

EiiF Presentation

EU Study
Climate Protection with Rapid Payback

Energy and CO2 Savings Potential of Industrial Insulation in EU27

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All around the world...



Industry fails to use insulation properly...

Industrial Insulation – Best Available Technology

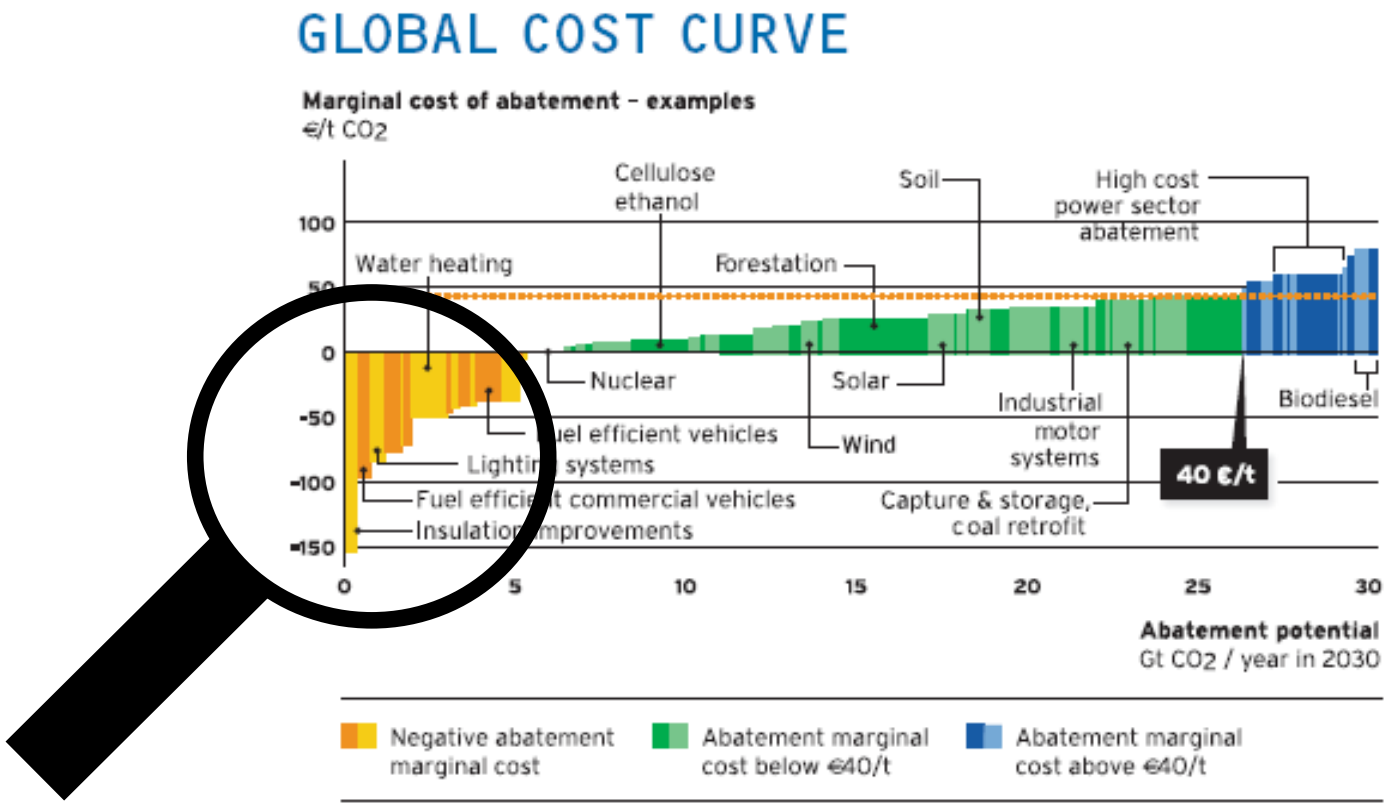
Industrial insulation is a proven technology to:

- ✓ Reduce Safety Risks for personnel and equipment
- ✓ Improve Process control and increase process productivity
- ✓ Increase Energy Efficiency
- ✓ Reduce Emissions

