

D4.1

MBs Identification and Evaluation Tools

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Multiple benefits of energy efficiency

Project partners



Environmental Change Institute



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European
council for an
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www.mbenefits.eu



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Resources

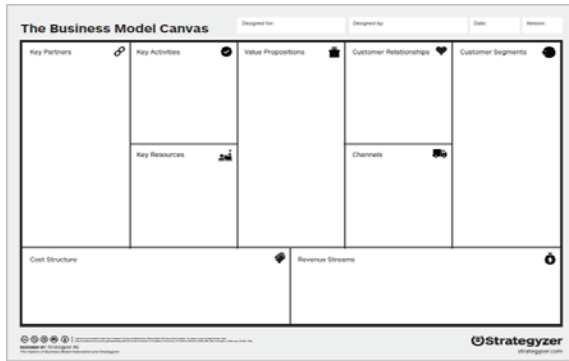
The Excel file presented in the next pages comprises generic material to streamline and support the Multiple Benefits analysis.

1.1 BM Canvas

Analysis of the company

Step 1.1 - Business Model Canvas

<https://www.strategyzer.com/canvas/business-model-canvas>

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1.2 DM Drivers

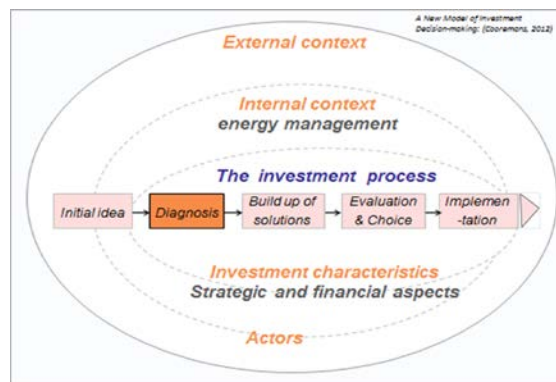
Analysis of the company

Step 1.2 - Decision-making drivers

FACTORS INFLUENCING ENERGY-EFFICIENCY INVESTMENT DECISION-MAKING		
Energy management level (the higher the better)	Score	Scale
Energy intensity Which percentage do your energy consumption total costs represent in % of your turnover: NB: one point is given IF an answer is given whatever the figure		yes = 1 / no = 0
Did your company make a commitment of a continuous reduction of its energy consumption		yes = 2 / no = 0
Did your company undertake any of the following tasks in relation with energy use :		
- Evaluation of energy performance (benchmarking)		yes = 1 / no = 0
- Definition of baseline		yes = 1 / no = 0
- Definition of key performance indicators		yes = 2 / no = 0
- Definition of energy policy		yes = 1 / no = 0
- Setting of measurable goals regarding energy consumption reduction		yes = 1 / no = 0
- Definition and setting of measures to reach the goals defined		yes = 1 / no = 0
- Data collection regarding goals achievement		yes = 1 / no = 0
Which resources have been allocated to energy-efficiency measures implementation :		
- Human resources (i.e. project team)		yes = 1 / no = 0
- Financial resources		yes = 1 / no = 1
- Technical resources (i.e. meters)		yes = 1 / no = 0
- Electronic resources (i.e. software)		yes = 1 / no = 0
Energy manager :		
- Does the company have an energy manager		yes = 2 / no = 0
- Does the energy manager perform other functions in your company		yes = -1 / no = 0
- If yes, which one		
Does your company have an internal communication on energy issues		yes = 1 / no = 0
Did your company organize the following systems and procedures in relation with its energy policy:		
- Training system for staff		yes = 1 / no = 0
- Reward system		yes = 1 / no = 0
- Monitoring system of the results in goals reaching		yes = 1 / no = 0
- Revising goals procedure		yes = 1 / no = 0
Does your company outsource facility management		yes = -1 / no = 0
TOTAL	0	Maximum score = 22 pts

NEGATIVE FACTORS		
Please rate the negative influence of the following factors on energy-efficient technologies adoption (1 = the less important - 4 = the most important)	Score	Scale
Energy & technology		
Energy costs are not sufficiently important		1-4
Energy efficiency has low priority		1-4
Current installations are sufficiently efficient		1-4
No good overview of existing technologies		1-4
Uncertainty regarding technologies quality		1-4
Investment cycle		
New technology can only be implemented when existing technology must be replaced		1-4
Finance		
Internal constraints on the budget		1-4
No loan possible when no core business investment		1-4
TOTAL		Maximum score = 32 pts

POSITIVE FACTORS		
Please rate the positive influence of the following factors on energy-efficient technologies adoption (1 = the less important - 4 = the most important)	Score	Scale
Physical resources		
The company owns its facilities/building(s)		yes = 1 no = 0
Even if tenant, influence is possible on large technical systems consuming energy		yes = 1 no = 0
A periodicity is defined for renovation of sales area or offices		yes = 1 no = 0
If there is a defined periodicity, what is its duration: -----	--	nr. years
Management systems	Score	Scale
Is your company certified:		
- ISO 9001 (quality)		yes = 1 / no = 0
- ISO 31000 (risks)		yes = 1 / no = 0
- ISO 50001 (energy management)		yes = 1 / no = 0
Did the company establish an Environmental Management System (EMS)		yes = 1 / no = 0
Management support	Score	Scale
Is there a Senior manager appointed to sponsor the energy audit program or the energy management action plan		yes = 1 / no = 0
TOTAL		Maximum score = 7 pts



Interpretation of results on Energy Management level	Score
No systematic EMs, or system with serious flaws	0-5
EMs does not meet requirements in its applications	6-10
Good EM system with possibilities for improvement	11-18
High level of Ems	19-22
The level of energy management is an indication of the importance given to energy issues in a company. (i.e. the goal of the questionnaire is not to give good or bad notes).	

Interpretation of results	Score
The higher the score, the higher the barriers to energy-efficiency investments in a company	0-32

Interpretation of results	Score
The higher the score, the higher the positive drivers to energy-efficiency investments or to the Multiple Benefits approach in a company.	0-7

2.1 Energy analysis

2.1

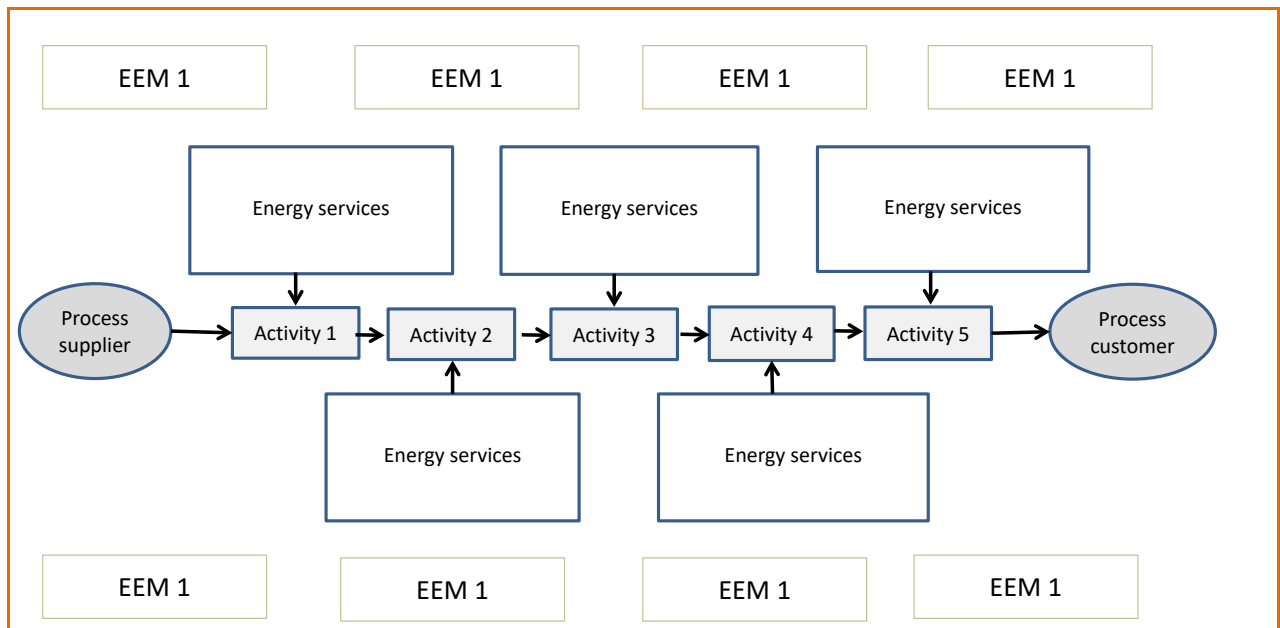
Step 2.1 Energy analysis

Pre-project summary	Post-installation energy benefits summary
<ul style="list-style-type: none">• Metering system• Estimated average power:• Energy consumption: -- kWh/year<ul style="list-style-type: none">• Electricity:• Thermal energy:• -----;• Indicators of energy consumption:<ul style="list-style-type: none">• ---• ---• ---	<ul style="list-style-type: none">• -- % improvement• ----- annual energy consumption savings:<ul style="list-style-type: none">• Electricity savings: KWh ----- EUR:-----• Natural gas savings: KWh ----- EUR:-----• Fuel oil savings: KWh----- EUR:-----

2.2 Operational analysis

Step 2.2 Operational analysis

ENERGY CARRIERS Primary / secondary / tertiary	ENERGY SERVICES	MAPPING OF PROCESS:				
		Activity 1	Activity 2	Activity 3	Activity 4	Activity 5
Combustible fuel (diesel fuel for worklift) Natural gas Low-voltage electricity Medium-voltage electricity High-voltage electricity Compressed air Water	Lighting Ventilation Air conditioning Cooling and refrigeration Refrigeration - positive cold Refrigeration - negative cold Heat - low temperature Heat - medium temperature Heat - High temperature Hot water Automated processing of information & communication Motive power - fixed (propulsion, electric drive system) Motive power - mobile					
Please use the following colour codes to represent impact of energy service on each process activity:		Inexistent	No colour			
		Weak				
		Average				
		Vital				



3.1.1 MBs All energy services

BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Example of indicator	Contribution to strategicity			Departement responsible in the company and data source
Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation -Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduc- tion	Value prop. Increase	Cost decrease	
PRODUCTION & PRODUCTS						
Reduced malfunction or breakdown of machinery and	Quantitative - M	Number of breakdowns/defects	x	x	x	Operations-Energy
Improved equipment performance	Quantitative - E-M	% default pieces/pieces produced	x	x	x	Operations-Energy
Longer equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - spending delayed			x	Operations-Energy
Improved product quality /consistency	Quantitative - M/E	Reduction of production losses - redo	x	x	x	Operations-Quality-Marketing & Sales
Increased production reliability (due to better control)	Quantitative - M	pieces produced	x	x	x	Opérations-Qualité
Larger product range	Quantitative - M	Number of additional products		x		Operations-Production manager-Marketing & Sales
Reduced customer service costs (due to better quality)	Quantitative - E	recall		x	x	Finance
Improved flexibility of production	Quantitative - E	Time-to-market - throughput time	x	x	x	Operations-Quality-Finance
Reduced raw material need	Quantitative - M	(in tonne/year) * costs of material (in	(x)		x	Operations
Reduced consumables	Quantitative - M	(nr/yr) * price (EUR/product)	(x)		x	Opérations-EHS
Shorter production cycle (shorter process cycle time)	Quantitative - M	Duration of production time		x	x	Operations
Increased production volume	Quantitative - M	(nr/yr) * price (EUR/product)				
Increased production yields	Quantitative - C	Output total/input total		x	x	Operations-Finance
WASTE & WATER						
Reduced waste heat	Quantitative - M	Quantity (total or as % of production)			x	Energy
Used waste heat	Quantitative - M	Quantity (% of total waste heat)			x	Energy
Reduced hazardous waste	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)	x		x	Operations
Reduced water consumption	Quantitative - M	turnover)	(x)		x	Operations-EHS
Reduced sewage volume	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Energy-Environment
Reduced sewage pollution level	Quantitative - M	Composition	x		x	Operations-Environment
Reduced product waste	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Environment
Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-EHS
GAZEOUS EMISSIONS						
Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
Reduced CO, CO2, NOx, SOx emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
Reduction of fluorinated (refrigerant) gases emissions	Quantitative - E	Quantity (total or as % of production)	x		x	Operations-Environment-Energy
MAINTENANCE						
Reduced maintenance cost	Quantitative - C	wages (EUR/hr) * reduced maintenance			x	Technical Service-Maintenance
Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment so reduced	x		x	Technical Service-Maintenance
Reduced engineering control cost	Quantitative - C	Technical control cost			x	Technical Service-Maintenance
WORKING ENVIRONMENT						
Reduced noise	Quantitative - M	Decibels x time of exposure	x	x	x	Operations-EHS
Air quality improvement of ambient air	Quantitative - M	Number of particles /m2 (example)	x	x	x	Operations-HR-Finance
Improved thermal comfort	Quant./qualitative	Well-being	x	x	x	Operations-Quality-HR
Improved visual comfort	Quant./qualitative	Well-being - productivity	x	x	x	Operations-Quality-HR
Improved workforce productivity	Depend on the tasks	Depend on the tasks (repetitive or not)	x	x	x	Operations-RH-Finance
Reduced absenteeism	Quantitative - C/E	Sickness absence days x cost per day	x	x	x	Operations-RH-Finance
Reduction of health costs	Quantitative - C/E	Insurance premiums reduction			x	Operations-RH-Finance
Reduced need for protective equipment	Quantitative - C/E	Cost of equipment			x	Operations-Finance
RISK REDUCTION						
Reduced risk of accident and occupational disease	qualitative - E	Number of accidents / year	x			Operations-Risk Assessment
Reduced CO2 and energy price risks	"	price forecasts)	x			Operations-Risk Assessment
Reduced water price risk	"	which water price is contractually agreed	x			Operations-Risk Assessment
Reduced commercial risk	"		x			Operations-Risk Assessment
Reduced legal risk	"	number of lawsuits or legal disputes	x			Operations-Risk Assessment
Reduced disruption of energy supply risk	"	electricity supply disruption rate)	x			Operations-Risk Assessment
Reduced disruption of (other) supplies	"		x			Operations-Risk Assessment
OTHERS						
Increased installation safety	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident	x	x	x	Operations
Improved staff satisfaction and loyalty	Qualitative ©	average nr of years that employees work at the company Or	x	x	x	HR
Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)	x	x	x	Hr-Finance
Delayed or reduced capital expenditure	Quantitative - C	Cost of equipment avoided			x	Operations-Finance
Reduced insurance cost	Quantitative - E	Insurance cost related to risk			x	Operations-Finance
Additional space / Improved space utilisation	Quantitative - C	Number of m2 saved		x	x	Operations-Finance
Simplification & automation of customs procedures	Qualitative - E	Nr of hours spend on procedures per year * wages/hr	x	x	x	Operations
Contribution to company's vision or strategy	Qualitative - E			x		Operations-General Management
Improved image or reputation	Qualitative (S)		x	x	x	Operations-Marketing
Increased knowledge of production/auxiliary processes	Qualitative		x	x	x	Operations-Quality-Energy-Environment
Increased assets value	Quantitative	Assets value	x	x		Finance
Contribution to regulatory compliance/reporting	Qualitative		x		x	Finance - Legal dpt

