

Pilot projects: First industries Large facilities management service

First Industries, Crissier, Switzerland

Large facilities management service, Switzerland

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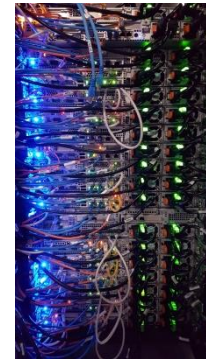
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Who are we?

Canton de Vaud, Direction de l'énergie, DIREN

Grands Consommateurs (large consumers, LC) program:

- Legal constraint of signing an energy efficiency agreement for 10 years
- Compulsory cost-effective energy efficiency actions
- About 600 large consumers sites, wide variety of activities



Collaboration between DIREN and M-Benefits (Dr. Cooremans)

2012-2013

Energy management and a different approach to profitability in LC audits

2017

First applications of the multiple benefits concept to the energy efficiency actions

2017

M-Benefits obtains the European Union Horizon 2020 fund

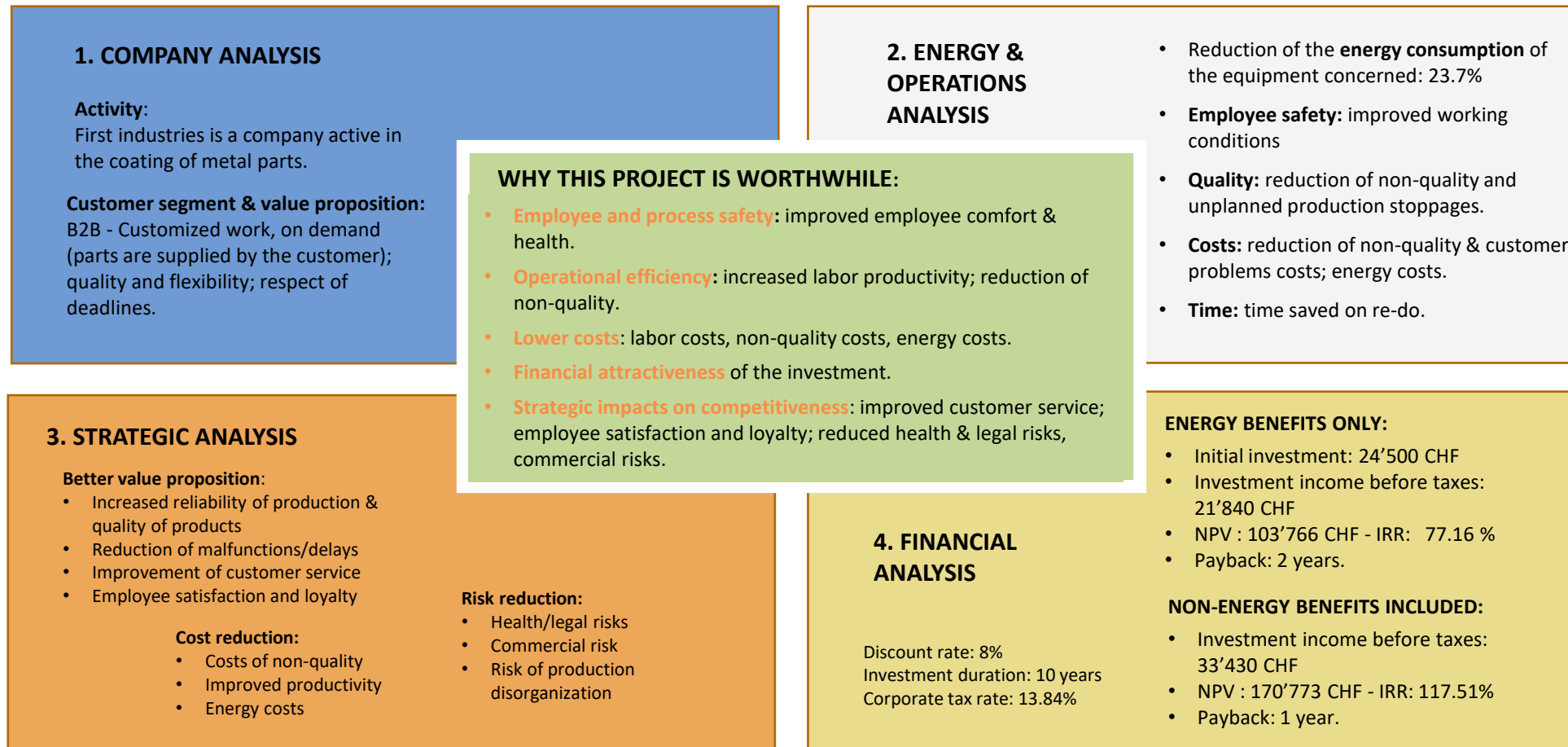
2019-2020

M-Benefits courses are proposed to LC and engineers

2020

Pilot projects are supported by the DIREN

Pilot project example 1: Renovation and optimization of the chromium plating workshop facilities (ventilation, rectifier cooling, chromium plating baths)



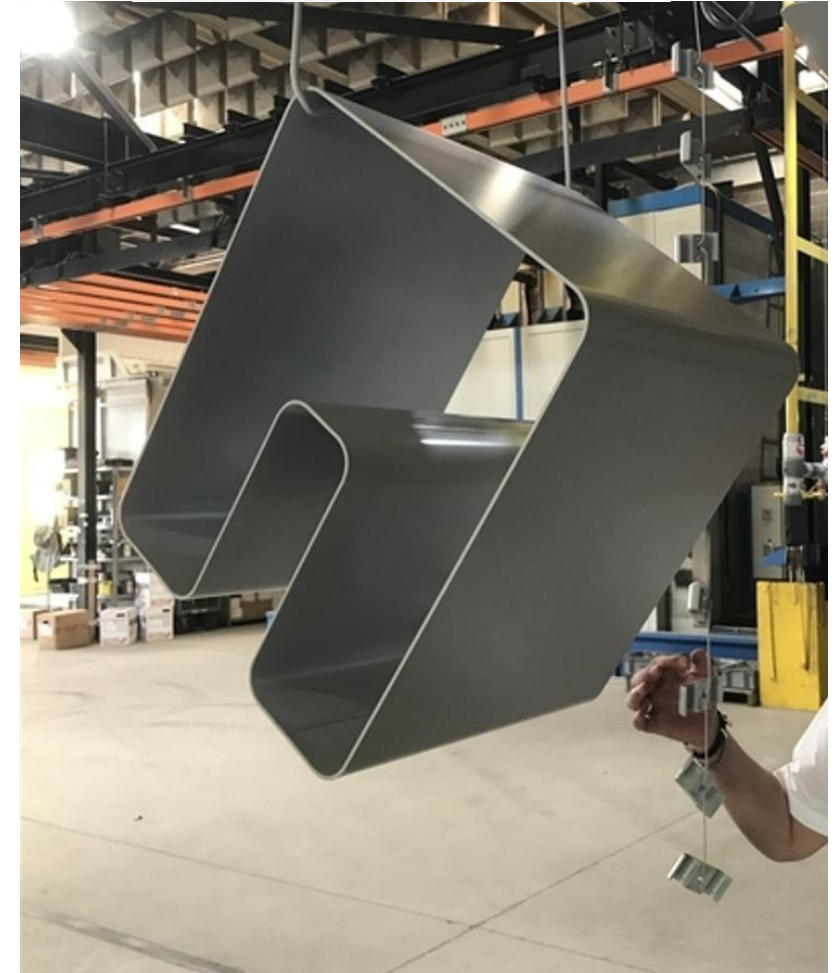
Project 1: First Industries overview



First Industries is a company active in surface treatment of metal pieces (hot galvanizing, electrolytic zinc plating, powder coating, nickel plating, chromium plating)

Customers and value proposition

Applies any type of surface treatment on the metal parts and products provided by customers. Offers flexibility, quality, reliability and fair prices, and highly-personalized service.