- ✓ **Reduce Costs**

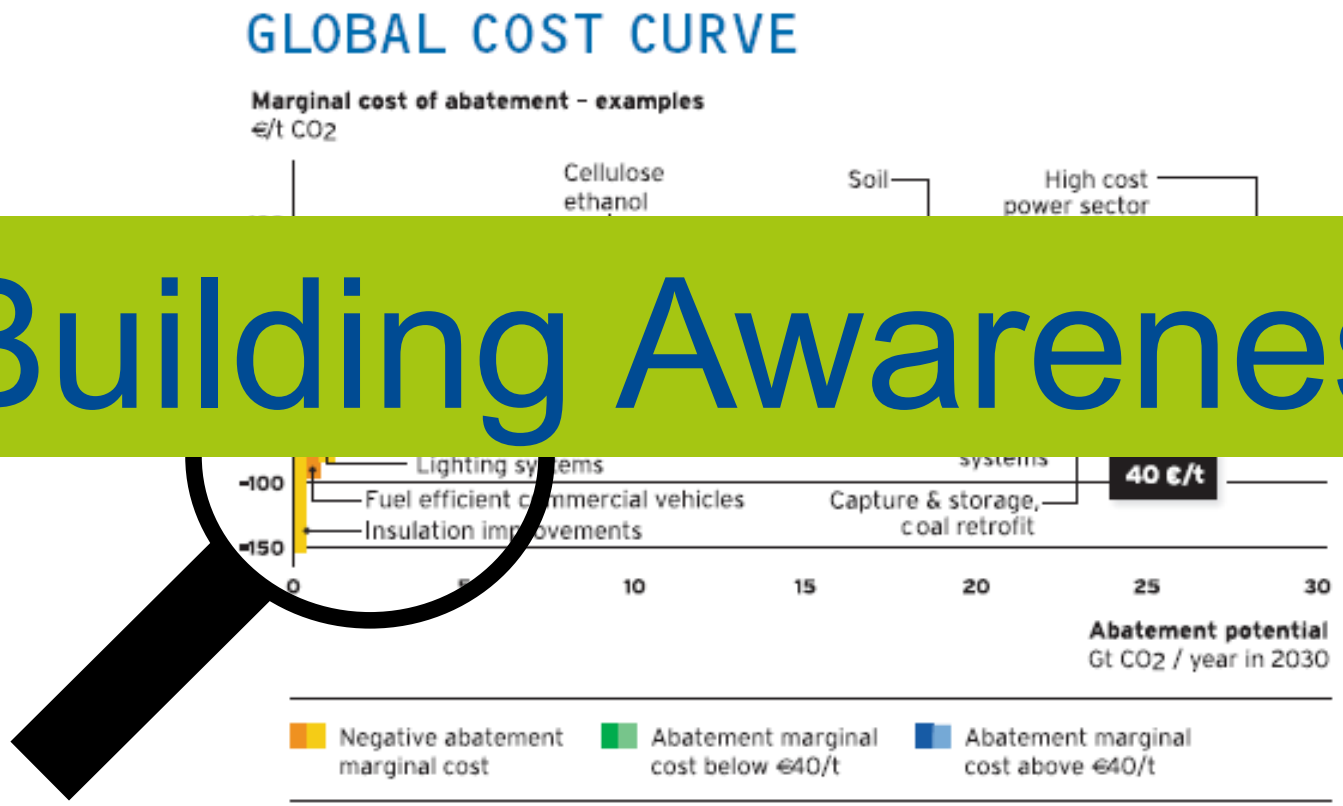


Industrial Insulation – a Best Available Technology



Source: McKinsey & Company/Vattenfall: Climatemap

Industrial Insulation – Best Available Technology



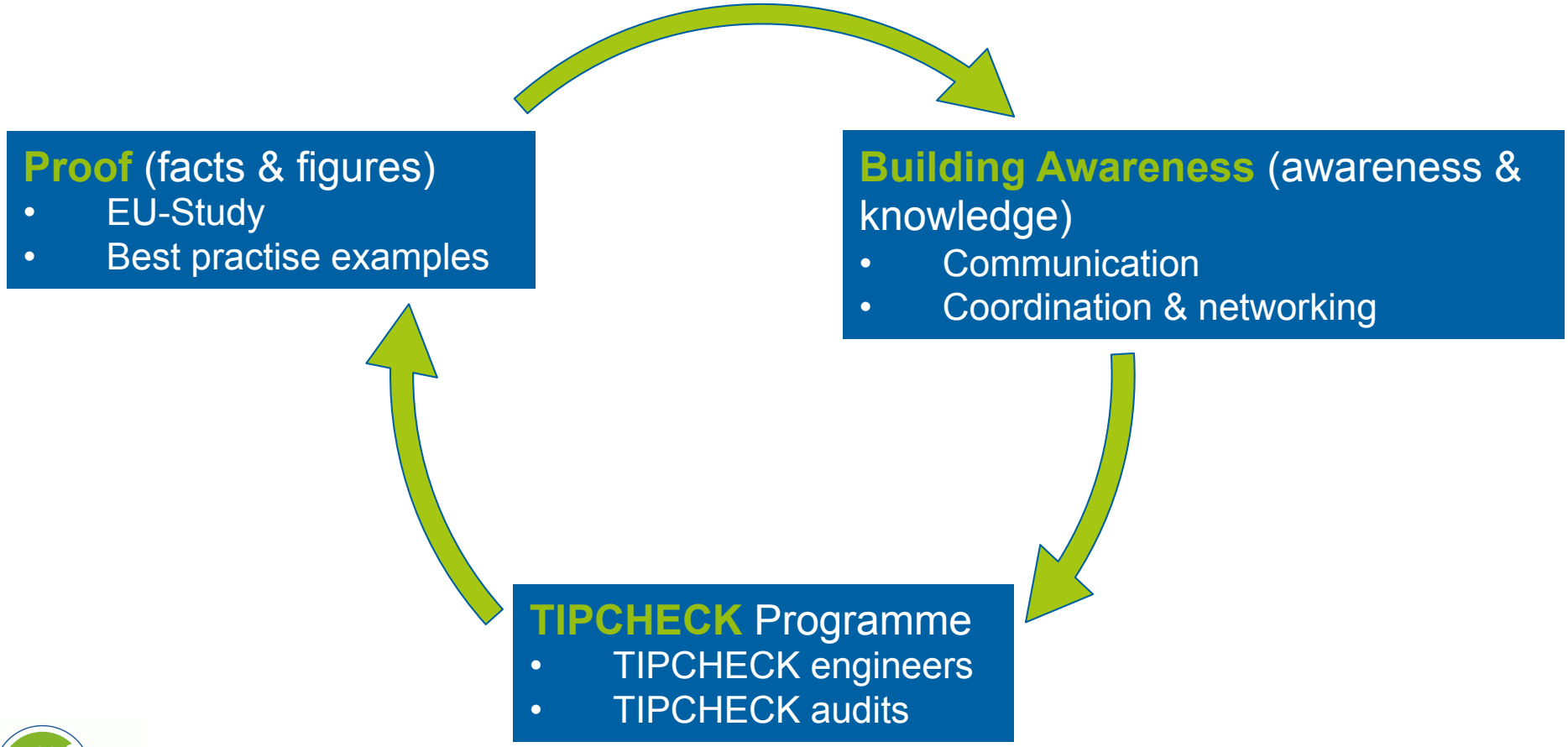
Building Awareness

Source: McKinsey & Company/Vattenfall: Climatemap