3.1.2 Lighting - MBs LIST

LIGHTING ENERGY SERVICE			BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of indicator	Contribution to strategy			Departement responsible in the company and data source
Functions / Impacts	Technical parameters	Major lighting energy-efficiency measures	Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation - Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. Increase	Cost decrease	
Functions			PRODUCTION & PRODUCTS						
Lux	lumen	Light-bulbing replacement (led)	improved equipment performance	Quantitative - M	Number of breakdowns/defects	x	x	x	Operations-Energy
Light temperature	T°K (kelvin)	Operating hours reduction/Sensors)	improved equipment performance	Quantitative - E-M	% default pieces/pieces produced	x	x	x	Operations-Energy
Colour rendering properties	Power W	Luminaire replacement (led)	improved equipment performance (due to reduced heat and volt)	Quantitative - E	Cost of equipment - spending delayed			x	Operations-Energy
operating hours		Automatic control lighting system	Improved production quality /consistency	Quantitative - M/E	Reduction of production losses - redo	x	x	x	Operations-Quality-Marketing & Sales
			Increased production reliability (due to better control)	Quantitative - M	% of conformity to specifications/total of	x	x	x	Operations-Qualité
Impacts									
Heat emission			Reduced customer service costs (due to better quality)	Quantitative - E	Number of additional products		x		Operations-Production manager-Marketing & Sales
Colour transforming properties			Improved flexibility of production	Quantitative - E	Number of product recalls x cost of product		x	x	Finance
			Reduced raw material need	Quantitative - M	Time-to-market - throughput time	x	x	x	Operations-Quality-Finance
			Reduced production volume	Quantitative - M	% raw materials - production volume	(x)			Operations
			Increased production yields	Quantitative - M	(nr/yr) * price (EUR/product)	(x)			Operations-EHS
			Increased production volume	Quantitative - M	Duration of production time		x	x	Operations
			Increased production yields	Quantitative - M	(nr/yr) * price (EUR/product)				
			Increased production yields	Quantitative - C	Output total/input total		x	x	Operations-Finance
WASTE & WATER									
			Reduced waste heat	Quantitative - M	Quantity (total or as % of production)			x	Energy
			Reduced waste heat	Quantitative - M	Quantity (% of total waste heat)			x	Energy
			Reduced wastewater	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)	x		x	Operations
			Reduced water consumption	Quantitative - M	Water - production volume (or in % of	(x)			Operations-EHS
			Reduced energy consumption	Quantitative - M	Quantity (total or as % of production)		x		Operations-Energy-Environment
			Reduced energy consumption	Quantitative - M	Composition	x		x	Operations-Environment
			Reduced energy consumption	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Environment
			Reduced energy consumption	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-EHS
GAZEUS EMISSIONS									
			Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
			Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
			Reduction of fluorescent lamp/energy glass emissions	Quantitative - E	Quantity (total or as % of production)	x			Operations-Environment-Energy
MAINTENANCE									
			Reduced maintenance cost	Quantitative - C	salaries (EUR/hr) * reduced maintenance			x	Technical Service-Maintenance
			Reduced maintenance and replacement water and tear	Quantitative - C	Longer lifetime of equipment so reduced	x		x	Technical Service-Maintenance
			Reduced engineering control cost	Quantitative - C	Technical control cost			x	Technical Service-Maintenance
WORKING ENVIRONMENT									
			Improved thermal comfort	Quantitative - M	Decibels x time of exposure	x	x	x	Operations-EHS
			Improved thermal comfort	Quantitative - M	Number of particles /m2 (example)	x	x	x	Operations-HR-Finance
			Improved visual comfort	Quant / qualitative	Well-being	x	x	x	Operations-Quality-HR
			Improved workforce productivity	Quant / qualitative	Well-being - productivity	x	x	x	Operations-Quality-HR
			Reduced absenteeism	Quantitative - C/E	Depend on the tasks (repetitive or not)	x	x	x	Operations-RH-Finance
			Reduction of health costs	Quantitative - C/E	Sickness absence days x cost per day	x	x	x	Operations-RH-Finance
			Reduction of health costs	Quantitative - C/E	Insurance premiums reduction			x	Operations-RH-Finance
			Reduction of health costs	Quantitative - C/E	Cost of equipment			x	Operations-Finance
RISK REDUCTION									
			Reduced risk of accident and occupational disease	Qualitative - E	Number of accidents / year	x			Operations-Risk Assessment
			Reduced CO2 and energy price risks	"	price forecasts	x			Operations-Risk Assessment
			Reduced commercial risk	"	which water price is contractually agreed	x			Operations-Risk Assessment
			Reduced commercial risk	"	number of lawsuits or legal disputes	x			Operations-Risk Assessment
			Reduced disruption of energy supply risk	"	electricity supply disruption rate)	x			Operations-Risk Assessment
			Reduced disruption of energy supply risk	"		x			Operations-Risk Assessment
OTHERS									
			Increased installation safety	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident	x	x	x	Operations
			Improved staff satisfaction and loyalty	Qualitative (S)	average nr of years that employees work at the company Or	x	x	x	HR
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)	x	x	x	HR-Finance
			Reduced or reduced capital expenditure	Quantitative - C	Cost of equipment avoided			x	Operations-Finance
			Reduced insurance cost	Quantitative - E	Insurance cost related to risk			x	Operations-Finance
			Additional space / improved space utilization	Quantitative - C	Number of m2 saved		x		Operations-Finance
			Automation & automation of customs procedures	Qualitative - E	Nr of hours spend on procedures per year * wages/hr	x	x	x	Operations
			Contribution to company's vision or strategy	Qualitative - E			x		Operations-General Management
			Improved image or reputation	Qualitative (S)		x	x	x	Operations-Marketing
			Increased knowledge of production/auxiliary processes	Qualitative		x	x	x	Operations-Quality-Energy-Environment
			Increased assets value	Qualitative	Assets value	x	x		Finance
			Contribution to regulatory compliance/reporting	Qualitative		x		x	Finance - Legal dpt

3.1.3 Air cond. - MBs LIST

AIR CONDITIONING ENERGY SERVICE			BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of indicator	Contribution to strategy			Department responsible in the company and data source
Functions / Impacts	Technical parameters	Major air conditioning energy-efficiency measures	Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation - Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. Increase	Cost decrease	
PRODUCTION & PRODUCTS									
Functions			Reduced malfunction or breakdown of machinery and	Quantitative - M	Number of breakdowns/defects	x	x	x	Operations-Energy
Stable T° in a defined T° window	Temperature (T°)	Lowering cold requirements/free cooling	Improved equipment performance	Quantitative - E-M	% default pieces/pieces produced	x	x	x	Operations-Energy
Air stability	Humidity rate (HR)	Operating parameters fitting	Longer equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - spending delayed			x	Operations-Energy
Air quality	Delta T	Heat recovery unit	Improved product quality / consistency	Quantitative - M/E	Reduction of production losses - redo pieces produced	x	x	x	Operations-Quality-Marketing & Sales
	Cooling power (KW)	Automatic control system (sensors)	Increased production reliability (due to better control)	Quantitative - M	Number of additional products		x	x	Operations-Qualité
Impacts		Cold production replacement	Larger product range	Quantitative - M	recall		x	x	Operations-Production manager-Marketing & Sales
Comfort - wellness		Renewable cold source	Reduced customer service costs (due to better quality)	Quantitative - E	Time-to-market - throughput time	x	x	x	Finance
Healthcare			Reduced raw material cost	Quantitative - M	(in tonne/year) * costs of material (in (€/yr) * price (EUR/product)	(x)		x	Operations-Quality-Finance
Product conservation			Shorter production cycle (shorter process cycle time)	Quantitative - M	Duration of production time		x	x	Operations
			Increased production volume	Quantitative - M	(€/yr) * price (EUR/product)				
			Increased production yields	Quantitative - C	Output total/input total		x	x	Operations-Finance
WASTE & WATER									
			Re-use of waste heat	Quantitative - M	Quantity (total or as % of production)			x	Energy
			Reduced water consumption	Quantitative - M	Quantity (% of total waste heat)			x	Energy
			Reduced water consumption	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)	x		x	Operations
			Reduced product waste	Quantitative - M	turnover)	(x)		x	Operations-EHS
			Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Environment
			Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
			Reduced greenhouse gas emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
			Reduction of greenhouse gas emissions	Quantitative - E	Quantity (total or as % of production)	x		x	Operations-Environment-Energy
MAINTENANCE									
			Reduced maintenance cost	Quantitative - C	wages (EUR/hr) * reduced maintenance			x	Technical Service-Maintenance
			Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment so reduced	x		x	Technical Service-Maintenance
			Reduced engineering control cost	Quantitative - C	Technical control cost				Technical Service-Maintenance
WORKING ENVIRONMENT									
			Reduced noise	Quantitative - M	Decibels x time of exposure	x	x	x	Operations-EHS
			Air quality improvement	Quantitative - M	Number of particles /m2 (example)	x	x	x	Operations-HR-Finance
			Improved thermal comfort	Quant / qualitative	Well-being	x	x	x	Operations-Quality-HR
			Improved workforce productivity	Quant / qualitative	Well-being - productivity	x	x	x	Operations-Quality-HR
			Reduced absenteeism	Quantitative - C/E	Depend on the tasks (repetitive or not)	x	x	x	Operations-RH-Finance
			Reduction of health costs	Quantitative - C/E	Sickness absence days x cost per day	x	x	x	Operations-RH-Finance
			Reduction of equipment-related equipment	Quantitative - C/E	Insurance premiums reduction			x	Operations-RH-Finance
			Cost of equipment	Quantitative - C/E	Cost of equipment			x	Operations-Finance
RISK REDUCTION									
			Reduced risk of accident and occupational disease	Qualitative - E	Number of accidents / year	x			Operations-Risk Assessment
			Reduced fire and energy price	"	price forecasts	x			Operations-Risk Assessment
			Reduced water price risk	"	which water price is contractually agreed	x			Operations-Risk Assessment
			Reduced commercial risk	"	number of lawsuits or legal disputes	x			Operations-Risk Assessment
			Reduced legal risk	"	electricity supply disruption rate	x			Operations-Risk Assessment
			Reduced disruption of energy supply risk	"	electricity supply disruption rate	x			Operations-Risk Assessment
OTHERS									
			Increased installation safety	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident	x	x	x	Operations
			Improved staff satisfaction and loyalty	Qualitative @	average nr of years that employees work at the company Or	x	x	x	HR
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)	x	x	x	HR-Finance
			Reduced or reduced capital expenditures	Quantitative - C	Cost of equipment avoided			x	Operations-Finance
			Reduced insurance cost	Quantitative - E	Insurance cost related to risk			x	Operations-Finance
			Additional space / improved space utilisation	Quantitative - C	Number of m2 saved		x	x	Operations-Finance
			Automation / automation of customer procedures	Qualitative - E	Nr of hours spend on procedures per year * wages/hr	x	x	x	Operations
			Contribution to company's vision or strategy	Qualitative - E			x		Operations-General Management
			Improved image or reputation	Qualitative (S)		x	x	x	Operations-Marketing
			Increased knowledge of production/auxiliary procedures	Qualitative		x	x	x	Operations-Quality-Energy-Environment
			Increased assets value	Qualitative	Assets value	x	x		Finance
			Contribution to regulatory compliance/monitoring	Qualitative		x		x	Finance - Legal dpt

3.1.4 Ventilation - MBs LIST

VENTILATION ENERGY SERVICE			BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of indicator	Contribution to strategy			Departement responsible in the company and data source
Functions / Impacts	Technical parameters	Major ventilation energy-efficiency measures	Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation -Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. increase	Cost decrease	
Functions			PRODUCTION & PRODUCTS						
Air renewal	m ³ /h	Motor - drive - fan replacement	Increased maintenance or substitution of machinery and	Quantitative - M	Number of breakdowns/defects	x	x	x	Operations-Energy
Air heating/cooling	Humidity rate CO2 rate	Adjustement of parameters(hours of use; flow rate) Automatic control system	Improved equipment performance Longer equipment life (due to reduced wear and tear)	Quantitative - E-M Quantitative - E	% default pieces/pieces produced Cost of equipment - spending delayed	x	x	x	Operations-Energy Operations-Energy
Impacts	Pollution rate	Heat recovery unit	Improved product quality /consistency Increased production reliability (due to better control)	Quantitative - M/E Quantitative - M	Reduction of production losses - redo pieces produced	x	x	x	Operations-Quality-Marketing & Sales Operations-Qualité
Air quality			Reduced customer service costs (due to better quality)	Quantitative - M	Number of additional products		x		Operations-Production manager-Marketing & Sales
Odors			Improved flexibility of production	Quantitative - E	recall		x	x	Finance
Wellness - Health			Reduced raw material need	Quantitative - M	Time-to-market - throughput time	x	x	x	Operations-Quality-Finance
			Reduced consumables	Quantitative - M	(in tonne/year) * costs of material (in	(x)			Operations
			Increased production volume	Quantitative - M	(m ³ /yr) * price (EUR/product)		x	x	Operations-EHS
			Increased production yields	Quantitative - M	(m ³ /yr) * price (EUR/product)		x	x	Operations
			WASTE & WATER	Quantitative - C	Output total/input total		x	x	Operations-Finance
			Re-use of waste heat	Quantitative - M	Quantity (total or as % of production)			x	Energy
			Reduced water consumption	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)	x	x	x	Energy
			Reduced energy volume	Quantitative - M	turnover)	(x)			Operations
			Reduced energy pollution level	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-EHS
			Reduced water volume	Quantitative - M	Composition	x	x	x	Operations-Energy-Environment
			Reduced water volume (e.g. water reduction (consumption))	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
			GAZEUS EMISSIONS	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
			Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
			Reduced CO, CO2, NOx, SOx emissions	Quantitative - E	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
			MAINTENANCE	Quantitative - C	wages (EUR/hr) * reduced maintenance			x	Technical Service-Maintenance
			Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment so reduced	x	x		Technical Service-Maintenance
			WORKING ENVIRONMENT	Quantitative - C	Technical control cost			x	Technical Service-Maintenance
			Air quality improvement	Quantitative - M	Decibels x time of exposure	x	x	x	Operations-EHS
			Improved thermal comfort	Quantitative - M	Number of particles /m2 (example)	x	x	x	Operations-HR-Finance
			Improved visual comfort	Quant /qualitative	Well-being	x	x	x	Operations-Quality-HR
			Improved workforce productivity	Quant /qualitative	Well-being - productivity	x	x	x	Operations-Quality-HR
			Reduced absenteeism	Quantitative - C/E	Depend on the tasks (repetitive or not)	x	x	x	Operations-RH-Finance
			Reduction of health costs	Quantitative - C/E	Sickness absence days x cost per day	x	x	x	Operations-RH-Finance
			Reduced need for protective equipment	Quantitative - C/E	Insurance premiums reduction			x	Operations-RH-Finance
			RISK REDUCTION	Quantitative - C/E	Cost of equipment			x	Operations-Finance
			Reduced risk of accident and occupational disease	qualitative - E	Number of accidents / year	x			Operations-Risk Assessment
			Reduced water price risk	"	price forecasts)	x			Operations-Risk Assessment
			Reduced commercial risk	"	water price is contractually agreed with	x			Operations-Risk Assessment
			Reduced legal risk	"	number of lawsuits or legal disputes	x			Operations-Risk Assessment
			Reduced disruption of energy supply risk	"	electricity supply disruption rate)	x			Operations-Risk Assessment
			OTHERS	"		x			Operations-Risk Assessment
			Increased satisfaction level	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident	x	x	x	Operations
			Improved staff satisfaction and loyalty	Qualitative Ø	average nr of years that employees work at the company Or	x	x	x	HR
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)	x	x	x	HR-Finance
			Reduced or reduced capital expenditure	Quantitative - C	Cost of equipment avoided			x	Operations-Finance
			Additional space / Improved space utilisation	Quantitative - E	Insurance cost related to risk			x	Operations-Finance
			Simplification & automation of customs procedures	Quantitative - C	Number of m2 saved		x	x	Operations-Finance
			Contribution to company's vision or strategy	Qualitative - E	Nr of hours spend on procedures per year * wages/hr	x	x	x	Operations
			Increased knowledge of production/business processes	Qualitative - E		x	x	x	Operations-General Management
			Increased assets value	Qualitative (S)		x	x	x	Operations-Marketing
			Contributions to operating condition monitoring	Qualitative	Assets value	x	x		Finance
				Qualitative		x		x	Finance - Legal dpt