Project 1 context

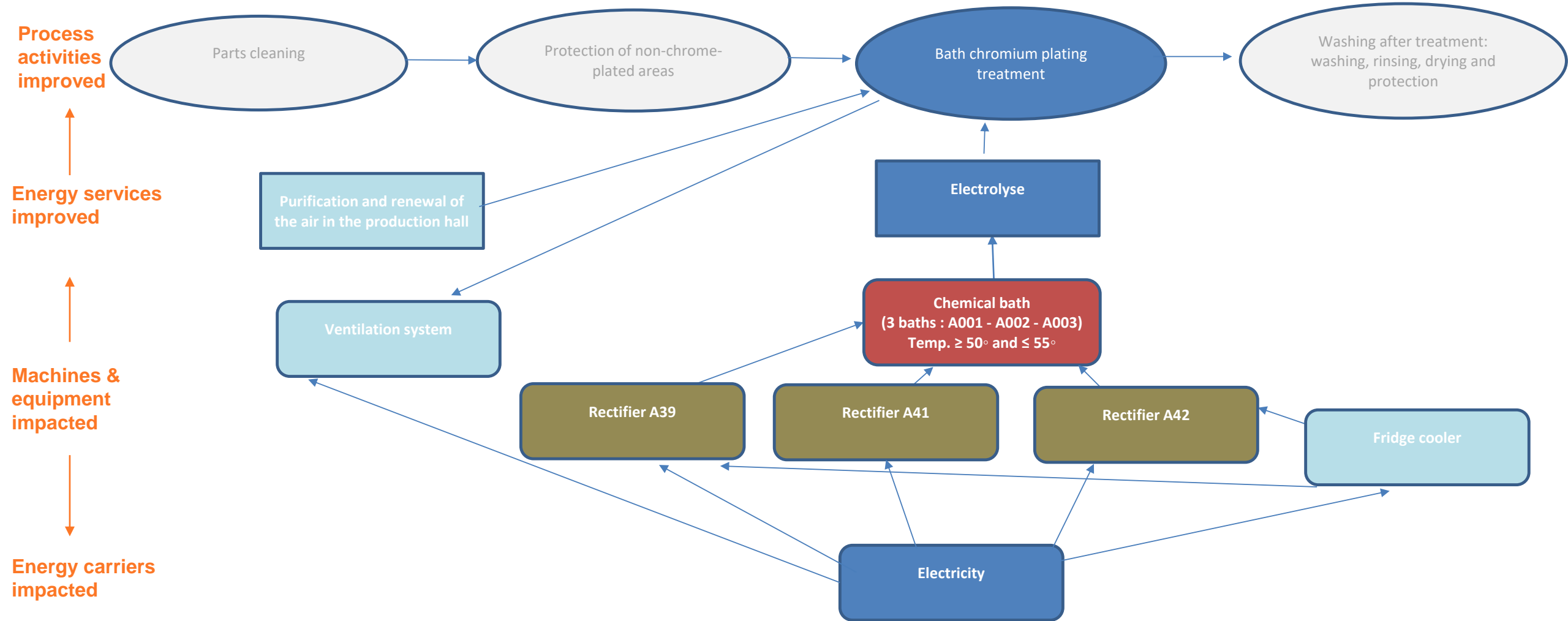
Situational analysis

- Outdates and insufficient ventilation: high temperature and poor air quality in the workshop
- The heat emitted by the cooling system is not recovered
- The rectifiers are recent, but their operation is not optimal: insufficient cross section of the cables