We Power Sustainability



EiiF strategy to stop energy losses



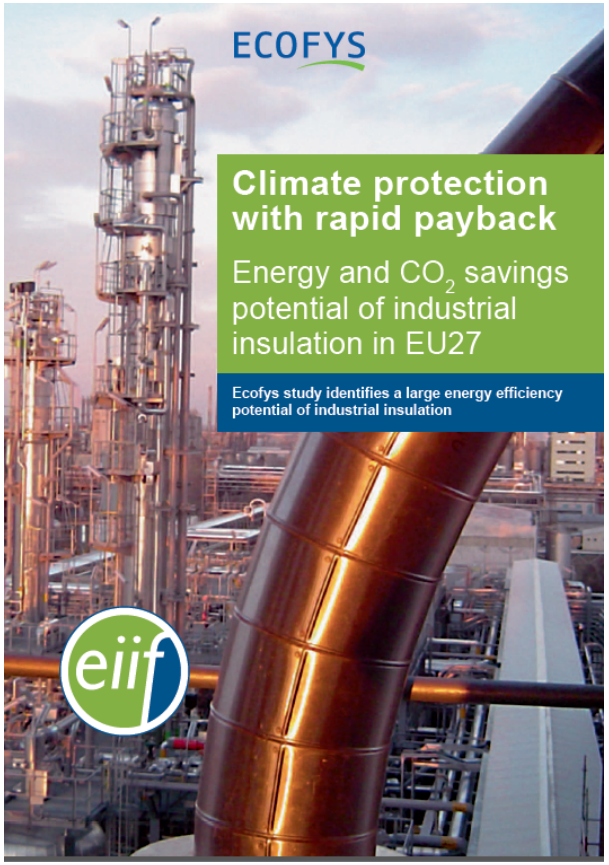
Proof: EU-Study identifies large potential

Summaries in EN, DE, IT, FR, NL, ES, PL
+ full report in EN

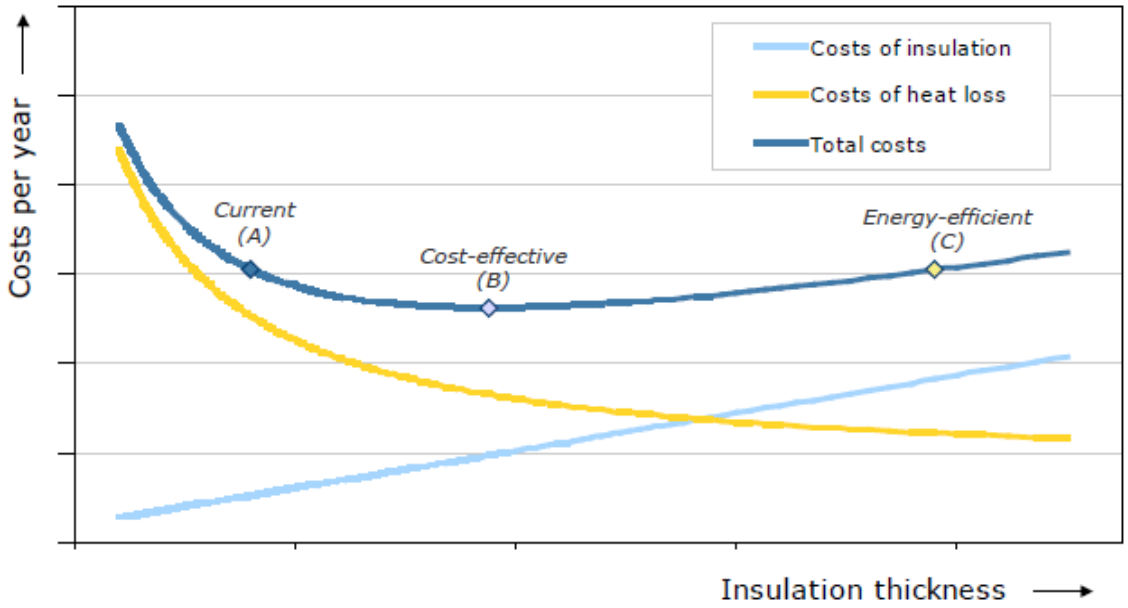


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EU-Study: Climate protection with rapid payback



