




Project EINSTEIN

Jan Pavlík, Pavel Sitný
ENVIROS, s.r.o.

The background of the slide is a photograph of an industrial facility. It features several large, vertical, cylindrical tanks or silos, likely made of metal, with a reddish-brown patina. These tanks are interconnected by a complex network of large, horizontal pipes. Some pipes are painted blue, while others are silver or grey. The scene is set outdoors under a clear blue sky. The overall impression is one of a large-scale industrial operation.

EINSTEIN

THE THERMAL AUDIT FOR COMPANIES FOR ENERGY COST REDUCTION

EXPERT **S**YSTEM FOR AN **I**NTELLIGENT
SUPPLY OF **T**HERMAL **E**NERGY IN **I**NDUSTRY

EINSTEIN



- Cuts energy costs
- Increases Energy efficiency
- Increases Use of Renewables
- Reduces CO2 Emissions

Target group

- The industrial companies – SMEs, especially:
- food processing
- wood processing
- metal treatment companies.

EINSTEIN – How?



- **Standardized Audit – the EINSTEIN Expert System:** methodology that works out energy efficient solutions for your production process based on energy saving and renewable energy sources
- **Audit Campaign:** A limited number of energy audits
- **Self-Assessment Tool:** Check your Performance
- **High Quality Training:** Training workshops for energy managers, technicians and consultants
- **Informationworkshops** for decision makers