3.1.5 Cooling-Refr. - MBs LIST

COOLING & REFRIGERATION (industrial use) ENERGY SERVICE (Food, medication, machinery, ...)			BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of indicator	Contribution to strategy			Department responsible in the company and data source
Functions / Impacts	Technical parameters	Major cooling & refrigeration energy-efficiency measures	Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation -Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. Increase	Cost decrease	
Functions			PRODUCTION & PRODUCTS						
Stable T° in a defined T° window	Temperature (T°)	Production adjustment to needs	Reduced malfunction or breakdown of machinery and	Quantitative - M	Number of breakdowns/defects	x	x	x	Operations-Energy
	Humidity rate (HR)	Cold distribution optimisation (insulation)	Improved equipment performance	Quantitative - E-M	% default pieces/pieces produced	x	x	x	Operations-Energy
	Delta T	Cold production replacement	Longer equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - spending delayed			x	Operations-Energy
Impact	Cooling power (KW)	Cold production centralization	Improved product quality /consistency	Quantitative - M/E	Reduction of production losses - redo	x	x	x	Operations-Quality-Marketing & Sales
	Heat recovery unit		Increased production reliability (due to better control)	Quantitative - M	pieces produced	x	x	x	Operations-Qualité
Product conservation		Renewable cold source	Larger product range	Quantitative - M	Number of additional products		x		Operations-Production manager-Marketing & Sales
Process stability and reliability			Reduced customer service costs (due to better quality)	Quantitative - E	recall		x	x	Finance
			Improved flexibility of production	Quantitative - E	Time-to-market - throughput time	x	x	x	Operations-Quality-Finance
			Reduced raw material need	Quantitative - M	(in tonne/year) * costs of material (in	(x)		x	Operations-Energy
			Reduced consumables	Quantitative - M	(nr/yr) * price (EUR/product)	(x)		x	Operations-EHS
			Shorter production cycle (shorter process cycle time)	Quantitative - M	Duration of production time		x	x	Operations
			Increased production volume	Quantitative - M	(nr/yr) * price (EUR/product)				
			Increased production yields	Quantitative - C	Output total/input total		x	x	Operations-Finance
			WASTE & WATER						
			Reduced waste water	Quantitative - M	Quantity (total or as % of production)			x	Energy
			Re-use of waste heat	Quantitative - M	Quantity (% of total waste heat)			x	Energy
			Reduced wastewater	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)	x		x	Operations
			Reduced water consumption	Quantitative - M	turnover)	(x)		x	Operations-EHS
			Reduced energy (thermal) need	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Energy-Environment
			Reduced energy (thermal) need	Quantitative - M	Composition	x		x	Operations-Environment
			Reduced product waste	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Environment
			Reduced energy need (E.g. cold storage, cold production)	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-EHS
			HAZARDOUS EMISSIONS						
			Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
			Reduced fluorinated (refrigerant) gases emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
			Reduced fluorinated (refrigerant) gases emissions	Quantitative - E	Quantity (total or as % of production)	x		x	Operations-Environment-Energy
			MAINTENANCE						
			Reduced maintenance cost	Quantitative - C	wages (EUR/hr) * reduced maintenance			x	Technical Service-Maintenance
			Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment so reduced	x			Technical Service-Maintenance
			Reduced engineering control cost	Quantitative - C	Technical control cost			x	Technical Service-Maintenance
			WORKING ENVIRONMENT						
			Reduced noise	Quantitative - M	Decibels x time of exposure	x	x	x	Operations-EHS
			Air quality improvement	Quantitative - M	Number of particles /m2 (example)	x	x	x	Operations-HR-Finance
			Improved thermal comfort	Quant./Qualitative	Well-being	x	x	x	Operations-Quality-HR
				Quant./Qualitative	Well-being - productivity	x	x	x	Operations-Quality-HR
			Improved workforce productivity	Depend on the tasks	Depend on the tasks (repetitive or not)	x	x	x	Operations-RH-Finance
				Quantitative - C/E	Sickness absence days x cost per day	x	x	x	Operations-RH-Finance
			Protection of health costs	Quantitative - C/E	Insurance premiums reduction			x	Operations-RH-Finance
			Reduced need for protective equipment	Quantitative - C/E	Cost of equipment			x	Operations-Finance
			RISK REDUCTION						
			Reduced risk of accident and occupational disease	Qualitative - E	Number of accidents / year	x			Operations-Risk Assessment
				"	price forecasts)	x			Operations-Risk Assessment
			Reduced water price risk	"	which water price is contractually agreed	x			Operations-Risk Assessment
			Reduced consumption risk	"		x			Operations-Risk Assessment
			Reduced legal risk	"	number of lawsuits or legal disputes	x			Operations-Risk Assessment
			Reduced disruption of energy supply risk	"	electricity supply disruption rate)	x			Operations-Risk Assessment
			Reduced disruption of (other) supplies	"		x			Operations-Risk Assessment
			OTHERS						
			Increased installation safety	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident	x	x	x	Operations
			Improved staff satisfaction and loyalty	Qualitative (S)	average nr of years that employees work at the company Or	x	x	x	HR
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)	x	x	x	HR-Finance
			Delayed or reduced capital expenditures	Quantitative - C	Cost of equipment avoided			x	Operations-Finance
			Reduced insurance cost	Quantitative - E	Insurance cost related to risk			x	Operations-Finance
			Additional space / Improved space utilisation	Quantitative - C	Number of m2 saved		x	x	Operations-Finance
			Simplification & automation of customs procedures	Qualitative - E	Nr of hours spend on procedures per year * wages/hr	x	x	x	Operations
			Contribution to company's values or strategy	Qualitative - E			x		Operations-General Management
			Improved image or reputation	Qualitative (S)		x	x	x	Operations-Marketing
			Increased knowledge of production/business processes	Qualitative		x	x	x	Operations-Quality-Energy-Environment
			Increased assets value	Quantitative	Assets value	x	x		Finance
			Contribution to regulatory compliance/reporting	Qualitative		x		x	Finance - Legal dpt

3.1.6 Heating - MBs LIST

HEATING ENERGY SERVICE(Housing, office, cooking, process)			BENEFITS OF ENERGY EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of indicator	Contribution to strategy			Departement responsible in the company and data source
Functions / Impacts	Technical parameters	Major heating energy-efficiency measures	Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation - Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduc- tion	Value prop. Increase	Cost decrease	
Functions			PRODUCTION & PRODUCTS						
Heat production: industrial processes	T°	Production adjustment to needs	Improved equipment performance	Quantitative - M	Number of breakdowns/defects	x	x	x	Operations-Energy
Heat production: cooking	Power KW	Primary heat T° level reduction	Improved product quality /consistency	Quantitative - E-M	% default pieces/pieces produced	x	x	x	Operations-Energy
Heat production: space heating		Heat distribution optimisation	Longer equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - spending delayed			x	Operations-Energy
Heat comfort		Automatic system control(Sensor)	Improved production reliability (due to better control)	Quantitative - M/E	Reduction of production losses - redo	x	x	x	Operations-Quality-Marketing & Sales
Stable T° in a defined T° window		Heat production replacement	Larger product range	Quantitative - M	pieces produced	x	x	x	Operations-Qualité
		Use of recovery heat source	Reduced customer service costs (due to better quality)	Quantitative - E	Number of additional products		x	x	Operations-Production manager-Marketing & Sales
		Use of renewable heat source	Improved flexibility of production	Quantitative - E	recall		x	x	Finance
Impacts			Reduced raw material need	Quantitative - M	Time-to-market - throughput time (in tonne/year) * costs of material (in	x	x	x	Operations-Quality-Finance
Product quality, conservation	Decibels (dB)				(x)				Operations
Cooking quality			Reduced consumables	Quantitative - M	(m/yr) * price (EUR/product)	(x)		x	Opérations-EHS
Sanitary risk			Shorter production cycle (shorter process cycle time)	Quantitative - M	Duration of production time			x	Operations
Noise			Increased production volume	Quantitative - M	(m/yr) * price (EUR/product)			x	
			Increased production yields	Quantitative - C	Output total/input total		x	x	Operations-Finance
			WASTE & WATER						
			Reduced waste heat	Quantitative - M	Quantity (total or as % of production)			x	Energy
			Re-use of waste heat	Quantitative - M	Quantity (% of total waste heat)			x	Energy
			Reduced hazardous waste	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)	x		x	Operations
			Reduced water consumption	Quantitative - M	(m³/yr) * price (EUR/product)	(x)		x	Operations-EHS
			Reduced product waste	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Energy-Environment
			Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Composition	x		x	Operations-Environment
			Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
			Reduced CO, CO2, NOx, SOx emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
			Reduction of hazardous solvent/gas emissions	Quantitative - E	Quantity (total or as % of production)	x		x	Operations-Environment-Energy
			MAINTENANCE						
			Reduced maintenance cost	Quantitative - C	wages (EUR/hr) * reduced maintenance			x	Technical Service-Maintenance
			Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment so reduced	x		x	Technical Service-Maintenance
			Reduced engineering control cost	Quantitative - C	Technical control cost			x	Technical Service-Maintenance
			WORKING ENVIRONMENT						
			Reduced noise	Quantitative - M	Decibels x time of exposure	x	x	x	Operations-EHS
			Improved thermal comfort	Quantitative - M	Number of particles /m2 (example)	x	x	x	Operations-HR-Finance
			Improved workforce productivity	Quant /qualitative	Well-being	x	x	x	Operations-Quality-HR
			Reduced absenteeism	Quant /qualitative	Well-being - productivity	x	x	x	Operations-Quality-HR
			Reduced health costs	Depend on the tasks	Depend on the tasks (repetitive or not)	x	x	x	Operations-RH-Finance
			Reduced need for protective equipment	Quantitative - C/E	Sickness absence days x cost per day	x	x	x	Operations-RH-Finance
			Reduced risk of accident and occupational disease	Quantitative - C/E	Insurance premiums reduction			x	Operations-RH-Finance
			RISK REDUCTION		Cost of equipment			x	Operations-Finance
			Reduced CO2 and energy price risks	qualitative - E	Number of accidents / year		x		Operations-Risk Assessment
			Reduced water price risk	"	price forecasts	x			Operations-Risk Assessment
			Reduced legal risk	"	which water price is contractually agreed	x			Operations-Risk Assessment
			Reduced disruption of energy supply risk	"	number of lawsuits or legal disputes	x			Operations-Risk Assessment
			Reduced disruption of (other) supplies	"	electricity supply disruption rate)	x			Operations-Risk Assessment
			OTHERS						
			Increased installation safety	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident	x	x	x	Operations
			Improved staff satisfaction and loyalty	Qualitative @	average nr of years that employees work at the company Or	x	x	x	HR
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)	x	x	x	Hr-Finance
			Reduced insurance cost	Quantitative - C	Cost of equipment avoided			x	Operations-Finance
			Additional space / improved space utilisation	Quantitative - E	Insurance cost related to risk			x	Operations-Finance
			Simplification & automation of customs procedures	Quantitative - C	Number of m2 saved			x	Operations-Finance
			Improved image or reputation	Qualitative - E	Nr of hours spend on procedures per year * wages/hr	x	x	x	Operations
			Increased knowledge of production/auxiliary processes	Qualitative - E			x		Operations-General Management
			Increased assets value	Qualitative (S)		x	x	x	Operations-Marketing
				Qualitative		x	x	x	Operations-Quality-Energy-Environment
				Qualitative	Assets value	x			Finance
				Qualitative		x		x	Finance - Legal dpt

3.1.7 Hot Water - MBs LIST

HOT WATER ENERGY SERVICE(Housing, Kitchen, laundry, process)			BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of Indicator	Contribution to strategy			Departement responsible in the company and data source
Functions / Impacts	Technical parameters	Major hot water energy-efficiency measures	Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation -Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. Increase	Cost decrease	
PRODUCTION & PRODUCTS									
Functions	T°	Production adjustment to needs	Reduced malfunction or breakdown of machinery and	Quantitative - M	Number of breakdowns/defects	x	x	x	Operations-Energy
	Flow (L/min)	flow reduction	Improved equipment performance	Quantitative - E-M	% default pieces/pieces produced	x	x	x	Operations-Energy
	Power (KW)	Heat distribution optimisation (insulation,	Longer equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - spending delayed				Operations-Energy
Impacts		Use of recovery heat source	Improved product quality /consistency	Quantitative - M/E	Reduction of production losses - redo	x	x	x	Operations-Quality-Marketing & Sales
		Use of renewable heat source	Increased production reliability (due to better control)	Quantitative - M	pieces produced	x	x	x	Operations-Qualité
		Heat production replacement	Larger product range	Quantitative - M	Number of additional products		x		Operations-Production manager-Marketing & Sales
Comfort		Limestone control system	Reduced customer service costs (due to better quality)	Quantitative - E	recall		x		Finance
Legionellosis risk			Improved flexibility of production	Quantitative - E	Time-to-market - throughput time	x	x	x	Operations-Quality-Finance
Water quality (limestone)			Reduced raw material need	Quantitative - M	(in tonne/year) * costs of material (in	(x)			Operations
			Reduced consumables	Quantitative - M	(m³/yr) * price (EUR/product)	(x)			Operations-EHS
			Shorter production cycle (shorter process cycle time)	Quantitative - M	Duration of production time		x	x	Operations
			Increased production volume	Quantitative - M	(m³/yr) * price (EUR/product)				
			Increased production yields	Quantitative - C	Output total/input total		x	x	Operations-Finance
WASTE & WATER									
			Reduced waste heat	Quantitative - M	Quantity (total or as % of production)			x	Energy
			Used waste heat	Quantitative - M	Quantity (% of total waste heat)			x	Energy
			Reduced hazardous waste	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)	x		x	Operations
			Reduced water consumption	Quantitative - M	(turnover)	(x)			Operations-EHS
			Reduced sewage volume	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Energy-Environment
			Reduced sewage pollution level	Quantitative - M	Composition	x		x	Operations-Environment
			Reduced product waste	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Environment
			Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-EHS
GAZEUS EMISSIONS									
			Reduced CO ₂ , CO ₂ , NO _x , SO _x emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
			Reduced CO ₂ and energy price risks	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
			Reduced water price risk	Quantitative - E	Quantity (total or as % of production)	x			Operations-Environment-Energy
MAINTENANCE									
			Reduced maintenance cost	Quantitative - C	wages (EUR/hr) * reduced maintenance			x	Technical Service-Maintenance
			Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment so reduced	x		x	Technical Service-Maintenance
			Reduced engineering control cost	Quantitative - C	Technical control cost			x	Technical Service-Maintenance
WORKING ENVIRONMENT									
			Reduced noise	Quantitative - M	Decibels x time of exposure	x	x	x	Operations-EHS
			Air quality improvement	Quantitative - M	Number of particles /m2 (example)	x	x	x	Operations-HR-Finance
			Improved thermal comfort	Quant / qualitative	Well-being	x	x	x	Operations-Quality-HR
			Improved workforce productivity	Quant / qualitative	Well-being - productivity	x	x	x	Operations-Quality-HR
			Reduced absenteeism	Depend on the tasks	Depend on the tasks (repetitive or not)	x	x	x	Operations-RH-Finance
			Reduction of health costs	Quantitative - C/E	Sickness absence days x cost per day	x	x	x	Operations-RH-Finance
			Reduced need for protective equipment	Quantitative - C/E	Insurance premiums reduction			x	Operations-RH-Finance
			Reduced need for protective equipment	Quantitative - C/E	Cost of equipment			x	Operations-Finance
RISK REDUCTION									
			Reduced risk of accident and occupational disease	Qualitative - E	Number of accidents / year	x			Operations-Risk Assessment
			Reduced CO2 and energy price risks	"	price forecasts	x			Operations-Risk Assessment
			Reduced water price risk	"	which water price is contractually agreed	x			Operations-Risk Assessment
			Reduced legal risk	"	number of lawsuits or legal disputes	x			Operations-Risk Assessment
			Reduced disruption of energy supply risk	"	electricity supply disruption rate)	x			Operations-Risk Assessment
			Reduced disruption of (other) supplies	"	electricity supply disruption rate)	x			Operations-Risk Assessment
OTHERS									
			Increased installation safety	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident	x	x	x	Operations
			Improved staff satisfaction and loyalty	Qualitative (I)	average nr of years that employees work at the company Or	x	x	x	HR
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)	x	x	x	HR-Finance
			Increased or reduced capital expenditure	Quantitative - C	Cost of equipment avoided			x	Operations-Finance
			Reduced insurance cost	Quantitative - E	Insurance cost related to risk			x	Operations-Finance
			Additional space / improved space utilisation	Quantitative - C	Number of m2 saved		x	x	Operations-Finance
			Simplification & automation of customs procedures	Qualitative - E	Nr of hours spend on procedures per year * wages/hr	x	x	x	Operations
			Contribution to company's mission or reputation	Qualitative - E			x		Operations-General Management
			Increased image or reputation	Qualitative (S)		x	x	x	Operations-Marketing
			Increased knowledge of production/auxiliary processes	Qualitative		x	x	x	Operations-Quality-Energy-Environment
			Increased assets value	Qualitative	Assets value	x	x		Finance
			Contribution to regulatory compliance/reporting	Qualitative		x		x	Finance - Legal dept