Current (A) Cost-effective (B) Energy-efficient (C)

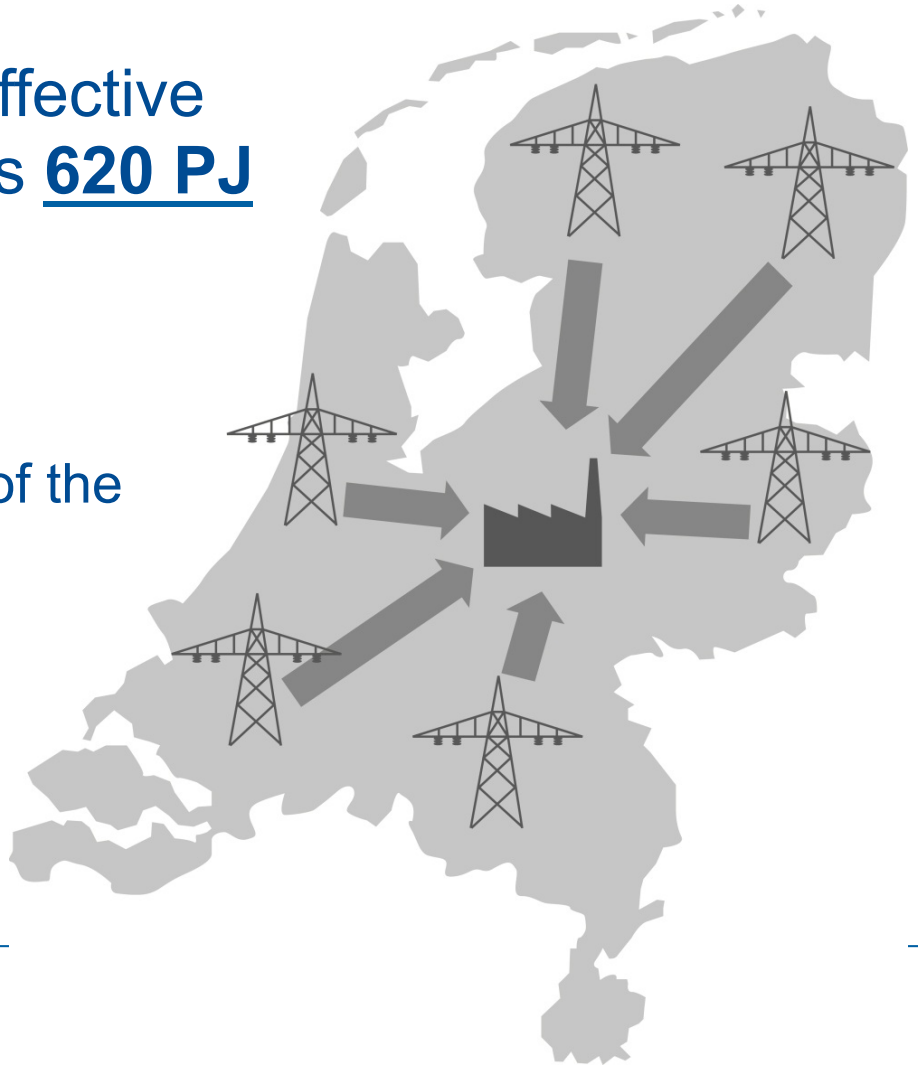


Result: 620 PJ Energy Savings Potential

The annual cost-effective savings potential is **620 PJ**

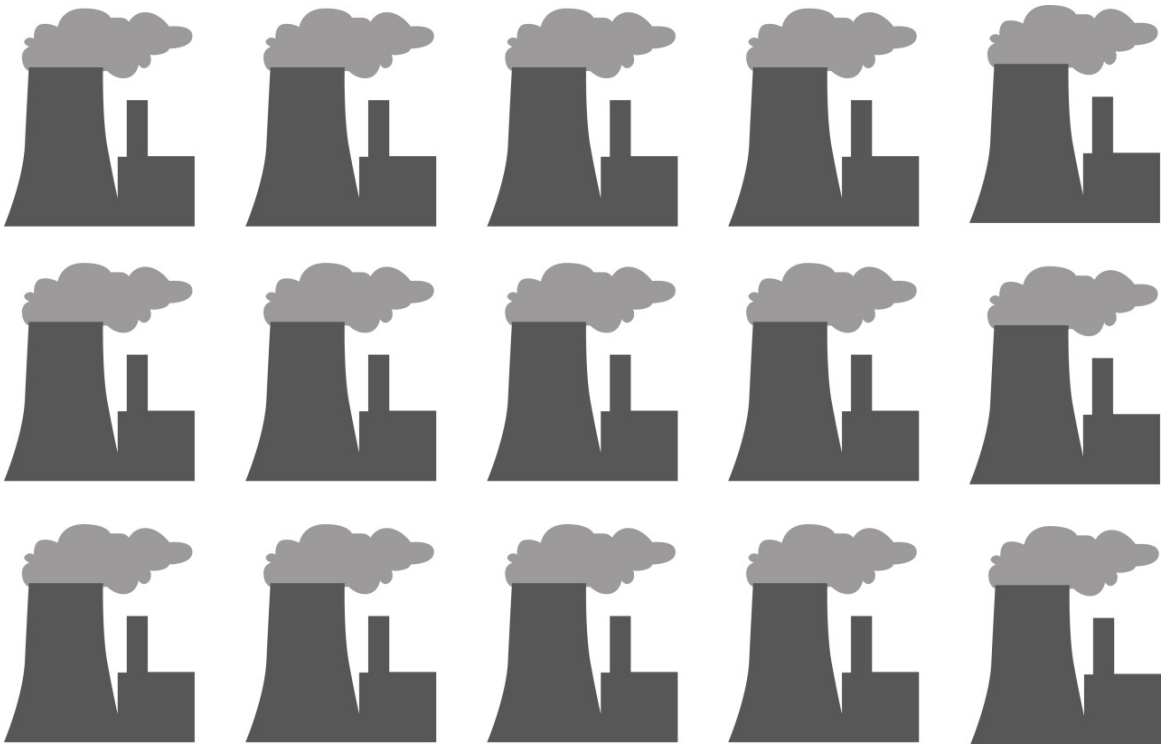
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Energy consumption of the entire Dutch industry.



Result: 620 PJ Energy Savings Potential

In return 15 coal-fired power plants of 500 MW could be switched off



Result: 49 Mt CO2 Reduction Potential

The annual CO2 reductions potential is equivalent to the emissions of 18 million middle class cars (running 12 500 kilometres per year)





No Limits

The savings potential exists across all regions, sectors, equipment and operating temperatures.



Why is the potential still there?

General:
Lack of information for the main decision makers about the large energy savings potential of industrial insulation