Project description

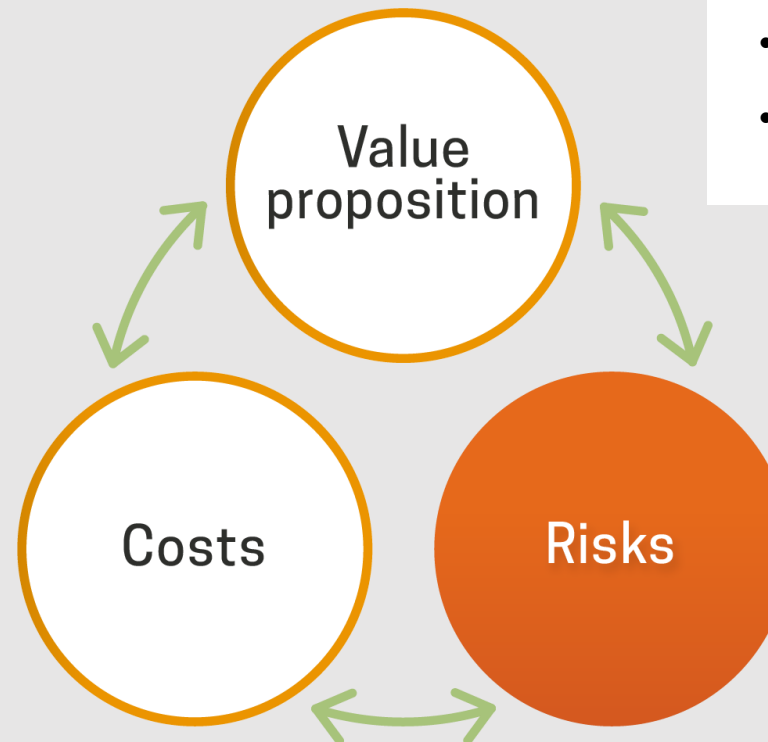
- Ventilation: regulation, recalibration, renovation of the system
- Cooling: optimisation of the rectifiers cooling and external cold air supply
- Insulation of the bath pipes, increase in the cross section of the rectifiers cables and bath operation optimisation

Project 1: Operational analysis



Project 1: Strategic analysis

- *Lower non-quality costs (re-do)*
- *Lower cost of customer problems (due to quality problems or late delivery)*
- *Productivity improvement (relative reduction in salary costs)*
- *Reduced energy costs*



- *Increased reliability of production and product quality*
- *Reduction of malfunctions or delays due to quality problems*
- *Improved customer service*
- *Improved employee satisfaction and loyalty*

- *Health risk*
- *Legal risk*
- *Commercial risk (due to quality problems and delivery delays)*
- *Risk of unplanned downtime*

Project 1: Financial analysis

Energy benefits only:

- CAPEX: 24'500 CHF
- Investment income before taxes: 21'840 CHF
- NPV: 103'766 CHF
- IRR: 77.16%
- Simple payback: 2 years

Energy and non-energy benefits:

- CAPEX: 24'500 CHF
- Investment income before taxes: 33'430 CHF
- NPV: 170'773 CHF
- IRR: 117.51%
- Simple payback: 1 year

Discount rate: 8%

Investment duration: 10 years (time used to calculate NPV and IRR)

Why this project is worthwhile:

- **Safety:** improved employee comfort and health.
- **Operational efficiency:** increased labour productivity; reduction of non-quality. Reduced labour costs, non-quality costs & management of customer problems, energy costs.
- **Strategic impacts:** improved customer service; increased employee satisfaction and loyalty. Risk reduction: risk of unplanned shutdowns and non-quality; risk of employee absenteeism; business risk. Reduced threats to business continuity.

Pilot project example 2: Renovation of the headquarter building of a multinational company

1. COMPANY ANALYSIS

Activity:

Maintain an optimal and environmentally-friendly building portfolio.

Customer segment & value proposition:

- The General Management – Swiss plants (Building envelope) R&D employees - Pension fund - All employees on administrative sites.
- A healthy and environmentally-friendly working environment for all employees in Switzerland. Quality services at a competitive cost.

2. ENERGY & OPERATIONS ANALYSIS

- Reduction of the **energy consumption** of the building concerned: 29%.
- Better **quality** of building and working conditions.
- **Safety:** better employee health and comfort.
- **Costs:** reduced maintenance and energy costs.

WHY THIS PROJECT IS WORTHWHILE:

- **Employee safety:** better employee comfort and health.
- **Operational efficiency:** increased labor productivity.
- **Lower operational costs:** maintenance, equipment, CO2 and energy costs.
- **Financial attractiveness** of the investment.
- **Strategic impacts on competitiveness:** employee satisfaction and loyalty; customer satisfaction (environmentally-friendly building); contribution to company's vision and strategy.

3. STRATEGIC ANALYSIS

Better value proposition:

- More environmentally-friendly building.
- Employee satisfaction and loyalty.
- Contribution of the renovated building to the company's strategy and vision.

Cost reduction:

- Improved productivity due to better visual quality.
- Maintenance & equipment costs.
- Cost of complaint management.
- Energy and CO2 costs.

Risk reduction:

- Reduced risk of occupational illnesses.
- Risk of losing talent.