3.1.8 Automated pr. - MBs LIST

AUTOMATED PROCESSING OF INFORMATION & COMMUNICATION TECHNOLOGIES ENERGY SERVICE(Office, process)			MULTIPLE BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of Indicator	Contribution to strategy			Department responsible in the company and data source
Functions / Impacts	Technical parameters	Major automated processing of information & communication energy-efficiency measures	Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation - Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. Increase	Cost decrease	
Functions			PRODUCTION & PRODUCTS						
Voltage stability	I*	Development of monitoring system	Reduced malfunction or breakdown of machinery and	Quantitative - M	Number of breakdowns/defects	x	x	x	Operations-Energy
Information storage	kWh	Development of measure, control &	Improved equipment performance	Quantitative - E-M	% default pieces/pieces produced	x	x	x	Operations-Energy
Electric protection (continuity of	Voltage V	Development of centralized technical	Longer equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - spending delayed			x	Operations-Energy
	Power kW		Improved product quality (consistency)	Quantitative - M/E	Reduction of production losses - redo	x	x	x	Operations-Quality-Marketing & Sales
Impacts			Increased production reliability (due to better control)	Quantitative - M	pieces produced	x	x		Operations-Quality
Strategic security			Larger product range	Quantitative - M	Number of additional products		x		Operations-Production manager-Marketing & Sales
			Reduced customer service costs (due to better quality)	Quantitative - E	recall		x	x	Finance
			Improved flexibility of production	Quantitative - E	Time-to-market - throughput time	x	x	x	Operations-Quality-Finance
			Reduced raw material need	Quantitative - M	(in tonne/year) * costs of material (in	(x)		x	Operations
			Reduced consumables	Quantitative - M	(nr/yr) * price (EUR/product)	(x)	x	x	Operations-EHS
			Shorter production cycle (shorter process cycle time)	Quantitative - M	Duration of production time				Operations
			Increased production volume	Quantitative - M	(nr/yr) * price (EUR/product)				
			Increased production yields	Quantitative - C	Output total/input total		x	x	Operations-Finance
			WASTE & WATER						
			Reduced waste heat	Quantitative - M	Quantity (total or as % of production)			x	Energy
			Re-used waste heat	Quantitative - M	Quantity (% of total waste heat)			x	Energy
			Reduced hazardous waste	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)	x		x	Operations
			Reduced water consumption	Quantitative - M	turnover	(x)		x	Operations-EHS
			Reduced sewage volume	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Energy-Environment
			Reduced sewage pollution level	Quantitative - M	Composition	x		x	Operations-Environment
			Reduced product waste	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Environment
			Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-EHS
			GAZEUS EMISSIONS						
			Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
			Reduced CO ₂ , CO ₂ , NO _x , SO _x emissions	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
			Reduction of fluorinated (refrigerant) gases emissions	Quantitative - E	Quantity (total or as % of production)	x			Operations-Environment-Energy
			MAINTENANCE						
			Reduced maintenance cost	Quantitative - C	wages (EUR/hr) * reduced maintenance			x	Technical Service-Maintenance
			Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment so reduced	x			Technical Service-Maintenance
			Reduced engineering control cost	Quantitative - C	Technical control cost			x	Technical Service-Maintenance
			WORKING ENVIRONMENT						
			Reduced noise	Quantitative - M	Decibels x time of exposure	x	x	x	Operations-EHS
			Air quality improvement	Quantitative - M	Number of particles /m2 (example)	x	x	x	Operations-HR-Finance
			Improved thermal comfort	Quant./qualitative	Well-being	x	x	x	Operations-Quality-HR
			Improved visual comfort	Quant./qualitative	Well-being - productivity	x	x	x	Operations-Quality-HR
			Improved workforce productivity	Depend on the tasks	Depend on the tasks (repetitive or not)	x	x	x	Operations-RH-Finance
			Reduced absenteeism	Quantitative - C/E	Sickness absence days x cost per day	x	x	x	Operations-RH-Finance
			Reduction of health costs	Quantitative - C/E	Insurance premiums reduction			x	Operations-RH-Finance
			Reduced need for production equipment	Quantitative - C/E	Cost of equipment			x	Operations-Finance
			RISK REDUCTION						
			Reduced risk of accident and occupational disease	Qualitative - E	Number of accidents / year	x			Operations-Risk Assessment
			Reduced CO ₂ and energy price risks	"	price forecasts	x			Operations-Risk Assessment
			Reduced water price risk	"	water price is contractually agreed with	x			Operations-Risk Assessment
			Reduced legal risk	"	number of lawsuits or legal disputes	x			Operations-Risk Assessment
			Reduced disruption of energy supply risk	"	electricity supply disruption rate	x			Operations-Risk Assessment
			Reduced disruption of (other) supplies	"		x			Operations-Risk Assessment
			OTHERS						
			Increased installation safety	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident	x	x	x	Operations
			Improved staff satisfaction and loyalty	Qualitative ID	average nr of years that employees work at the company Or	x	x	x	HR
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)	x	x	x	HR-Finance
			Increased or reduced capital expenditures	Quantitative - C	Cost of equipment avoided			x	Operations-Finance
			Reduced insurance cost	Quantitative - E	Insurance cost related to risk			x	Operations-Finance
			Additional space / Improved space utilisation	Quantitative - C	Number of m2 saved		x	x	Operations-Finance
			Simplification & automation of customs procedures	Qualitative - E	Nr of hours spend on procedures per year * wages/hr	x	x	x	Operations
			Contribution to company's vision or strategy	Qualitative - E			x		Operations-General Management
			Improved image or reputation	Qualitative (S)		x	x	x	Operations-Marketing
			Increased knowledge of production/auxiliary processes	Qualitative		x	x	x	Operations-Quality-Energy-Environment
			Increased assets value	Qualitative	Assets value	x	x		Finance
				Qualitative		x		x	Finance - Legal dpt

3.1.9 Motive Power - MBs LIST

MOTIVE POWER ENERGY SERVICE (ENGINES, DRIVES & DISTRIBUTION NETWORK) using electric, pneumatic, hydraulic technologies			BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of indicator	Contribution to strategy			Department responsible in the company and data source
Functions / impacts	Technical parameters	Major motive power energy-efficiency measures	Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation - Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. Increase	Cost decrease	
Functions			PRODUCTION & PRODUCTS						
Flexibility	Flow	Adjustment to operating hours	Reduced malfunction or breakdown of machinery and	Quantitative - M	Number of breakdowns/defects	x	x	x	Operations-Energy
Power availability	Power (KW)	Motor replacement	Improved equipment performance	Quantitative - E-M	% default pieces/pieces produced	x	x	x	Operations-Energy
Time availability	Operating point	Drive replacement	Longer equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - spending delayed			x	Operations-Energy
		Drive network optimisation	Improved product quality /consistency	Quantitative - M/E	Reduction of production losses - redo	x	x	x	Operations-Quality-Marketing & Sales
		Development of an automatic control and regulation	Increased production reliability (due to better control)	Quantitative - M	pieces produced	x	x	x	Operations-Qualité
Impacts			Larger product range	Quantitative - M	Number of additional products		x		Operations-Production manager-Marketing & Sales
Productivity			Reduced customer service costs (due to better quality)	Quantitative - E	recall		x	x	Finance
Continuity			Improved flexibility of production	Quantitative - E	Time-to-market - throughput time	x	x	x	Operations-Quality-Finance
			Reduced raw material need	Quantitative - M	(in tonne/year) * costs of material (in				Operations
			Reduced consumables	Quantitative - M	(nr/yr) * price (EUR/product)	(x)		x	Operations-EHS
			Shorter production cycle (shorter process cycle time)	Quantitative - M	Duration of production time		x		Operations
			Increased production volume	Quantitative - M	(nr/yr) * price (EUR/product)				
			Increased production yields	Quantitative - C	Output total/input total		x	x	Operations-Finance
			WASTE & WATER						
			Reduced waste heat	Quantitative - M	Quantity (total or as % of production)			x	Energy
			Reduced waste water	Quantitative - M	Quantity (% of total waste heat)			x	Energy
			Reduced water consumption	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)	x		x	Operations
			Reduced energy consumption	Quantitative - M	(nr/yr) * price (EUR/product)	(x)		x	Operations-EHS
			Reduced waste water	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Energy-Environment
			Reduced production waste	Quantitative - M	Composition	x		x	Operations-Environment
			Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-Environment
			Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity (total or as % of production)	x		x	Operations-EHS
			GAZEUS EMISSIONS						
			Reduced CO2	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment
			Reduced CO2	Quantitative - M	Quantity (total or as % of production)	x	x	x	Operations-Environment-Energy
			Reduced CO2	Quantitative - E	Quantity (total or as % of production)	x		x	Operations-Environment-Energy
			MAINTENANCE						
			Reduced maintenance cost	Quantitative - C	pieces (EUR/ha) * reduced maintenance			x	Technical Service-Maintenance
			Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment so reduced	x		x	Technical Service-Maintenance
			Reduced engineering control cost	Quantitative - C	Technical control cost			x	Technical Service-Maintenance
			WORKING ENVIRONMENT						
			Reduced noise	Quantitative - M	Decibels x time of exposure	x	x	x	Operations-EHS
			Improved thermal comfort	Quantitative - M	Number of particles /m2 (example)	x	x	x	Operations-HR-Finance
			Improved thermal comfort	Quant./qualitative	Well-being	x	x	x	Operations-Quality-HR
			Improved workforce productivity	Quant./qualitative	Well-being - productivity	x	x	x	Operations-Quality-HR
			Reduced absenteeism	Depend on the tasks	Depend on the tasks (repetitive or not)	x	x	x	Operations-RH-Finance
			Reduced need for protective equipment	Quantitative - C/E	Sickness absence days x cost per day	x	x	x	Operations-RH-Finance
			Reduced need for protective equipment	Quantitative - C/E	Insurance premiums reduction			x	Operations-RH-Finance
			Reduced need for protective equipment	Quantitative - C/E	Cost of equipment			x	Operations-Finance
			RISK REDUCTION						
			Reduced risk of accident and occupational disease	Qualitative - E	Number of accidents / year	x			Operations-Risk Assessment
			Reduced CO2 and energy price risks	"	price forecasts	x			Operations-Risk Assessment
			Reduced maintenance risk	"	water price is contractually agreed with	x			Operations-Risk Assessment
			Reduced maintenance risk	"		x			Operations-Risk Assessment
			Reduced legal risk	"	number of lawsuits or legal disputes	x			Operations-Risk Assessment
			Reduced disruption of energy supply risk	"	electricity supply disruption rate	x			Operations-Risk Assessment
			Reduced disruption of (other) supplies	"		x			Operations-Risk Assessment
			OTHERS						
			Increased installation safety	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident	x	x	x	Operations
			Improved staff satisfaction and loyalty	Qualitative ID	average nr of years that employees work at the company Or	x	x	x	HR
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)	x	x	x	HR-Finance
			Reduced insurance cost	Quantitative - C	Cost of equipment avoided			x	Operations-Finance
			Additional space / improved space utilisation	Quantitative - E	insurance cost related to risk			x	Operations-Finance
			Simplification & automation of customs procedures	Quantitative - C	Number of m2 saved		x	x	Operations-Finance
			Contribution to company's image or strategy	Qualitative - E	Nr of hours spend on procedures per year * wages/hr	x	x	x	Operations
			Improved image or reputation	Qualitative - E			x		Operations-General Management
			Increased knowledge of production/auxiliary processes	Qualitative [S]		x	x	x	Operations-Marketing
			Increased assets value	Qualitative		x	x	x	Operations-Quality-Energy-Environment
			Contribution to regulatory compliance/reporting	Qualitative	Assets value	x	x		Finance
						x		x	Finance - Legal dpt

3.2 Quantifying and valuing MB

Energy-Efficiency Measure Title:

Description:

Value proposition

Costs

Risks

Analysis to be made for each EEM

	Multiple benefits contributing to Risk decrease	Description / comments	KPI (Key Performance Indicator)	Data (Variable to measure)	Nature of the data (Quantitative /Qualitative)	Accuracy	Source (Dpt in the company)	Quantitative result in Value or Cost cells
MBR1					Qualitative			
MBR2					Qualitative			
MBR3					Qualitative			
MBR4					Qualitative			
MBR5					Qualitative			
...					Qualitative			
	Multiple Benefits contributing to Value or Value proposition increase	Description / comments	KPI (Key Performance Indicator)	Data (Variable to measure)	Nature of the data (Quantitative /Qualitative)	Accuracy	Source (company's department)	Quantitative result
MBV1								
MBV2								
MBV3								
MBV4								
MBV5								
...								
	Multiple Benefits contributing to Cost decrease	Description / comments	KPI (Key Performance Indicator)	Data (Variable to measure)	Nature of the data (Quantitative /Qualitative)	Accuracy	Source (company's department)	Quantitative result
MBC1								
MBC2								
MBC3								
MBC4								
MBC5								
...								