Together with other energy efficiency measures, it is **not the core business** of the main decision makers.

Technical:
Level of insulation is based on minimum investment decisions like

?

- Safety (maximum surface temperatures)
- Minimum process needs
- Outdated maximum heat loss rates
- Split responsibilities and budgets



Outdated maximum heat loss rates

Insulation standards: A simple comparison of industry and building insulation standards illustrates why industry is **LOSING** not only **ENERGY** but also **MONEY** whilst producing tons of unneccessary **CO_2:**

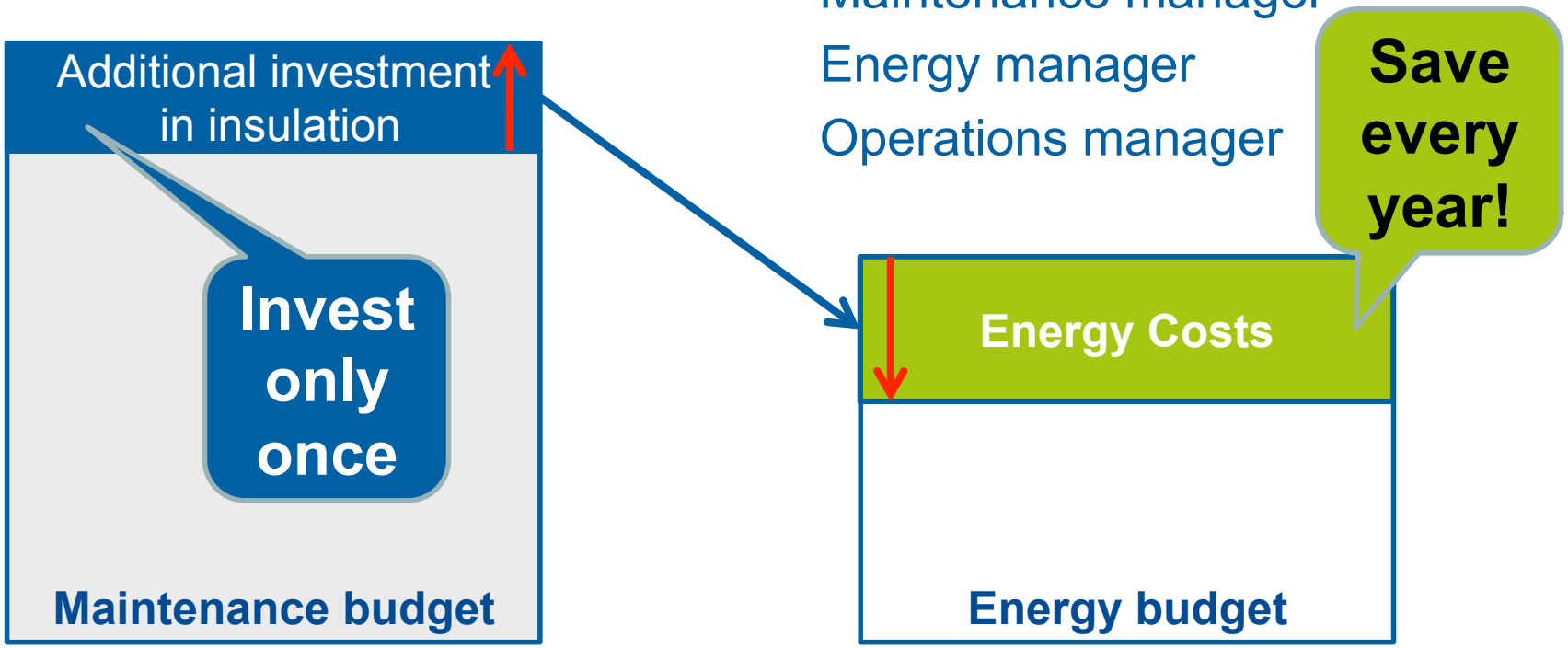
	Power Plant	Current building code	Passive House
Temperature	250°C – 640°C	18°C – 22°C	18°C – 22°C
Heat loss (AGI Q101)	150 W/m²	< 10 W/m²	< 3 W/m2
Insulation thickness	100mm	100mm	350–500mm