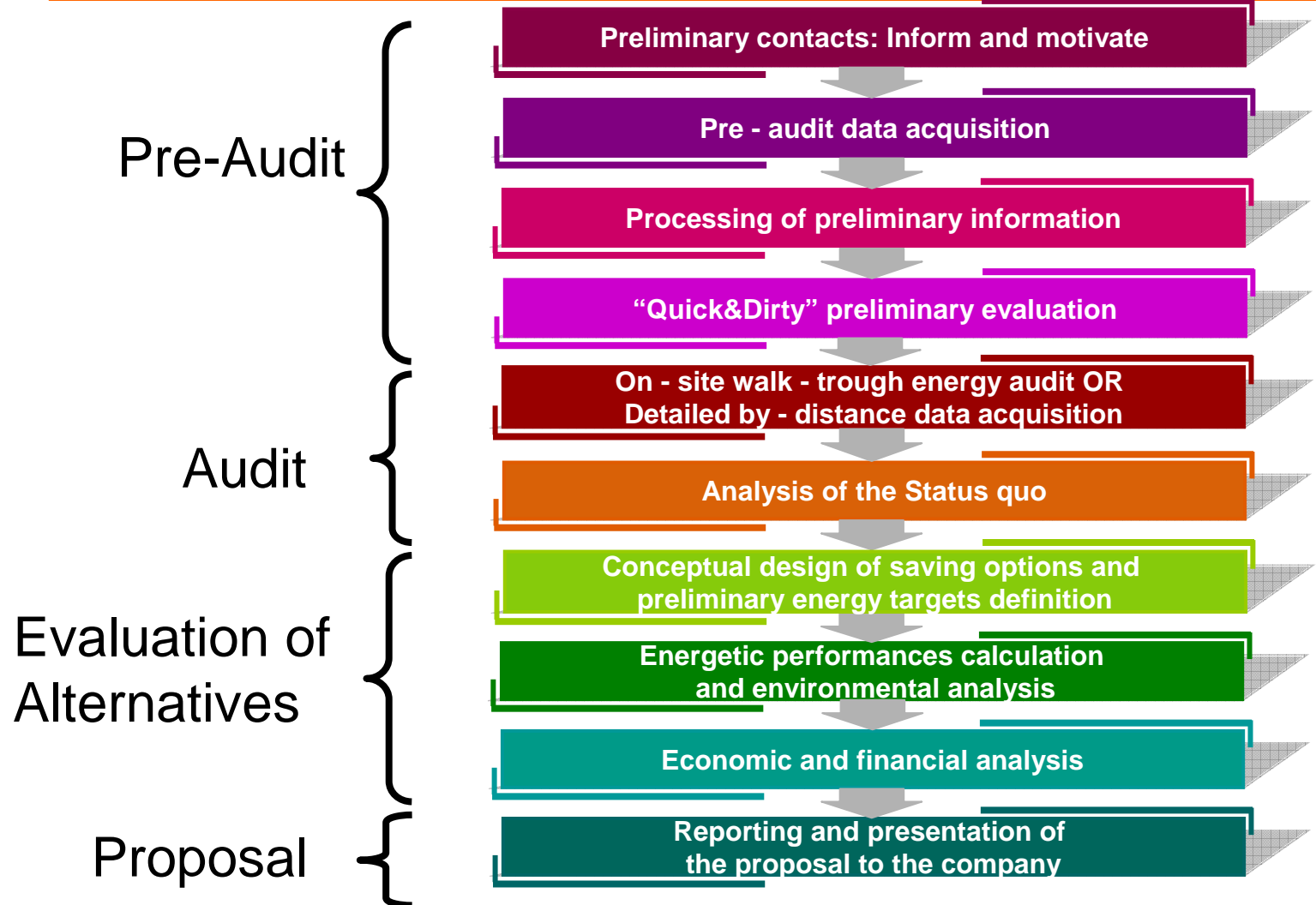
EINSTEIN – THE TOOL



EINSTEIN is a GENIUS, he thinks for You:

- Guides you through the audit
- Knows everything about energy
- Does all the annoying calculations
- Keeps memory of every detail and reminds you when needed
- Proposes solutions
- Writes a nice report

EINSTEIN – AUDIT Steps



A two day EINSTEIN Audit



- Initial Questionnaire
- 2 Days in your company
- Energybalance (existing data, measurements)
- Calculation of efficiency of boilers
- Action plan for efficiency measures
- Rough economic evaluation of recommended measures
- Basis for detailed analysis

Data for....



- Steam and warm water generation
- Transfer of heat to other media and processes
- Thermal supply systems and distribution network
- Processes themselves

Description of equipment for heat and cold generation

Name Units fuel

Manufacturer Elect. consumption

Year Conversion efficiency

Model Elect. production

Type Conversion efficiency

Nº units Temperature Exhaust

Fuel type: None Utiliz. factor

Cooling tower Hours of operation

Nominal power Days of operation

Fuel consumption Heat or cold supplied

UPH by process

Process	MWh	%
1 Pasteurisation	4999999.99969	62.500008229
2 Heating	1999999.88182	24.999988535
3 Mozzarella product	1000000.01266	12.500003236
4 Total	7999999.89417	100.0

UPH by processes

Heat demand by process temperature.

Process	Process temperature	Distribution temperature	Heat demand MWh
1 Pasteurisation	72.0	180.0	4999999.99969
2 Heating	40.0	180.0	1999999.88182
3 Mozzarella product	90.0	180.0	1000000.01266

HD by process temperature

Process Optimization Module

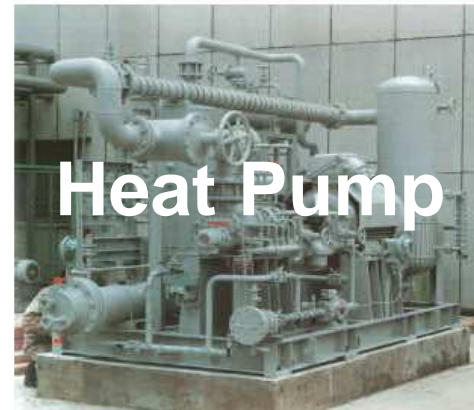
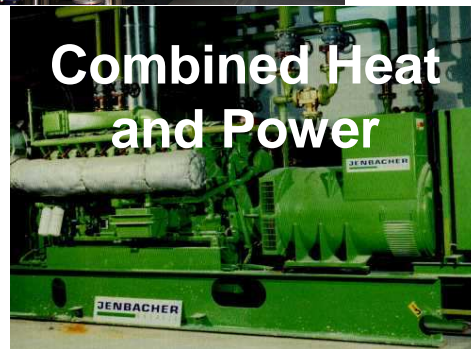


- EINSTEIN thinks logical, therefore energy saving first!
- He shows variety of options which are available to improve the efficiencies of the processes and equipment
- Database of best available technologies
- Process optimization measures
- Identification tool for optimization possibilities