4. MBs Financial evaluation

Step 4 - Multiple Benefits Financial Analysis									
Investment project (EEM or grouped EEMs):									
Hypotheses for the calculations	t0	t1	t2	t3	t4	t5	t6	t7	T8
		(EUR)							
Initial capital spending (CAPEX) in t0	0,0	--	--	--	--	--	--	--	--
Additional capital spending - t1 to Tn	0,0	--	--	--	--	--	--	--	--
Subsidy	0,0	--	--	--	--	--	--	--	--
Terminal value	--	--	--	--	--	--	--	--	0,0
Average cost of saved energy (EUR/KWh) net of TVA	0,0	--	--	--	--	--	--	--	--
Estimated energy savings (Electric KWh/year)	Kwh	--	--	--	--	--	--	--	--
Estimated energy savings (Thermal KWh/year)	Kwh	--	--	--	--	--	--	--	--
Estimated energy savings (Thermal KWh/year)	Kwh	--	--	--	--	--	--	--	--
Energy benefits (EB = energy costs reduction):									
- Electricity	--	0	0	0	0	0	0	0	0
- Thermique (natural gas)	--	0	0	0	0	0	0	0	0
- Thermique (heating fuel)	--	0	0	0	0	0	0	0	0
TOTAL EBs :		0	0	0	0	0	0	0	0
Non-energy benefits (NEBs)									
- NEB1 :	--	0	0	0	0	0	0	0	0
- NEB2 :	--	0	0	0	0	0	0	0	0
- NEB3 :	--	0	0	0	0	0	0	0	0
- NEB4 :	--	0	0	0	0	0	0	0	0
- NEB5 :	--	0	0	0	0	0	0	0	0
TOTAL NEBs :		0	0	0	0	0	0	0	0
Information to ask to Accounting-Finance Department									
Straight-line depreciation	0	--	--	--	--	--	--	--	--
Discount rate	0%	--	--	--	--	--	--	--	--
Investment duration (i.e. nr of years included in the calculations)	0	--	--	--	--	--	--	--	--
Corporate tax	0%	--	--	--	--	--	--	--	--
Depreciation	t0	t1	t2	t3	t4	t5	t6	t7	T8
		(EUR)							
Capital expenditure (initial and additional)	0,0	0	0	0	0	0	0	0	0
Depreciation of initial investment made in t = 0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Depreciation of additional capital expenditure made in t = 1			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Total depreciation		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Book value of fixed assets		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Revenues	t0	t1	t2	t3	t4	t5	t6	t7	T8
		(EUR)							
Total gross revenues of Multiple Benefits of energy-efficiency investment:									
- Total energy benefits		0	0	0	0	0	0	0	0
- Total non-energy benefits		0	0	0	0	0	0	0	0
TOTAL gross revenue of investment		0	0	0	0	0	0	0	0
Depreciation		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Net income before taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Net income after taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Depreciation		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Free cash-flows after taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Investment free cash-flows	t0	t1	t2	t3	t4	t5	t6	t7	T8
		(EUR)							
Cash-flow after taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Capital expenditure	0								
Terminal value in year T									0
Terminal value after taxes in year T									0
Investment free cash-flows	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	5%	8%							
NPV (Net Present Value) 8 years @ 5%	#DIV/0!								
NPV (Net Present Value) 8 years @ 8%	#DIV/0!								
IRR (Internal rate of return)	#WERT!								
Payback in years :	#DIV/0!								

GENERIC EEMs

	Type of measure	Guidelines	Examples	Colonne1
Management de l'énergie	Energy management		Mise en place de l'organisation Designation d'un responsable Etablissement d'une charte énergie Définition d'indicateurs et fixation d'objectifs Elaboration d'un plan d'actions Formation d'un groupe de travail Mise en place d'un système de prime à l'efficacité énergétique Mode de comparaison des offres en coûts totaux Etc.	Setting up the management system Appointment of an energy management representative Establishment of an energy policy Setting objectives and defining indicators Development of an action plan Etc.
Comptage & monitoring de l'énergie	Energy metering & monitoring		Mise en place de compteurs supplémentaires et organisation des relevés Logiciel d'analyse de signatures Exploitation des données sous supervision, etc. Plan de mesure et de vérification selon IPMVP Etc.	setting up of additional counters and meter reading planning Energy consumption analysis software IPMVP monitoring and control plan Etc.
Comportement des personnes	People's behavior	When the energy consumption depends significantly on the behavior of people (production line operators, hotel customers, etc.), as a replacement or complement to the implementation of automation (hardware and / or software) to reduce unnecessary services (standby losses, etc.)	Bulletin d'information et / ou affichage Campagne de sensibilisation / conscientisation Directive concernant la mise en pause temporaire des équipements Toute action visant des économies par un changement de comportement des utilisateurs.	Bulletin board or newsletter Awareness-raising campaign Directive on Temporary Pause of Equipment Any action aimed at energy savings through a change in user behavior
Optimisation maintenance équip. / install.	Optimisation of maintenance of the equipment and installations	Preventive (or curative) maintenance plan aiming at keeping existing equipment at the best efficiency and quality. Choose this category when the organized planning aspect of the performance / default is predominant, as opposed to an occasional replacement of defective equipment, without a plan	Calibration des capteurs Campagne de détection de défauts (lignes AC, purges vapeur défectueuses, etc.) et remplacement Nettoyage systématique d'échangeurs Rénovation de calorifugeage défectueux existant.	Calibration of the sensors Defect detection campaign Systematic cleaning of exchangers Renovation of existing defective thermal insulation.
Optimisation consignes contrôle commande	Optimisation of control / command setpoints	Optimization of the operation of equipment and installations by working on setpoint instructions, schedules, etc., without modifying the principles / control loops or control systems, without addition of additional sensor / detector, without new module setting (as opposed to improving the monitoring, control and surveillance system)	Modification (restriction) des horaires de fonctionnement des luminaires, des ventilations, etc. Changement de consigne de température, d'humidité relative, etc. Relèvement de la température de consigne de départ d'eau glacée Réduction de la fréquence d'un convertisseur, ou passage en petite vitesse Abaissement de la pression de consigne de la production d'air comprimé	Modification (restriction) of the operating hours of luminaires, ventilation, etc. Change of temperature setpoint, relative humidity, etc. Reducing the frequency of a converter, or switching to low speed Lowering the setpoint pressure of compressed air production.
Optimisation gestion de "production"	Optimisation of production planning	Changing the spatial or temporal organization of activities to save energy and / or costs (Demand Side Management)	Réorganisation l'agencement des zones de production pour valoriser des synergies énergétiques (approcher les zones), limiter les pertes (zones exothermiques dans des bâtiments mal isolés), optimiser les flux de matière, ... Réduction des consommations par réorganisation du planning de production, schedule des opérations ou des recettes (recettes compatibles réduisant le nombre de cycles de CIP, lots de plus grande taille) Changement de procédure pour réduire ou supprimer le nombre d'impressions. Reprogrammation d'activités en période tarifaire HC, recours au stockage de glace pour la production de froid. Gestion / limitation de la puissance de pointe par délestage, etc. Rescheduling de procédés pour réduire les pointes de débit de vapeur, d'électricité, etc.	Reorganization of the layout of the production areas to enhance energy synergies (bringing the zones closer together), limiting losses (exothermic areas in poorly insulated buildings), optimizing the flow of material, etc. Reducing consumption by reorganization of the production schedule Change of procedure Reprogramming of activities in tariff period HC, use of ice storage for the production of cold. Rescheduling processes to reduce peaks in steam flow, electricity, etc.
Amélioration du concept MCR	Improvement of the monitoring, control and regulation system / concept	Automation allowing a functioning closer to the actual needs (reduction of useless services). Improvement of the setting strategy by adding new functionalities	Installation de commutation par zone (éclairage). Installation de détecteurs de présence ou de passage pour enclencher / déclencher des installations (luminaires, ventilation, etc.). Installation de capteurs de grandeurs représentatives de l'occupation (CO2, humidité) ou de gaz traceur en vue de gérer le débit de ventilation. Gestion électronique de dégivrage (basé sur la mesure de la formation de givre) de chambres frigorifique. Calcul de température de bulbe humide pour gérer la consigne de température de condensation. L'installation de vannes thermostatiques peut aussi être assimilée comme une action de type Amélior MCR. Modification de la cascade d'enclenchement de compresseurs d'un groupe froid, des ventilateurs de tours, etc. pour privilégier le fonctionnement en charge partielle	
Amélioration perform. équipements existants	Improvement of the existing equipment performance	Improving the operating performance of existing equipment and facilities at a reasonable cost (whether in "production", distribution, "conversion" or "use"). The goal of the eem is loss reduction and not heat recovery.	Réduction des pertes par isolation de portions de conduite initialement non isolée, vannes, etc. Installation de réflecteur sur des buses TL sans remplacement de la source lumineuse ni des luminaires. Peinture ou revêtement mot plâtré du colorier clair pour réduire la puissance lumineuse requise: actions sur les diffuseurs Réduction des infiltrations d'air par mise en place de joints de battées, obturage de passage, etc. Accroissement (sans remplacement) de l'épaisseur de calorifugeage de murs et toitures Suppression de ponts de froid localisés. Pose de films IR / solaire sur vitrages existants. Ajout d'un module de free-cooling sur groupe froid existant, modification de sa connexion (parallèle => série sur le retour), ou accroissement de sa capacité. Désaération de l'air dans les locaux de grande hauteur. Pose de transformateur-abaisseur de tension (optimiseur de réseau) pour l'alimentation de luminaires	Reduction of losses by insulation of initially uninsulated pipe portions, valves, etc. Painting walls and ceiling in light color to reduce the required light Reduction of air infiltration by setting up batten seals, passage blocking, etc. Increase (without replacement) of the insulation thickness of walls and roofs Suppression of localized cold bridges Addition of a free-cooling module on an existing refrigeration unit Air delamination in high rooms. Installation of voltage-reducing transformer (network optimizer) for luminaire supply
Récup. / revalorisation de chaleur ou froid	Heat / cold recovery and / reuse	Improved operating performance of existing equipment and facilities by simple heat recovery.	Pose d'économeur sur chaudière Installation d'une roue récupératrice ou échangeur air neuf / air extrait, etc. Ajout d'un module de free-cooling sur groupe froid existant. Récupération de chaleur sur effluents. Récupération de chaleur sur air comprimé	Saver installation on boiler Installation of a recovery wheel or fresh air exchanger / extract air, etc. Addition of a free-cooling module on an existing refrigeration unit. Heat recovery on compressed air
Optimisation système & procédés	Optimisation of systems and processes	Several actions of different types on different elements constituting the system to optimize the overall efficiency of this system. Changes without replacement, or limited replacement, of system elements.	Optimisation de la production/distribution de froid: compresseur en HP flottant et optimisation des aéro-condenseurs, modification hydraulique 3V => 2V, température de départ glissante, ajout de pompe en parallèle pour le fonctionnement en charge partielle et ou ajout de variateur de fréquence, etc. Optimisation de la production/distribution de chaleur, visant par ex. à garantir une température de retour <50 °C pour permettre une condensation des gaz de combustion Augmentation de la teneur en matière sèche d'un produit à sécher à l'entrée d'un spray dryer	Optimization of the production / distribution of cold Optimization of the production / distribution of heat, aiming eg. to guarantee a return temperature <50 °C to allow a condensation of the combustion gases Increasing the dry matter content of a product to be dried at the entrance of a spray dryer
Remplac. par équipement plus performant	Replacement of the existing equipment by a more efficient one	Replacement by a similar technology (as opposed to a new technology).	Remplacement d'une vieille chaudière surdimensionnée par une chaudière modulaire à condensation Remplacement de luminaires par luminaires plus performants (mais de type de source lumineuse identique) Remplacement de moteur par moteur de dernière génération (IE3 ou IE4-VF) Remplacement de fenêtres ou de vitrages Réfection totale de l'isolation thermique	Replacement of an oversized old boiler with a modulating condensing boiler Replacement of luminaires with more efficient luminaires (but of the same type of light source) Engine replacement by latest generation engine Replacement of windows or glazing Total renovation of the thermal insulation
"Nouvelle" technologie / solution	Adoption of new technology or solution	Replacement of current technology (whether in "production", distribution, "conversion" of energy or unit operation) with a different / more efficient technology or solution (it is not an action on the mix of resources).	Four à induction plutôt que combustion Installation d'une cogénération plutôt que chaudière Remplacement d'une production centralisée d'ECs par une production décentralisée Remplacement d'un groupe froid à compression par un système à absorption Recours à dalle active et refroidissement adiabatique en remplacement de groupe froid à compression. Remplacement de luminaires par luminaires plus performants (et de type de source lumineuse identique) Recours à un procédé / technologie de production différente.	Induction furnace rather than combustion Installation of a CHP rather than a boiler Replacement of a centralized production of DHW by decentralized production Replacement of a compression chiller with an absorption system
Intégration énergétique	Energy integration	Recalibration / recycling actions / systematic use of cascade heat resulting from a system analysis of the Pinch analysis type.	Réseau d'échange de chaleur (échangeur et tout ce qui va autour), PAC, cogin, unité de conversion d'énergie, etc.	
Changement de mix de ressources	Change in the resources mix	Substitution of energy vector or type of energy, use of renewable energies, ... heat pump using environment (air, water, soil)	Valorisation énergétique de déchets (méthanisation) Recours à la biomasse Production solaire photovoltaïque Production solaire thermique Achat d'électricité labellisée Passage du mazout au gaz naturel Refroidissement sur tour aéro-refrigérante plutôt qu'en eau de ville perdue	
Optimisation contrat approvis. / tarifs	Optimisation of supply contract or tariffs	Action to reduce the average price of energy.	Choix du fournisseur d'énergie Choix du type de contrat (elec: fourniture BT ou MT, tarifs, puissance souscrite, take or pay, ...) Suppression / regroupement de petits compteurs ou réduction du diamètre nominal (cas de contrat eau de ville)	
Debottleneck utilités / capacité production	Debottlenecking of utilities / production capacity	Investment in additional production capacity (if possible with higher performance than existing equipment / systems, which enables to improve the average energy performance)		
Action d'un autre type	Other type action			

Case study analysis

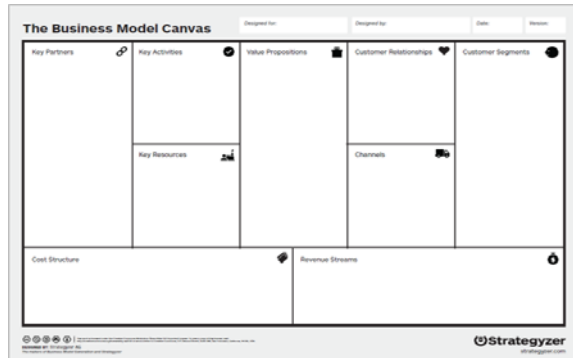
The Excel file presented in the next pages comprises specific analytical tools to receive the results of the Multiple Benefits analysis.