Split responsibilities & budgets

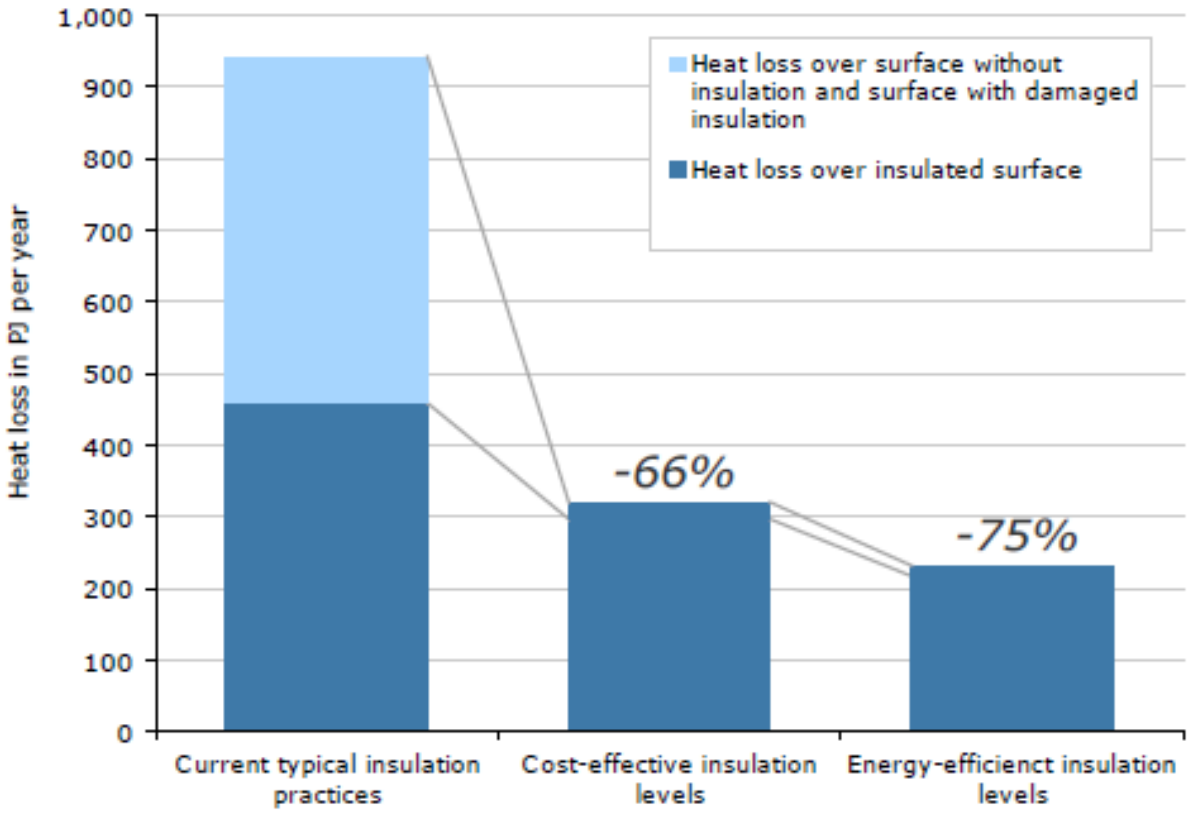
Standard Company Organisation

Split responsibilities between:

- Project manager
- Maintenance manager
- Energy manager
- Operations manager



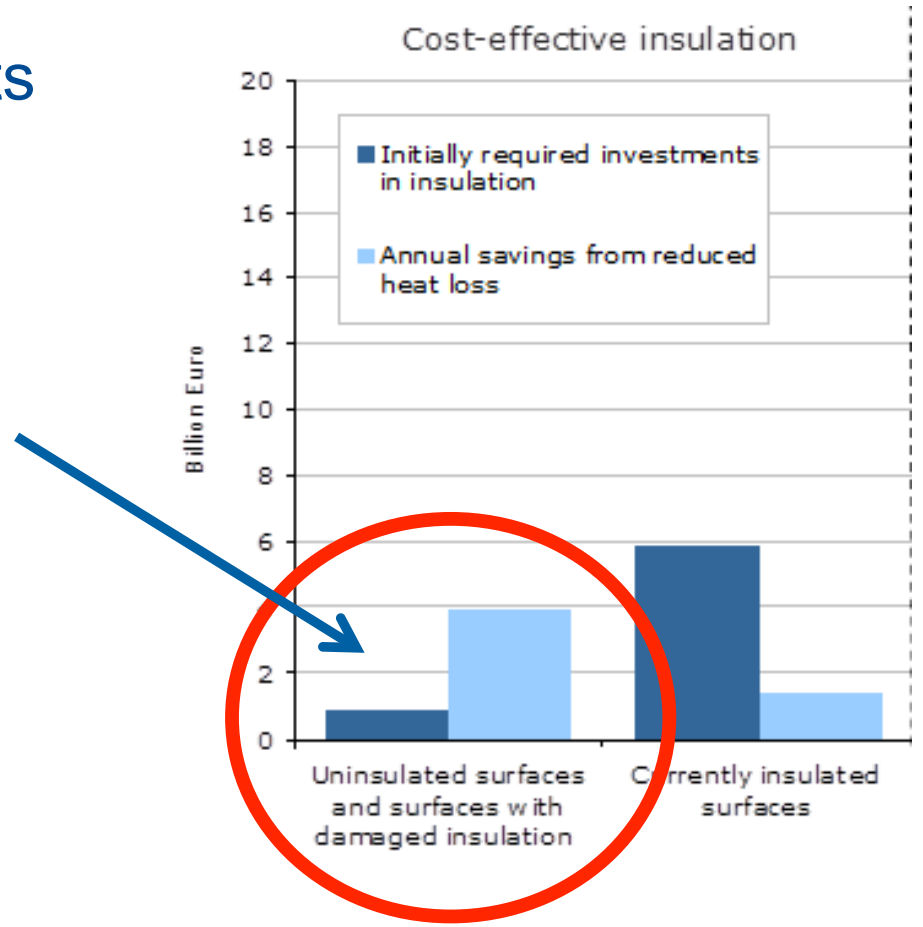
Uninsulated parts offer large potential



Attractive payback times

Uninsulated and damaged parts offer attractive payback times:

Payback times are typically **less than one year** (life time = 15 years)



One-time Investments offer high annual Savings

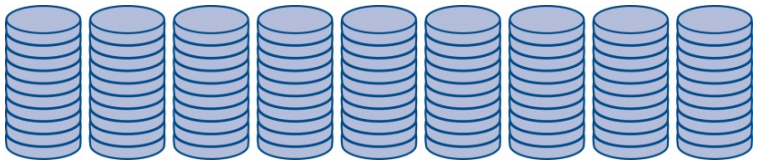
Insulating bare surfaces to cost-effective levels and repairing damaged insulation would save about **460 PJ = about 75% of the entire Savings Potential**

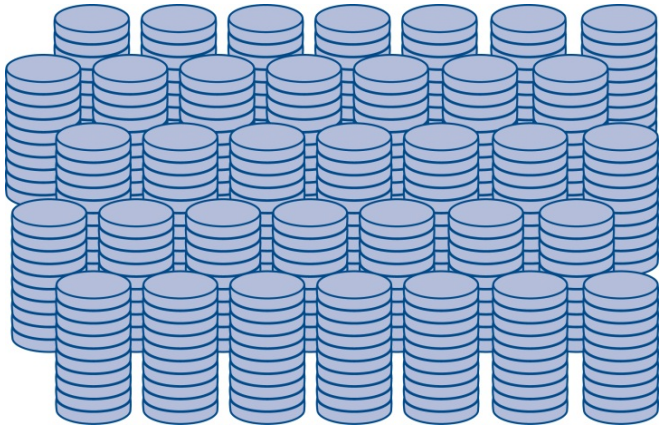
One time investment:

900 million euro

High annual Savings:

3.5 billion euro





How to tap the potential – STEP 1

Insulate **uninsulated parts** and
replace damaged insulation.

Keep in mind:

Uninsulated and damaged parts represent about 75% of the Potential.



How to tap the potential – STEP 2

Evaluate the cost-effectiveness of your insulation and consider upgrading.



How to tap the potential – STEP 3

Involve insulation experts early in the planning process of new building, overhauling or retrofitting projects.

Too little available space is most often the reason why efficient insulation cannot be realised.

Insulation experts help to avoid planning mistakes.





TIPCHECK your Savings Potential

TIPCHECK = Technical Insulation Performance CHECK

- TIPCHECKs provide clients with **a neutral report** on the quality and efficiency of their insulation.
- TIPCHECKs identify the spots bearing the highest **energy saving potential** and offering a rapid **payback time**.
- The scope of a TIPCHECK usually includes already insulated and un-insulated lines and equipment.