4. FINANCIAL ANALYSIS

Discount rate: 8%
Investment duration: 10 years
Corporate tax rate: 13.84%

ENERGY BENEFITS ONLY:

- Initial investment: 23'809'208 CHF
- Investment income before taxes: 379'849 CHF
- NPV : -20'171'266 CHF - IRR: -11.69%
- Simple payback: 49 years

NON-ENERGY BENEFITS INCLUDED:

- Investment income before taxes: 23'809'208 CHF
- NPV : 3'391'200 CHF - IRR: 11.03 %
- Simple payback: 8 years

Project 2: large company building services

The company carries out all the activities necessary for the development and maintenance of the building portfolio in Switzerland

Customers and value proposition

- The General Management – Swiss plants (Building envelope) R&D employees - Pension fund - All employees on administrative sites.
- A healthy and environmentally-friendly working environment for all employees in Switzerland. Quality services at a competitive cost.



Project 2 context

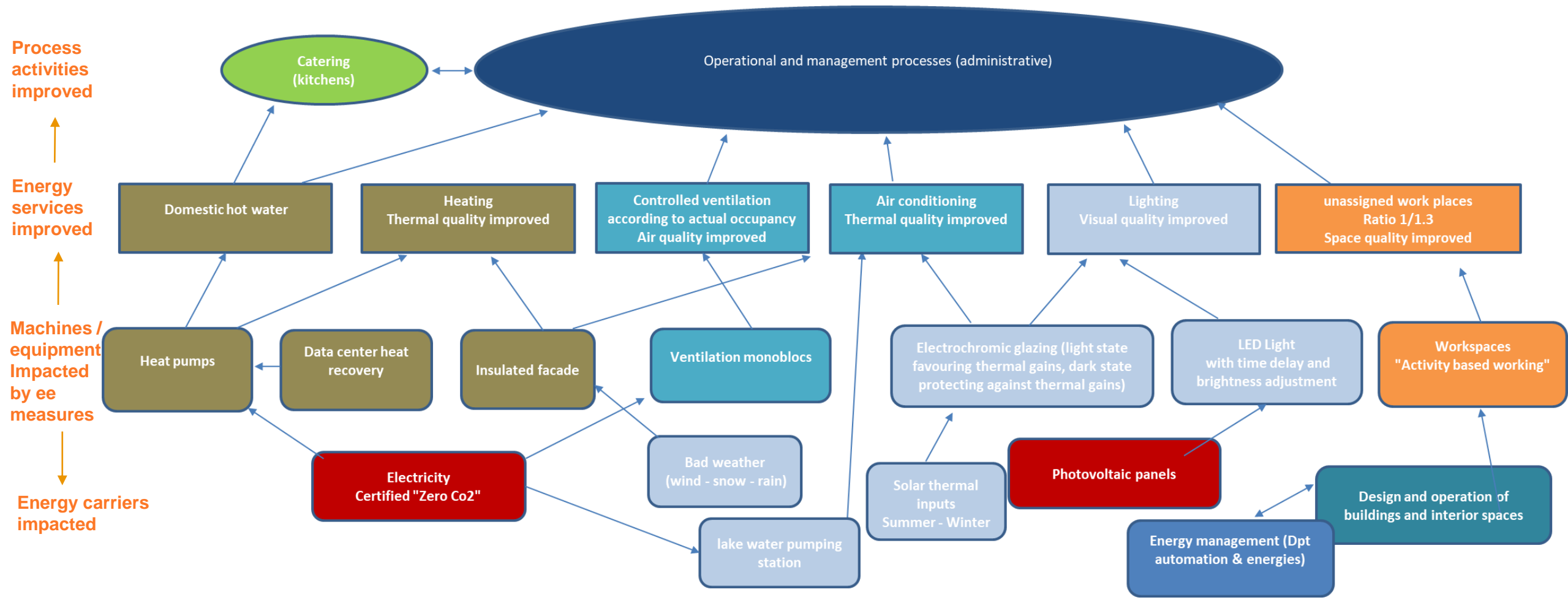
Situational analysis

- Old headquarters of the company
- Low energy performance (heating and lighting)
- Unsatisfactory visual performance
- Low efficiency usage of workspaces