1.1 BM Canvas

Analysis of the company

Step 1.1 - Business Model Canvas

<https://www.strategyzer.com/canvas/business-model-canvas>

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1.2 DM Drivers

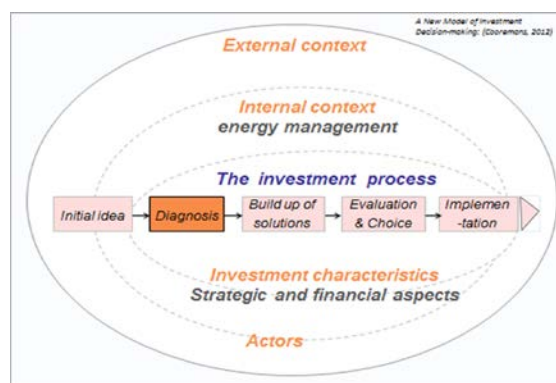
Analysis of the company

Step 1.2 - Decision-making drivers

FACTORS INFLUENCING ENERGY-EFFICIENCY INVESTMENT DECISION-MAKING		
Energy management level (the higher the better)	Score	Scale
Energy intensity Which percentage do your energy consumption total costs represent in % of your turnover: NB: one point is given IF an answer is given whatever the figure		yes = 1 / no = 0
Did your company make a commitment of a continuous reduction of its energy consumption		yes = 2 / no = 0
Did your company undertake any of the following tasks in relation with energy use :		
- Evaluation of energy performance (benchmarking)		yes = 1 / no = 0
- Definition of baseline		yes = 1 / no = 0
- Definition of key performance indicators		yes = 2 / no = 0
- Definition of energy policy		yes = 1 / no = 0
- Setting of measurable goals regarding energy consumption reduction		yes = 1 / no = 0
- Definition and setting of measures to reach the goals defined		yes = 1 / no = 0
- Data collection regarding goals achievement		yes = 1 / no = 0
Which resources have been allocated to energy-efficiency measures implementation :		
- Human resources (i.e. project team)		yes = 1 / no = 0
- Financial resources		yes = 1 / no = 1
- Technical resources (i.e. meters)		yes = 1 / no = 0
- Electronic resources (i.e. software)		yes = 1 / no = 0
Energy manager :		
- Does the company have an energy manager		yes = 2 / no = 0
- Does the energy manager perform other functions in your company		yes = -1 / no = 0
- If yes, which one		
Does your company have an internal communication on energy issues		yes = 1 / no = 0
Did your company organize the following systems and procedures in relation with its energy policy:		
- Training system for staff		yes = 1 / no = 0
- Reward system		yes = 1 / no = 0
- Monitoring system of the results in goals reaching		yes = 1 / no = 0
- Revising goals procedure		yes = 1 / no = 0
Does your company outsource facility management		yes = -1 / no = 0
TOTAL	0	Maximum score = 22 pts

NEGATIVE FACTORS		
Please rate the negative influence of the following factors on energy-efficient technologies adoption (1 = the less important - 4 = the most important)	Score	Scale
Energy & technology		
Energy costs are not sufficiently important		1-4
Energy efficiency has low priority		1-4
Current installations are sufficiently efficient		1-4
No good overview of existing technologies		1-4
Uncertainty regarding technologies quality		1-4
Investment cycle		
New technology can only be implemented when existing technology must be replaced		1-4
Finance		
Internal constraints on the budget		1-4
No loan possible when no core business investment		1-4
TOTAL		Maximum score = 32 pts

POSITIVE FACTORS		
Please rate the positive influence of the following factors on energy-efficient technologies adoption (1 = the less important - 4 = the most important)	Score	Scale
Physical resources		
The company owns its facilities/building(s)		yes = 1 no = 0
Even if tenant, influence is possible on large technical systems consuming energy		yes = 1 no = 0
A periodicity is defined for renovation of sales area or offices		yes = 1 no = 0
If there is a defined periodicity, what is its duration: -----	--	nr. years
Management systems	Score	Scale
Is your company certified:		
- ISO 9001 (quality)		yes = 1 / no = 0
- ISO 31000 (risks)		yes = 1 / no = 0
- ISO 50001 (energy management)		yes = 1 / no = 0
Did the company establish an Environmental Management System (EMS)		yes = 1 / no = 0
Management support	Score	Scale
Is there a Senior manager appointed to sponsor the energy audit program or the energy management action plan		yes = 1 / no = 0
TOTAL		Maximum score = 7 pts



Interpretation of results on Energy Management level	Score
No systematic EMs, or system with serious flaws	0-5
EMs does not meet requirements in its applications	6-10
Good EM system with possibilities for improvement	11-18
High level of Ems	19-22
The level of energy management is an indication of the importance given to energy issues in a company. (i.e. the goal of the questionnaire is not to give good or bad notes).	

Interpretation of results	Score
The higher the score, the higher the barriers to energy-efficiency investments in a company	0-32

Interpretation of results	Score
The higher the score, the higher the positive drivers to energy-efficiency investments or to the Multiple Benefits approach in a company.	0-7

2.1 Energy analysis

Step 2.1 Energy analysis

Pre-project summary

- Metering system
- Estimated average power:
- Energy consumption: -- kWh/year
 - Electricity:
 - Thermal energy:
 - -----;
- Indicators of energy consumption:
 - ---
 - ---
 - ---

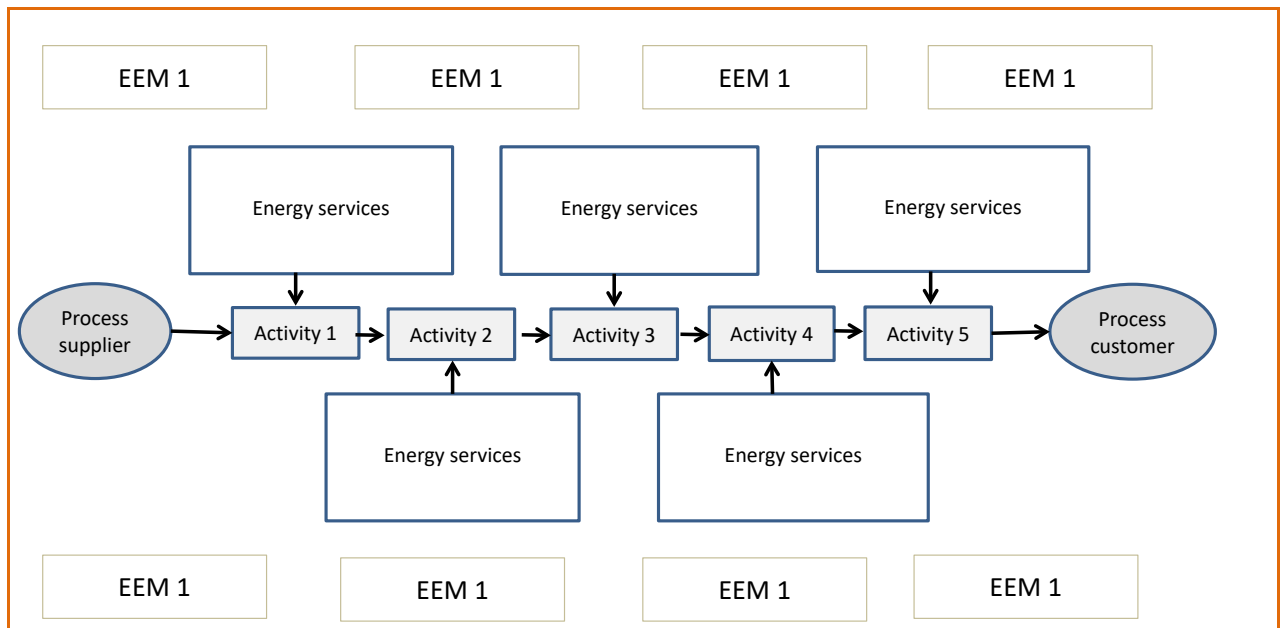
Post-installation energy benefits summary

- -- % improvement
- ----- annual energy consumption savings:
 - Electricity savings: KWh ----- EUR:-----
 - Natural gas savings: KWh ----- EUR:-----
 - Fuel oil savings: KWh----- EUR:-----

2.2 Operational analysis

Step 2.2 Operational analysis

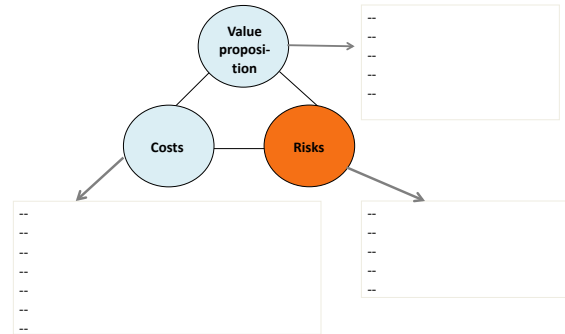
ENERGY CARRIERS Primary / secondary / tertiary	ENERGY SERVICES	MAPPING OF PROCESS:				
		Activity 1	Activity 2	Activity 3	Activity 4	Activity 5
Combustible fuel (diesel fuel for worklift) Natural gas Low-voltage electricity Medium-voltage electricity High-voltage electricity Compressed air Water	Lighting Ventilation Air conditioning Cooling and refrigeration Refrigeration - positive cold Refrigeration - negative cold Heat - low temperature Heat - medium temperature Heat - High temperature Hot water Automated processing of information & communication Motive power - fixed (propulsion, electric drive system) Motive power - mobile					
Please use the following colour codes to represent impact of energy service on each process activity:		Inexistent	No colour			
		Weak				
		Average				
		Vital				



3.1.1 MBs All energy services

BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Example of indicator	Contribution to strategy		
Be careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation - Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. Increase	Cost decrease
PRODUCTION & PRODUCTS					
Reduced malfunction or breakdown of machinery and	Quantitative - M	Number of breakdowns/defects			
Improved equipment performance	Quantitative - E-M	% default pieces/pieces produced			
Longer equipment life (due to reduced wear and tear)	Quantitative - F	Cost of equipment - spending delayed			
Improved product quality/consistency	Quantitative - M/E	Reduction of production losses - redo pieces produced			
Increased production reliability (due to better control)	Quantitative - M	Number of additional products			
Larger product range	Quantitative - M	recall			
Reduced customer service costs (due to better quality)	Quantitative - E	Time-to-market - throughput time			
Improved flexibility of production	Quantitative - E	(in tonnes/year) * costs of material (in m³/yr) * price (EUR/product)			
Reduced raw material need	Quantitative - M	Duration of production time			
Reduced consumables	Quantitative - M	(m³/yr) * price (EUR/product)			
Shorter production cycle (shorter process cycle time)	Quantitative - M	Output total/input total			
Increased production volume	Quantitative - M				
Increased production yields	Quantitative - C				
WASTE & WATER					
Reduced waste heat	Quantitative - M	Quantity (total or as % of production)			
Used waste heat	Quantitative - M	Quantity (W of total waste heat)			
Reduced hazardous waste	Quantitative - M	(kg/yr) * disposal costs (EUR/kg)			
Reduced water consumption	Quantitative - M	(turnover)			
Reduced sewage volume	Quantitative - M	Quantity (total or as % of production)			
Reduced sewage pollution level	Quantitative - M	Composition			
Reduced product waste	Quantitative - M	Quantity (total or as % of production)			
Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity (total or as % of production)			
GAZEUS EMISSIONS					
Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)			
Reduced CO ₂ , CO ₂ , NO _x , SO _x emissions	Quantitative - M	Quantity (total or as % of production)			
Reduction of fluorinated (refrigerant) gases emissions	Quantitative - E	Quantity (total or as % of production)			
MAINTENANCE					
Reduced maintenance cost	Quantitative - C	wages (EUR/hr) * reduced maintenance			
Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment so reduced technical control cost			
Reduced engineering control cost	Quantitative - C				
WORKING ENVIRONMENT					
Reduced noise	Quantitative - M	Decibels x time of exposure			
Air quality improvement of ambient air	Quantitative - M	Number of particles /m2 (example)			
Improved thermal comfort	Quant./qualitative	Well-being			
Improved visual comfort	Quant./qualitative	Well-being - productivity			
Improved workforce productivity	Depend on the tasks	Depend on the tasks (repetitive or not)			
Reduced absenteeism	Quantitative - C/E	Sickness absence days x cost per day			
Reduction of health costs	Quantitative - C/E	Insurance premiums reduction			
Reduced need for protective equipment	Quantitative - C/E	Cost of equipment			
RISK REDUCTION					
Reduced risk of accident and occupational disease	qualitative - E	Number of accidents / year			
Reduced CO ₂ and energy price risks	-	price forecasts)			
Reduced water price risk	-	water price is contractually agreed with			
Reduced commercial risk	-				
Reduced legal risk	-	number of lawsuits or legal disputes			
Reduced disruption of energy supply risk	-	electricity supply disruption rate)			
Reduced disruption of (other) supplies	-				
OTHERS					
Increased installation safety	Quantitative - C	nr of incidents per year * average costs (or other impact) per incident			
Improved staff satisfaction and loyalty	Qualitative D	average nr of years that employees work at the company Or			
Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)			
Delayed or reduced capital expenditure	Quantitative - C	Cost of equipment avoided			
Reduced insurance cost	Quantitative - E	Insurance cost related to risk			
Additional space / improved space utilisation	Quantitative - C	Number of m2 saved			
Simplification & automation of customs procedures	Qualitative - E	Nr of hours spend on procedures per year * wages/hr			
Contribution to company's vision or strategy	Qualitative - E				
Improved image or reputation	Qualitative D)				
Increased knowledge of production/auxiliary processes	Qualitative				
Increased assets value	Qualitative	Assets value			
Contribution to regulatory compliance/reporting	Qualitative				

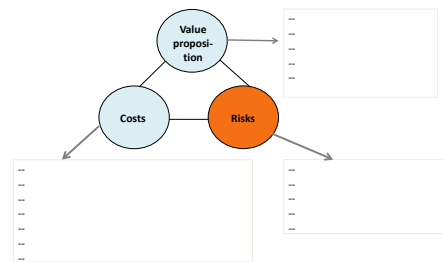
Assessing multiple benefits of EEM



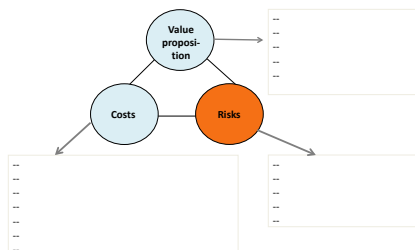
3.1.2 Lighting - MBs LIST

LIGHTING ENERGY SERVICE			BENEFITS OF ENERGY EFFICIENCY PROJECTS (Based on benefits identified in past projects)		Quantifiable (Measure - Calculation - Estimate)	Suggestions of indicator	Contribution to strategy	Phase use the following colour codes in the cells: no strategic value: no colour weak strategic value: green average strategic value: yellow high strategic value: red
Functions / Impacts	Technical parameters	Major lighting energy efficiency measures	No cause of double counting or cascading effects ! no benefits are the same under different names	Qualitative (Evaluation / Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value proposition	Cost decrease
FUNCTIONS & EFFECTS								
Qualities	none	Light fixture replacement (led)		Quantitative - M	Number of breakdowns/defects			
Light temperature	°K / Kelvin	Operating hours reduction (Sensor)		Quantitative - M	% default pages/pages produced			
Colour rendering properties	Operating W Operating hours	Luminaire replacement (led) Automatic control lighting system	improved product quality / aesthetics	Quantitative - E	Cost of equipment - spending delayed			
			increased production reliability (due to better control)	Quantitative - M	Reduction of production / quality / yield			
Health				Quantitative - E	% of conformity to specifications/total of quantity			
Heat emission			Reduced customer service costs (due to better control)	Quantitative - E	Number of product recalls / cost of			
Colour transforming properties			improved flexibility of production	Quantitative - E	Time-to-market - throughput time			
			Reduced raw material cost	Quantitative - M	% raw materials - production volume			
				Quantitative - M	Accident * area (E\$/product)			
				Quantitative - M	Quantity of production loss			
			increased production volume	Quantitative - M	Accident * area (E\$/product)			
			increased production yields	Quantitative - E	Output total/output total			
WASTE & WATER								
			Reduced waste heat	Quantitative - M	Quantity (total or as % of production)			
				Quantitative - M	Quantity (% of total waste heat)			
				Quantitative - M	Quantity * disposal costs (E\$/kg)			
				Quantitative - M	Water - production volume for in % of			
				Quantitative - M	Quantity (total or as % of production)			
				Quantitative - M	Consumption			
				Quantitative - M	Quantity (total or as % of production)			
				Quantitative - M	Quantity (total or as % of production)			
GENEROUS EMISSIONS								
				Quantitative - M	Quantity (total or as % of production)			
				Quantitative - M	Quantity (total or as % of production)			
				Quantitative - E	Quantity (total or as % of production)			
MAINTENANCE								
			Reduced maintenance cost	Quantitative - E	usage (E\$/hour) * reduced maintenance			
				Quantitative - E	longer lifetime / planned to be reduced			
			Reduced engineering control cost	Quantitative - E	Technical control cost			
SAFETY (ENVIRONMENT)								
				Quantitative - M	Outlets / a time of exposure			
			Improved thermal comfort	Quantitative - M	Number of incidents /no. incident			
			Improved visual comfort	Quantitative - M	Weld burns			
			Improved energy efficiency productivity	Quantitative - M	Weld burns - productivity			
			Reduced phosporus	Quantitative - E/E	Expend on the health benefits or not			
			Reduction of health costs	Quantitative - E/E	Sickness absence days a cost per day			
				Quantitative - E/E	Insurance premiums reduction			
RISK REDUCTION								
			Reduced risk of accident and occupational disease	Quantitative - E	Cost of equipment			
			Reduced CO2 and energy price risks	Quantitative - E	Number of accidents / year			
				Quantitative - E	price forecast			
			Reduced commercial risk	Quantitative - E	which water price is contractually agreed			
			Reduced disruption of energy supply risk	Quantitative - E	number of lawsuits or legal disputes			
				Quantitative - E	electricity supply disruption rate			
OTHERS								
			Improved installation safety	Quantitative - E	no or incidents per year * average costs (or other impact per incident)			
			Improved staff satisfaction and loyalty	Quantitative - E	average nr. of years that employees work at the company Or			
			Reduced staff turnover	Quantitative - E/E	Employee satisfaction (based on survey)			
				Quantitative - E	Cost of equipment avoided			
			Reduced insurance risk	Quantitative - E	Cost of equipment related to risk			
				Quantitative - E	Number of no. used			
				Quantitative - E	nr of hours spent on procedures per year * wage/hr			
			Contribution to company's vision or strategy	Qualitative - E				
			Improved image or reputation	Qualitative - M				
				Qualitative - M				
				Qualitative - M	Assets value			