TIPCHECK

TIPCHECK examples

Chemical Plant in France

Key facts:

- 1 employee equiped with a thermografic camera
- 2 weeks on-site
- 400 pictures taken and used for the audit report



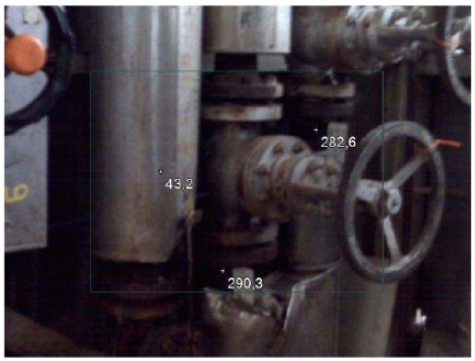
Key findings:

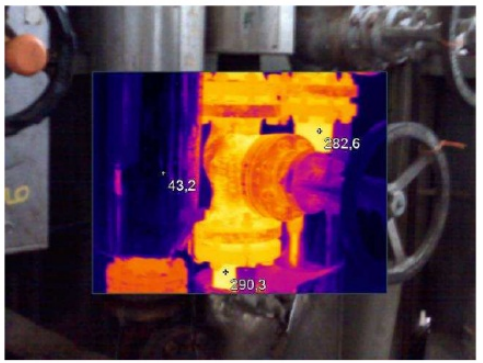
- Safety: Burn risk due to missing insulation
- Financial: Money savings due to reduced energy loss
- Energy Efficiency: Energy/heat loss



TIPCHECK example: Chemical Plant, France

Key findings - **Safety**





Non-insulated parts of equipment:

Detected burn danger:

Surface temperatures above 280°C bare a great risk of severe burn injuries for staff

Proposed insulation solution:

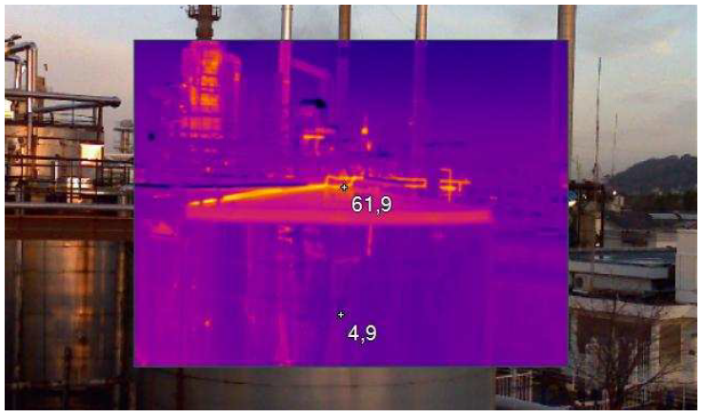
Installment of mattress insulation to assure surface temperatures below 50°C

Action:

About 30 similar valves were identified and insulated

TIPCHECK example: Chemical Plant, France

Key findings – **Energy Efficiency**



1. Storage tanks

35 Storage tanks with uninsulated roof tops

Surface approx.	28m^2
Temperature of stored liquids:	150˚C
Unnecessary energy loss per year	**approx. 12.000 MWh**

2. Valves

30 Uninsulated valves (see Safety):

Internal temperature:	approx. 300 °C
Unnecessary energy loss per year	**approx. 600 MWh**



TIPCHECK example: Chemical Plant, France

Key findings – **Financial**

Savings potential:

Total unnecessary annual energy loss (valves+tanks):	**approx. 12.600 MWh**
Total annual financial saving potential (4ct/kWh):	**approx. 505.000 EUR**

Investment:

TIPCHECK:	approx. 10.000 EUR
Insulation instalment and material costs:	approx. 90.000 EUR
Total investment:	**approx. 100.000 EUR**

Payback time: **approx. 2,4 months**

TIPCHECK example: Refinery, Italy

Refinery in Italy

Doubling the insulation thickness and using better material **cut the heat losses in half**.

Energy Savings: **1.021.958 kWh/a**

Financial Savings: **75.000,00 EUR**

Payback time: **1-3 years***

*The new insulation system had to improve the fire protection, which lead to more expensive materials than those that would have been used for energy efficiency only. This higher investement extended the payback in this example from 1 to 3 years.



TIPCHECK example: Processing plant, Germany

Insulation of an asphalt boiler in Germany

- Tube, ferritic steel, thickness: 5 mm
- Width 1,70 m
- Depth 0,760 m
- Hight 26 m
- Surface 127,92 m^2
- Average heatprice 0,033 €/kWh
- Operating hours: 1‘500

- **Insulation investment** **12.792 EUR**
- **Energy savings** **1.450 MWh/a**
- **Financial savings** **47.800 EUR/a**
- **Payback time** **< 3 months**

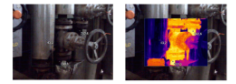
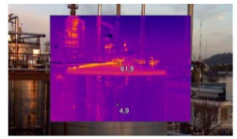
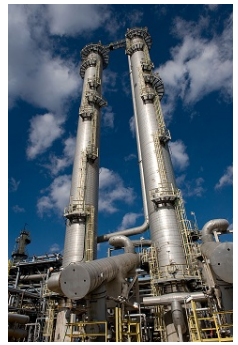


TIPCHECK examples: Summary

Without the insulation improvements identified by TIPCHECKs these 3 companies would go on losing every year:

- **Energy**: approx. **15.000 MWh/a**
- **Money:** approx: **630.000 EUR/a**

Stop losing Energy & Money
- TIPCHECK your savings potential.




Summary

The Savings Potential of Industrial Insulation is large

This Savings Potential is highly cost-Attractive

The Savings Potential can be tapped today

Thank you

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