EINSTEIN – The Technologies

Intelligent Energy  Europe

EINSTEIN
thermal energy
industry audit



Proposal generation



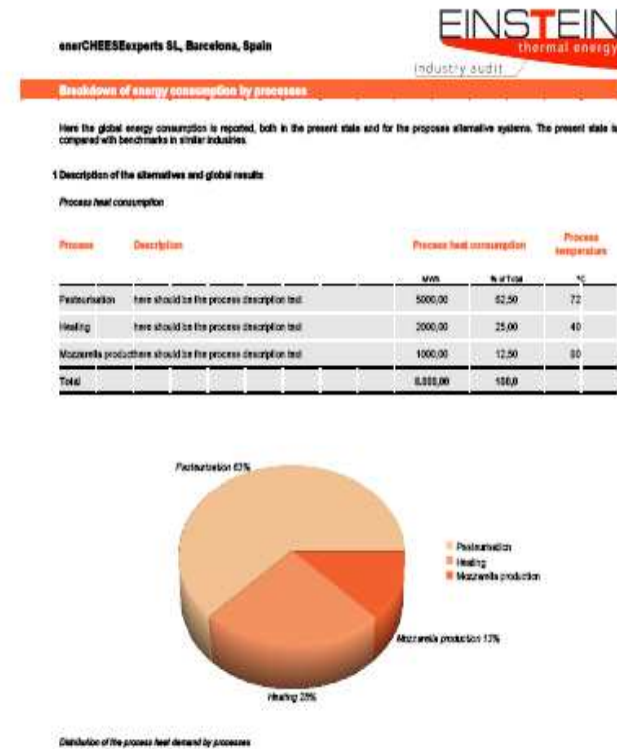
If once You don't know what to propose to some industry, EINSTEIN has surely ideas for You:

- *Design assistants* propose you solutions and pre-dimensioning for certain heat and cold supply options
- In EINSTEIN's BAT library you can find a lot more of hints

Evaluation and Report Modules



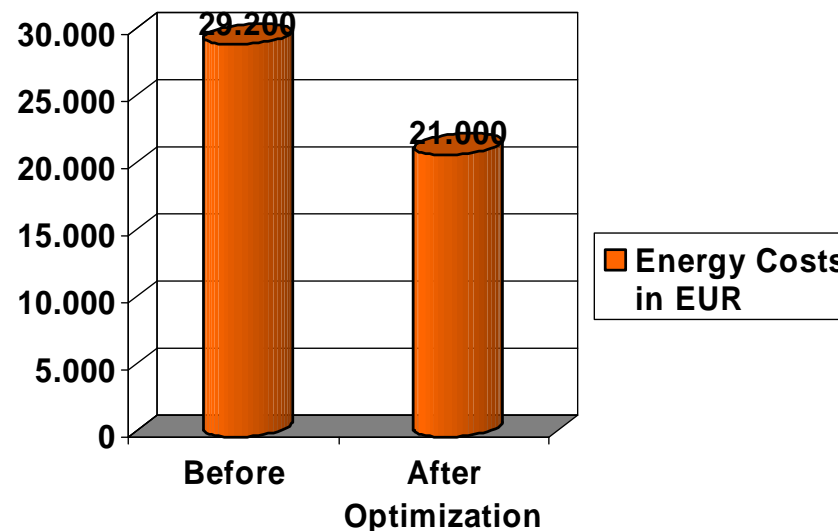
- Total Cost Assessment
- Performance description, budget estimation
- Automatically creates Report on analysis of state of the art and alternative proposals



Example for Intelligent Use of Energy I

Animal Food Production Company in Slovenia Implemented Measures:

- Insulation of Silowall
- Use of wasteheat of cooler (55°C) for preheating of rawmaterial
- **Savings:** 8.200 EUR p.a., CO2 Reduction: 5.500 kg
- Internal Rate of Return 41%, payback: 2,4 months



Example for Intelligent Use of Energy II

Intelligent Energy  Europe

Brauerei Neuwirth, brewery

- Final Uses of the heat: Bottle washing, pasteurisation, sterilization
- Solar thermal collectors for warm water generation for the brew process
- Power installed: 14 kW (20 m²), 50-95 °C
- Solar process heat replaces electrical heating of the brew vessel
- 60-90% savings in summer months



Example for Intelligent Use of Energy II

Roche Diagnostics GmbH, Graz, Austria

- Optimised Heat Recovery from the cooling machines for the heat necessary in air conditioning during the summer time
- Heat demand (before optimisation) 70°C / after optimisation: 50°C
- In the first 2-3 months of operation 90 MWh of gas demand could be saved

Summary



When should you join EINSTEIN?

- If you want to reduce operating costs
- If you are looking for a comprehensive solution for energy efficiency and integration of renewable energy for your company
- If you are active in energy consultancy and want profit from international know-how
- If you are a public body promoting energy efficiency measures and the use of renewables

Project partners

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thermal energy
industry audit

	
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 SAPIENZA UNIVERSITÀ DI ROMA	 energy perts.net
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 UNIVERSITY OF MARIBOR	 COGEN europe
 ENVIROS	Ajuntament  de Sabadell

Thanks a lot to everybody ...

EINSTEIN
www.iee-einstein.org



DI Christoph Brunner
JOANNEUM RESEARCH

Tel: +43 316 876 2413
Email: christoph.brunner@joanneum.at

Ing. Pavel Sitný
ENVIROS, s.r.o.

Tel: +420 284 007 487
Email: pavel.sitny@enviros.cz