Assessing n



3.1.3 Air cond. - MBs LIST

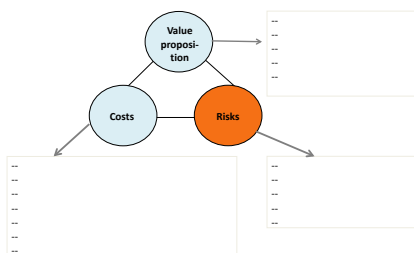
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3.1.4 Ventilation - MBs LIST

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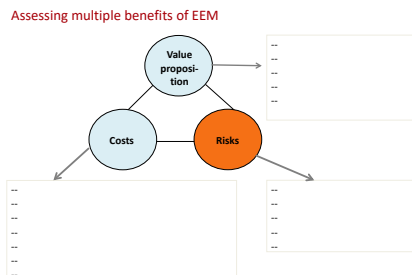
Please use the following colour codes in the cells:

- no strategic value: no colour
- weak strategic value: green
- average strategic value: yellow
- High strategic value: red



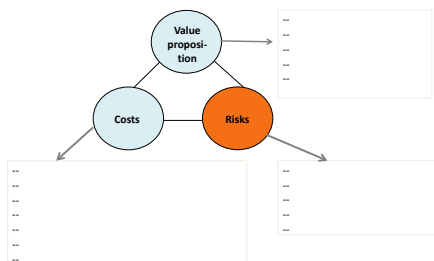
3.1.5 Cooling-Refr. - MBs LIST

COOLING & REFRIGERATION (industrial use) ENERGY SERVICE (Food, medication, machinery, ...)		BENEFITS OF ENERGY-EFFICIENCY PROJECTS (Based on benefits identified in past projects)		Quantities (Masses) Calculation (Formula)	Suggestions of indicator	Contribution to strategy	Please use the following colour codes in the table: no strategic value, no colour weak strategic value, green average strategic value, yellow high strategic value, red
Functions / Impacts	Technical parameters	Machinery, cooling & refrigeration energy efficiency measures	Be careful of double counting or cancelling effects! Some benefits are the same under different names	Qualification (Evaluation) (Scale)	To be related to a time period (i.e., year/month/day/year)	Risk Reduction Value Improvement Cost Decrease	
REDUCED NOISE & VIBRATIONS							
Quantities	Temperature (°C)	Production adjustment to needs	Reduced maintenance / replacement of machinery and equipment	Quantitative - M	Number of breakdowns / incidents		
	Humidity rate (RH)	Cold distribution optimization (production)	Improved equipment performance	Quantitative - M	kg of equipment / spare parts produced		
Unit 1	Unit 1	Cold production optimization (production)	Reduced equipment life due to reduced wear and tear	Quantitative - M	Reduction of equipment lifetime (years)		
	Unit 2	Cold production optimization (production)	Improved product quality (consistency)	Quantitative - M	Number of product quality incidents		
Unit 3	Unit 3	Cold production optimization (production)	Reduced production variability (due to better control)	Quantitative - M	Number of production variability incidents		
	Unit 4	Cold production optimization (production)	Improved product taste	Quantitative - M	Number of additional products		
Unit 5	Unit 5	Cold production optimization (production)	Reduced customer service costs (due to better quality)	Quantitative - 2	€ saved		
	Unit 6	Cold production optimization (production)	Improved facility of production	Quantitative - 1	Number of complaints / threatened times		
Unit 7	Unit 7	Cold production optimization (production)	Reduced energy material usage	Quantitative - M	kg of material / kg of costs of material (kg)		
	Unit 8	Cold production optimization (production)	Improved production cycle (shorter process cycle time)	Quantitative - M	kg of kg / price (€/kg)		
Unit 9	Unit 9	Cold production optimization (production)	Increased production volume	Quantitative - M	Quantity of production (kg)		
	Unit 10	Cold production optimization (production)	Increased production volume	Quantitative - M	kg of kg / price (€/kg)		
Unit 11	Unit 11	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 12	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 13	Unit 13	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 14	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 15	Unit 15	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 16	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 17	Unit 17	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 18	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 19	Unit 19	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 20	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 21	Unit 21	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 22	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 23	Unit 23	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 24	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 25	Unit 25	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 26	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 27	Unit 27	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 28	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 29	Unit 29	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 30	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 31	Unit 31	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 32	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 33	Unit 33	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 34	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 35	Unit 35	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 36	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 37	Unit 37	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 38	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 39	Unit 39	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 40	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 41	Unit 41	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 42	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 43	Unit 43	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 44	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 45	Unit 45	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 46	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 47	Unit 47	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 48	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 49	Unit 49	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 50	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 51	Unit 51	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 52	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 53	Unit 53	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 54	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 55	Unit 55	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 56	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 57	Unit 57	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 58	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 59	Unit 59	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 60	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 61	Unit 61	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 62	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 63	Unit 63	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 64	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 65	Unit 65	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 66	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 67	Unit 67	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 68	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 69	Unit 69	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 70	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 71	Unit 71	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 72	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 73	Unit 73	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 74	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 75	Unit 75	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 76	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 77	Unit 77	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 78	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 79	Unit 79	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 80	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 81	Unit 81	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 82	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 83	Unit 83	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 84	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 85	Unit 85	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 86	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 87	Unit 87	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 88	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 89	Unit 89	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 90	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 91	Unit 91	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 92	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 93	Unit 93	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 94	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 95	Unit 95	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 96	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 97	Unit 97	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 98	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 99	Unit 99	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 100	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 101	Unit 101	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 102	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 103	Unit 103	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 104	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 105	Unit 105	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 106	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 107	Unit 107	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 108	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 109	Unit 109	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 110	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 111	Unit 111	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 112	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 113	Unit 113	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 114	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 115	Unit 115	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 116	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 117	Unit 117	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 118	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 119	Unit 119	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 120	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 121	Unit 121	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 122	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 123	Unit 123	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 124	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 125	Unit 125	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 126	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 127	Unit 127	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 128	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 129	Unit 129	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 130	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 131	Unit 131	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 132	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 133	Unit 133	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 134	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 135	Unit 135	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 136	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 137	Unit 137	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 138	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 139	Unit 139	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 140	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 141	Unit 141	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 142	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 143	Unit 143	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 144	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 145	Unit 145	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 146	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 147	Unit 147	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 148	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 149	Unit 149	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 150	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 151	Unit 151	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 152	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 153	Unit 153	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 154	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 155	Unit 155	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 156	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 157	Unit 157	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 158	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 159	Unit 159	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 160	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 161	Unit 161	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 162	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 163	Unit 163	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 164	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 165	Unit 165	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 166	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 167	Unit 167	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 168	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 169	Unit 169	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 170	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 171	Unit 171	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 172	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 173	Unit 173	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 174	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 175	Unit 175	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
	Unit 176	Cold production optimization (production)	Increased production volume	Quantitative - C	Quantity (kg) or % of production		
Unit 177	Unit 177	Cold production optimization (production)					



3.1.6 Heating - MBs LIST

HEATING (ENERGY SERVICE)(Housing, office, cooking, process)			BENEFITS OF ENERGY-EFFICIENCY PROJECTS (based on benefits identified in past projects)		Quantifiable (Measure + Calculation - Estimate)	Suggestions of indicator	Contribution to strategy			Please use the following colour codes in the cells: - no string value, no colour - weak string value green - average string value yellow - high string value: red
Functions / Impacts	Technical parameters	Major heating energy efficiency measures	in the realm of double counting or cascading effects? Some benefits are the same under different names	Qualitative (Evaluation Staff) (Support)	To be related to a time period (e.g. year/month/day/hour)	Risk Reduction	Value proposition	Cost decrease		
functions										
Heat production: industrial processes	Power kW	Production adjustment to needs		Quantitative - M	Number of installations/defects					
Heat production: cooking		Process heat 1° heat reduction	Improved equipment performance	Quantitative - M	Reduced processes reduced					
Heat production: space heating		Heat production optimisation	Longer equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - operating delayed					
Controlled access		Controlled system control facility (Accessories)	Reduced maintenance costs (due to better control)	Quantitative - M	Number of maintenance issues, repairs					
Stable 1° in a defined T° window		Heat production replacement	Larger product range	Quantitative - M	Number of additional products					
		Use of recovery heat source	Reduced customer service costs (due to better quality)	Quantitative - M	Reduced waste					
		Use of renewable heat source	Improved flexibility of production	Quantitative - E	Time-to-market - time/sprint time					
impact			Reduced raw material costs	Quantitative - M	Raw material costs * costs of material (in %)					
Product quality, conservation	Productivity (t/h)		Reduced consumables	Quantitative - M	Costs of consumables					
Control risk			Shorter production cycle (fasterer process cycle time)	Quantitative - M	Costs of production time					
Energy			Increased production volume	Quantitative - M	Quantity of production time (t/h) * price of (t/h/production)					
			Increased production velocity	Quantitative - F	Cost of production time (t/h) * price of (t/h/production)					
			WASTE & WATER							
			Reduced waste heat	Quantitative - M	Quantity (total or as % of production)					
			Focus of waste heat	Quantitative - M	Quantity (t/h of total waste waste heat)					
			Reduced hazardous waste	Quantitative - M	Quantity - disposal costs (t/h/price)					
			Reduced water contamination	Quantitative - M	Cost of water					
			Reduced water consumption	Quantitative - M	Quantity (total or as % of production)					
			Reduced product waste	Quantitative - M	Cost of product					
			Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity (total or as % of production)					
			HAZARDOUS EMISSIONS							
			Reduced dust emissions	Quantitative - M	Quantity (total or as % of production)					
			Reduced CO ₂ emissions	Quantitative - M	Quantity (total or as % of production)					
			Reduced CO ₂ , CO ₂ , NO _x , SO _x emissions	Quantitative - E	Quantity (total or as % of production)					
			MAINTENANCE							
			Reduced maintenance cost	Quantitative - C	Energy (t/h/price) * reduced maintenance					
			Reduced machinery and equipment wear and tear	Quantitative - C	Energy (t/h/price) * reduced maintenance					
			Reduced maintenance control cost	Quantitative - C	Energy (t/h/price) * reduced maintenance					
			WORKING ENVIRONMENT							
			Improved thermal comfort	Quantitative - M	Number of accidents (not prevented)					
			Improved ergonomics productivity	Quantitative - M	Number of accidents (not prevented)					
			Reduced health issues	Quantitative - C	Number of accidents (not prevented)					
			Reduced heat for production equipment	Quantitative - C	Cost of equipment					
			USE REDUCED RISK							
			Reduced risk of accident and occupational disease	Qualitative - E	Number of accidents / year					
			Reduced CO ₂ and energy price risks	-	Price fluctuations					
			Reduced water price risk	-	Water price fluctuations					
			Reduced legal risk	-	Number of lawsuits or legal disputes					
			Reduced disruption of energy supply risk	-	Electricity supply disruption rate					
			Reduced disruption of former supplies	-	Electricity supply disruption rate					
			OTHERS							
			Increased installation safety	Quantitative - C	Number of incidents per year * average costs (or other impact) per incident					
			Improved staff satisfaction and loyalty	Qualitative - D	average nr of years that employees work at the company (or)					
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)					
			Reduced insurance cost	Quantitative - C	Cost of insurance accident					
			Reduced insurance risk	Quantitative - E	Insurance cost related to risk					
			Additional income: Improved space utilization	Quantitative - C	Number of m ² saved					
			Simplification & automation of customer procedures	Quantitative - E	Nr of hours spent on procedures per year * average/hour					
			Increased income or reparation	Quantitative - E						
			Increased knowledge of production/auxiliary processes	Quantitative (D)						
			Increased assets value	Quantitative	Assets value					