Project description

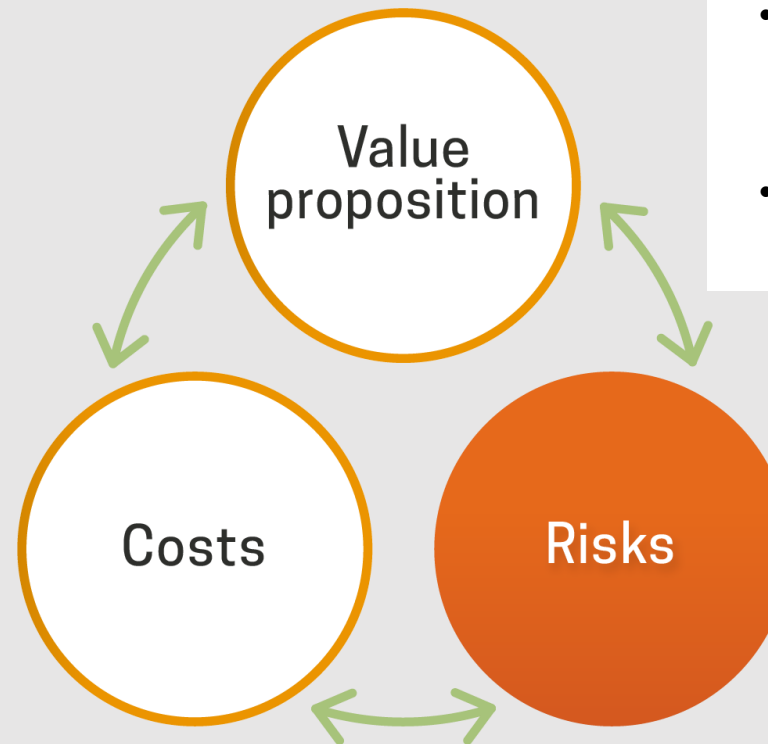
- Total renovation of the building envelope (without windows)
- Zero CO₂ heating and air conditioning
- Replacement of light sources and windows and self-generation of electricity
- Real-time attendance-controlled ventilation
- Unassigned “Activity-based working” workspaces

Project 2: Operational analysis



Project 2: Strategic analysis

- *Reduced maintenance costs*
- *Reduced equipment wear and tear*
- *Improved productivity*
- *Reduction of thermal discomfort*
- *Reduction of turnover costs*
- *Reduction of operational costs*
- *Reduced CO₂ (tax) and energy costs*



- *Contribution to CO₂ strategy and corporate values (sustainability-comfort-health)*
 - *Improvement of image and exemplarity (first mover)*
 - *Organisational resources reinforced (reduces turnover, absenteeism and presenteeism)*
 - *Improved technological resources and physical infrastructure*
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- *Lower health risk*
 - *Lower legal risk*
 - *Lower operational risk (dysfunctions due to dilapidated state of equipment and building)*
 - *Strategic risk (inability to carry out missions)*
 - *Energy and CO₂ risks reduced*

Project 2: Financial analysis

Energy benefits only:

- CAPEX: 23'809'208 CHF
- Investment income before taxes: 379'849 CHF
- NPV: -20'171'266 CHF
- IRR: -11.69%
- Simple payback: 49 years

Discount rate: 8%

Investment duration: 25 years (time used to calculate NPV and IRR)

Depreciation: 50 years

NB: non-energy benefits figures don't take into account an increased value of the real estate assets of possible increase in energy and CO₂ prices.

Energy and non-energy benefits:

- CAPEX: 23'809'208 CHF
- Investment income before taxes: 3'391'200 CHF
- NPV: 4'836'840 CHF
- IRR: 11.03%
- Simple payback: 8 years

Why this project is worthwhile:

- **Strategic missions and objectives:** safety and health for staff; climate neutrality; sustainability at the heart of core business; exemplarity (first mover).
- **Operational efficiency:** productivity of teams, quality of installations.
- **Financial efficiency:** unnecessary costs avoided (maintenance; technical interventions); increased productivity; reduction of CO2 and energy costs.
- **Increased value of real estate assets:** complete renovation of a dilapidated building.

Contacts

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Thanks for your attention!

