

SUSTAINABLE ENERGY  
 TECHNOLOGY AT WORK



## Certified energy management systems

Purchase and project design

[www.setatwork.eu](http://www.setatwork.eu)

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## Course structure

1. Introduction
2. Organisation and planning
3. Review of energy aspects
4. Target and Monitoring
5. Training and communication
- 6. Purchase and project design**
7. Management review

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## Agenda

- Purchase and energy efficiency
- Energy efficiency in Project design
- Introduction to Sustainable Design

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## Purchase and energy efficiency

- Energy aspects are included in the evaluation of quotes and bids of energy consuming equipment
- Requires an energy needs analysis
- Evaluate more options and technical solutions
- Apply lifecycle economy approach (Lifecycle costs = investment + operation + maintenance + scrap + ..)

4  
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## Example

15 kW pump operating 3000 hours/year

High Efficiency      Medium      Low efficiency

□ Energy   ■ Maintenance   ■ Investment

5  
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## Purchase types

- Address
  - Planned purchases
  - Emergency purchases
  - Investment projects

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## Example

- Review current purchase practices and structure
- Identify vendors/products for off the shelf products with high energy efficiency
- Set up a simple system to evaluate life cycle costs of more complex purchases/significant energy users
- Set up specific guidelines for Sustainable Design

7

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## Sustainable Design

- A technique for investment projects
- Applied during design of any energy consuming process
- Improves environmental and energy performance of industrial production processes
- Increased efficiency relative to defined baseline

8

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## Phases of Sustainable Design

- **Phase 1**
  - Mapping of energy consumption data
  - Analysis of project and energy needs
  - Identification/priority of focus areas
- **Phase 2**
  - Analysis of energy services and technology
  - Optimisation of process equipment and utility systems
  - Hand over the energy project to design engineers
- **Phase 3**
  - Input to tendering and contracts
  - Quality assurance of projects
  - Achieved savings by EED

9

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## Achieved savings

### Solvent recovery in pharmaceutical industry

- Reduced %w/w of Ethanol recovered 88%→80%
- Batch definition and operation reduces needs for analysis and cleaning
- CIP sequence optimisation
- Internal heat recovery reduces steam consumption
- Heat recover for production of on-site district heating
- Elimination of chilled water supply

13  
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## Results

### Solvent recovery in pharmaceutical industry

Category	Baseline (%)	After EED (%)
Investment	~25	~25
Energy	~25	~15
Heat recovery	~10	~10
CIP	~10	~10
Maintenance	~10	~10
Analysis	~10	~10
pH-adjustment	~5	~5
<b>Total</b>	<b>~100</b>	<b>~44</b>

Life cycle costs reduced by 56%  
 Payback period < 3 years

14  
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## The end

Thank you for your attention

15  
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