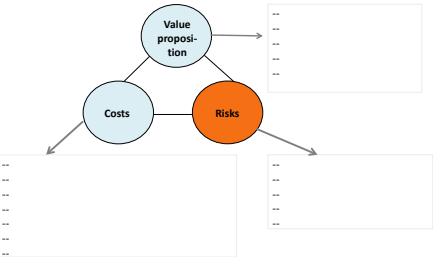


3.1.7 Hot Water - MBs LIST

HOT WATER ENERGY SERVICE(Housing, Kitchen, laundry, process)			BENEFITS OF ENERGY EFFICIENCY PROJECTS (Based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of indicator	Contribution to strategy		
Functions / impacts	Technical parameters	Major hot water energy efficiency measures	No careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation - Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. Increase	Cost Decrease
Production & Production								
Double "T" in a defined "T" window	CT	Production adjustment to needs	Reduced inefficiency or breakdown of machinery and	Quantitative - M	Number of breakdowns/defects			
Flow reduction	Flow reduction	Flow reduction	Improved equipment performance	Quantitative - E-M	% defect/space/lines produced			
Heat distribution optimization	Heat distribution optimization	Heat distribution optimization	Energy equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - operating lifespan			
Use of renewable heat source	Use of renewable heat source	Use of renewable heat source	Improved product quality / consistency	Quantitative - M/E	Reduction of production losses - ratio			
Heat production improvement	Heat production improvement	Heat production improvement	Increased production reliability (due to better control)	Quantitative - M	Lines produced			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Higher product range	Quantitative - M	Number of additional products			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced customer service costs (due to better quality)	Quantitative - E	Labour cost			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Improved flexibility of production	Quantitative - E	Time to market - throughput time			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced raw material input	Quantitative - M	Raw material input * costs of material in			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced consumables	Quantitative - M	Labour * price (EU/lineproduct)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Higher production with shorter process cycle time	Quantitative - M	Duration of production time			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Increased production volume	Quantitative - M	Labour * price (EU/lineproduct)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Increased production yields	Quantitative - C	Output total input total			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	WASTE & WASTE					
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced waste heat	Quantitative - M	Quantity (total or as % of production)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Less water loss	Quantitative - M	Quantity (as % of total water loss)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced water consumption	Quantitative - M	Quantity (total or as % of production)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced sewage volume	Quantitative - M	Quantity (total or as % of production)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced sewage volume	Quantitative - M	Quantity (total or as % of production)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced product waste	Quantitative - M	Quantity (total or as % of production)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity (total or as % of production)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	CO2/NOx/PM10 emissions	Quantitative - M	Quantity (total or as % of production)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced CO2, CO2, NOx, SOx emissions	Quantitative - E	Quantity (total or as % of production)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	MAINTENANCE					
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced maintenance cost	Quantitative - C	Cost of equipment * reduced maintenance			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced machinery and equipment wear and tear	Quantitative - C	Longer lifetime of equipment as reduced			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced equipment control cost	Quantitative - C	Reduced control cost			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced equipment control cost	Quantitative - C	Reduced control cost			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced equipment control cost	Quantitative - M	Contributes a time of equipment			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced equipment control cost	Quantitative - M	Number of particles (and examples)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Improved thermal comfort	Quantitative - E/C	Room temperature			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Improved workplace productivity	Quantitative - E	Based on the tasks (productive or not)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced electricity	Quantitative - C/E	Electricity consumption			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduction of health costs	Quantitative - C/E	Reduction of health costs			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced need for protective equipment	Quantitative - C/E	Cost of equipment			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	REDUCTION					
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced risk of accident and occupational disease	Qualitative - E	Number of accidents / year			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced CO2 and energy price risks	+	Price forecast			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced water price risk	+	Which water price is contractually agreed			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced fire risk	+	Number of incidents or fire incidents			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced disruption of energy supply risk	+	Electricity supply disruption risk			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced disruption of (other) supplies	+	Electricity supply disruption risk			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Other					
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Increased installation safety	Quantitative - C	# of incidents per year * average costs (or other impact per incident)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Improved staff satisfaction and loyalty	Qualitative E	Average or all years that employees work at the company Or			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Reduced insurance cost	Quantitative - E	Cost of equipment accident			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Additional waste / increased waste utilization	Quantitative - C	Number of all agent			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)	Optimization & automation of custom procedures	Qualitative - E	# of hours spent on procedures per year			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)		Qualitative - E	# of hours spent on procedures per year			
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)		Qualitative (D)				
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)		Qualitative				
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)		Qualitative				
Water quality (disinfection)	Water quality (disinfection)	Water quality (disinfection)		Qualitative				

Please use the following colour codes in the cells:
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- weak strategic value: green
- average strategic value: yellow
- high strategic value: red

Assessing multiple benefits of EEM

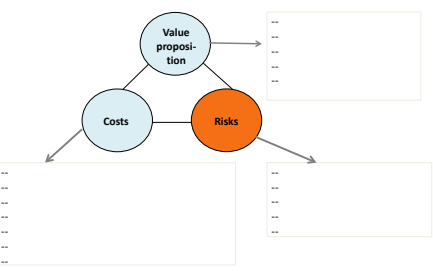


3.1.8 Automated pr. - MBs LIST

AUTOMATED PROCESSING OF INFORMATION & COMMUNICATION TECHNOLOGIES ENERGY SERVICE(Office, process)			MULTIPLE BENEFITS OF ENERGY EFFICIENCY PROJECTS (based on benefits identified in past projects)	Quantifiable (Measure - Calculation - Estimate)	Suggestions of indicator	Contribution to strategy		
Functions / impacts	Technical parameters	Major automated processing of information & communication energy-efficiency measures	No careful of double counting or cascading effects ! Some benefits are the same under different names	Qualitative (Evaluation: Staff survey)	To be related to a time period (i.e. year/month/day/hour)	Risk Reduction	Value prop. Increase	Cost decrease
Energy efficiency & productivity								
Energy efficiency	Both	Development of monitoring system	Reduced electricity consumption	Quantitative - M	Number of kWh/kVA/production			
Information storage	Both	Development of measure, control & Development of centralized technical	Improved equipment performance	Quantitative - E,M	% default process times reduction			
Electric protection (continuity of power etc)	Power etc		Longer equipment life (due to reduced wear and tear)	Quantitative - E	Cost of equipment - average delayed			
Costs								
			Improved product quality (consistency)	Quantitative - M	Reduction of production losses - ratio			
			Increased production reliability (due to better control)	Quantitative - M	Process produced			
Strategic security								
			Longer product life	Quantitative - M	Number of additional products			
			Reduced customer service costs (due to better quality)	Quantitative - E	Product result			
			Improved flexibility of production	Quantitative - E	Time to market - shortest time			
			Reduced raw material need	Quantitative - M	On inventory * costs of material (in ton/ton) * price (€/kg/production)			
			Reduced consumables	Quantitative - M	ton/ton * price (€/kg/production)			
			Shorter production cycle (shorter process cycle time)	Quantitative - M	Shortest of production time			
			Increased production volume	Quantitative - M	ton/ton * price (€/kg/production)			
			Increased production yields	Quantitative - C	Output total/output label			
WASTE & WATER								
			Reduced waste heat	Quantitative - M	Quantity heat or as % of production			
			Re-use waste heat	Quantitative - M	Quantity re-use waste heat			
			Reduced hazardous waste	Quantitative - M	ton/ton * disposal costs (€/kg/kg)			
			Reduced water consumption	Quantitative - M	ton/ton * price (€/kg/production)			
			Reduced sewage volume	Quantitative - M	Quantity heat or as % of production			
			Reduced sewage pollution level	Quantitative - M	Concentration			
			Reduced landfill waste	Quantitative - M	Quantity heat or as % of production			
			Reduced other waste (e.g. non-hazardous consumables)	Quantitative - M	Quantity heat or as % of production			
AIRBORN EMISSIONS								
			Reduced dust emissions	Quantitative - M	Quantity heat or as % of production			
			Reduced CO ₂ , CO, NO _x , SO _x emissions	Quantitative - M	Quantity heat or as % of production			
			Reduction of fluorinated hydrocarbon gases emissions	Quantitative - E	Quantity heat or as % of production			
MAINTENANCE								
			Reduced maintenance cost	Quantitative - C	price (€/kg/h) * reduced maintenance			
			Reduced machine and equipment wear and tear	Quantitative - C	Longer lifetime of equipment on reduced			
			Reduced equipment consumables	Quantitative - C	Technical control cost			
WORKING CONDITIONS								
			Reduced noise	Quantitative - M	Decibels x time of exposure			
			Air quality improvement	Quantitative - M	Number of workers and equipment			
			Improved thermal comfort	Quantitative - M	Level score			
			Improved workforce productivity	Quantitative - M	Work time - productivity			
			Reduced absenteeism	Quantitative - C	Depend on the risks (positive or not)			
			Reduction of health costs	Quantitative - C	sickness absence days x cost per day			
				Quantitative - C	Cost of equipment			
RISK REDUCTION								
			Reduced risk of accident and occupational disease	Qualitative - E	Number of accidents / year			
			Reduced CO ₂ and energy price risks	-	price forecasts			
			Reduced water price risk	-	which water price is contractually agreed			
			Reduced legal risk	-	number of lawsuits or legal disputes			
			Reduced disruption of energy supply risk	-	discovery within disruption rate			
			Reduced disruption of energy supply risk	-	discovery within disruption rate			
OTHER								
			Increased installation safety	Quantitative - C	no of incidents per year * average costs for other impact per incident			
			Improved staff satisfaction and loyalty	Qualitative - C	percentage of years that employees work at the company for			
			Reduced staff turnover	Quantitative - E/C	Employee satisfaction (based on survey)			
			Reduced insurance cost	Quantitative - C	Cost of equipment avoided			
			Additional cases / improved usage utilization	Quantitative - C	Insurance cost related to risk			
			Simplification & automation of customs procedures	Qualitative - E	Number of m3 saved			
			Contribution to company's value or strategy	Qualitative - E	% of hours spent on procedure per year			
			Increased image or reputation	Qualitative - C	* revenue			
			Increased knowledge of production/auxiliary processes	Qualitative				
			Increased assets value	Qualitative	Asset value			

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Assessing multiple benefits of EEM

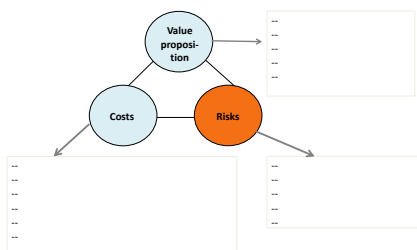


3.1.9 Motive Power - MBs LIST

MOTIVE POWER ENERGY SERVICE (ENGINES, DRIVES & DISTRIBUTION NETWORK) (using electric, pneumatic, hydraulic technologies)			BENEFITS OF ENERGY EFFICIENCY PROJECTS (based on benefits identified in past projects)		Quantities (Measure - Calculation - Estimate)	Suggestion of a date	Contribution to sustainability		
Functions / impacts	Technical parameters	Major motive power energy efficiency measures	In case of a double counting or crossing effects <i>Some benefits are the same under different cases</i>	Qualitative (Evaluation, Staff, savings)		To be validated at a time period (i.e. year/month/day/year)	Risk Reduction	Value Amp. Increased	Cost decrease
FUNCTIONS & CONCEPTS									
Availability	Power (kW)	Adjustment to operating hours	Increased maintenance or breakdown of machinery and equipment	Quantitative - M	Number of breakdowns/maintenance	x	x	x	x
Energy availability	Power (kW)	Motor maintenance	Increased equipment performance	Quantitative - M	Added power/maintenance avoided	x	x	x	x
Time availability	Operative shift	Drive replacement	Lower equipment life (due to reduced wear and tear)	Quantitative - E	Cost of replacement - preventive delayed	x	x	x	x
Energy	Production rate	Power network optimisation	Improved product quality, consistency	Quantitative - M	Increased production times, costs	x	x	x	x
		Development of an automatic control and regulation	Increased production reliability (due to better control)	Quantitative - M	Power produced	x	x	x	x
Productivity	Production rate	Power network optimisation	Increased product range	Quantitative - M	Number of additional products	x	x	x	x
Continuity	Production rate	Power network optimisation	Reduced customer service times (due to better quality)	Quantitative - E	Profit	x	x	x	x
Energy	Production rate	Power network optimisation	Improved flexibility of production	Quantitative - E	Time to react - technological time	x	x	x	x
		Power network optimisation	Reduced maintenance cost	Quantitative - M	Number of maintenance visits of repaired Dr	100	x	x	x
		Power network optimisation	Reduced consumption	Quantitative - M	Energy / year (kWh/production)	100	x	x	x
		Power network optimisation	Shorter production cycle (shorter process cycle time)	Quantitative - M	Duration of production time	100	x	x	x
Energy	Production rate	Power network optimisation	Increased production volume	Quantitative - M	Product's price (kWh/production)	x	x	x	x
		Power network optimisation	Increased production quality	Quantitative - C	Cost of reworked/lost prod.	x	x	x	x
		Power network optimisation	Energy & savings	Quantitative - M	Quantity (kWh) or as % of production	x	x	x	x
		Power network optimisation	Reduced waste heat	Quantitative - M	Quantity (kWh) or as % of production	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced water consumption	Quantitative - M	Quantity (kWh) or as % of production	x	x	x	x
		Power network optimisation	Reduced water consumption	Quantitative - M	Quantity (kWh) or as % of production	x	x	x	x
		Power network optimisation	Reduced product waste	Quantitative - M	Quantity (kWh) or as % of production	x	x	x	x
		Power network optimisation	Reduced other water (e.g. non-hazardous consumables)	Quantitative - M	Quantity (kWh) or as % of production	x	x	x	x
CONCEPTS/ENVIRONMENT									
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
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Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
Energy	Production rate	Power network optimisation	Reduced maintenance cost	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x
		Power network optimisation	Reduced machinery and equipment wear and tear	Quantitative - C	Energy (kWh) * reduced maintenance	x	x	x	x

Please use the following colour codes in the cells:

- no strategic value: no colour
- weak strategic value: green
- average strategic value: yellow
- High strategic value: red



4. MBs Financial evaluation

Step 4 - Multiple Benefits Financial Analysis									
Investment project (EEM or grouped EEMs):									
Hypotheses for the calculations	t0	t1	t2	t3	t4	t5	t6	t7	T8
		(EUR)							
Initial capital spending (CAPEX) in t0	0,0	--	--	--	--	--	--	--	--
Additional capital spending - t1 to Tn	0,0	--	--	--	--	--	--	--	--
Subsidy	0,0	--	--	--	--	--	--	--	--
Terminal value	--	--	--	--	--	--	--	--	0,0
Average cost of saved energy (EUR/KWh) net of TVA	0,0	--	--	--	--	--	--	--	--
Estimated energy savings (Electric KWh/year)	Kwh	--	--	--	--	--	--	--	--
Estimated energy savings (Thermal KWh/year)	Kwh	--	--	--	--	--	--	--	--
Estimated energy savings (Thermal KWh/year)	Kwh	--	--	--	--	--	--	--	--
Energy benefits (EB = energy costs reduction):									
- Electricity	--	0	0	0	0	0	0	0	0
- Thermique (natural gas)	--	0	0	0	0	0	0	0	0
- Thermique (heating fuel)	--	0	0	0	0	0	0	0	0
TOTAL EBs :		0	0	0	0	0	0	0	0
Non-energy benefits (NEBs)									
- NEB1 :	--	0	0	0	0	0	0	0	0
- NEB2 :	--	0	0	0	0	0	0	0	0
- NEB3 :	--	0	0	0	0	0	0	0	0
- NEB4 :	--	0	0	0	0	0	0	0	0
- NEB5 :	--	0	0	0	0	0	0	0	0
TOTAL NEBs :		0	0	0	0	0	0	0	0
Information to ask to Accounting-Finance Department									
Straight-line depreciation	Duration in years :	0	--	--	--	--	--	--	--
Discount rate	Rate in % :	0%	--	--	--	--	--	--	--
Investment duration (i.e. nr of years included in the calculations)	Nr of years :	0	--	--	--	--	--	--	--
Corporate tax	Rate in % :	0%	--	--	--	--	--	--	--
Depreciation	t0	t1	t2	t3	t4	t5	t6	t7	T8
		(EUR)							
Capital expenditure (initial and additional)	0,0	0	0	0	0	0	0	0	0
Depreciation of initial investment made in t = 0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Depreciation of additional capital expenditure made in t = 1		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Total depreciation		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Book value of fixed assets		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Revenues	t0	t1	t2	t3	t4	t5	t6	t7	T8
		(EUR)							
Total gross revenues of Multiple Benefits of energy-efficiency investment:									
- Total energy benefits		0	0	0	0	0	0	0	0
- Total non-energy benefits		0	0	0	0	0	0	0	0
TOTAL gross revenue of investment		0	0	0	0	0	0	0	0
Depreciation		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Net income before taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Net income after taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Depreciation		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Free cash-flows after taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Investment free cash-flows	t0	t1	t2	t3	t4	t5	t6	t7	T8
		(EUR)							
Cash-flow after taxes		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Capital expenditure	0								
Terminal value in year T									0
Terminal value after taxes in year T									0
Investment free cash-flows	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
		5%	8%						
NPV (Net Present Value) 8 years @ 5%	#DIV/0!								
NPV (Net Present Value) 8 years @ 8%	#DIV/0!								
IRR (Internal rate of return)	#WERT!								
Payback in years :	#DIV/0!								