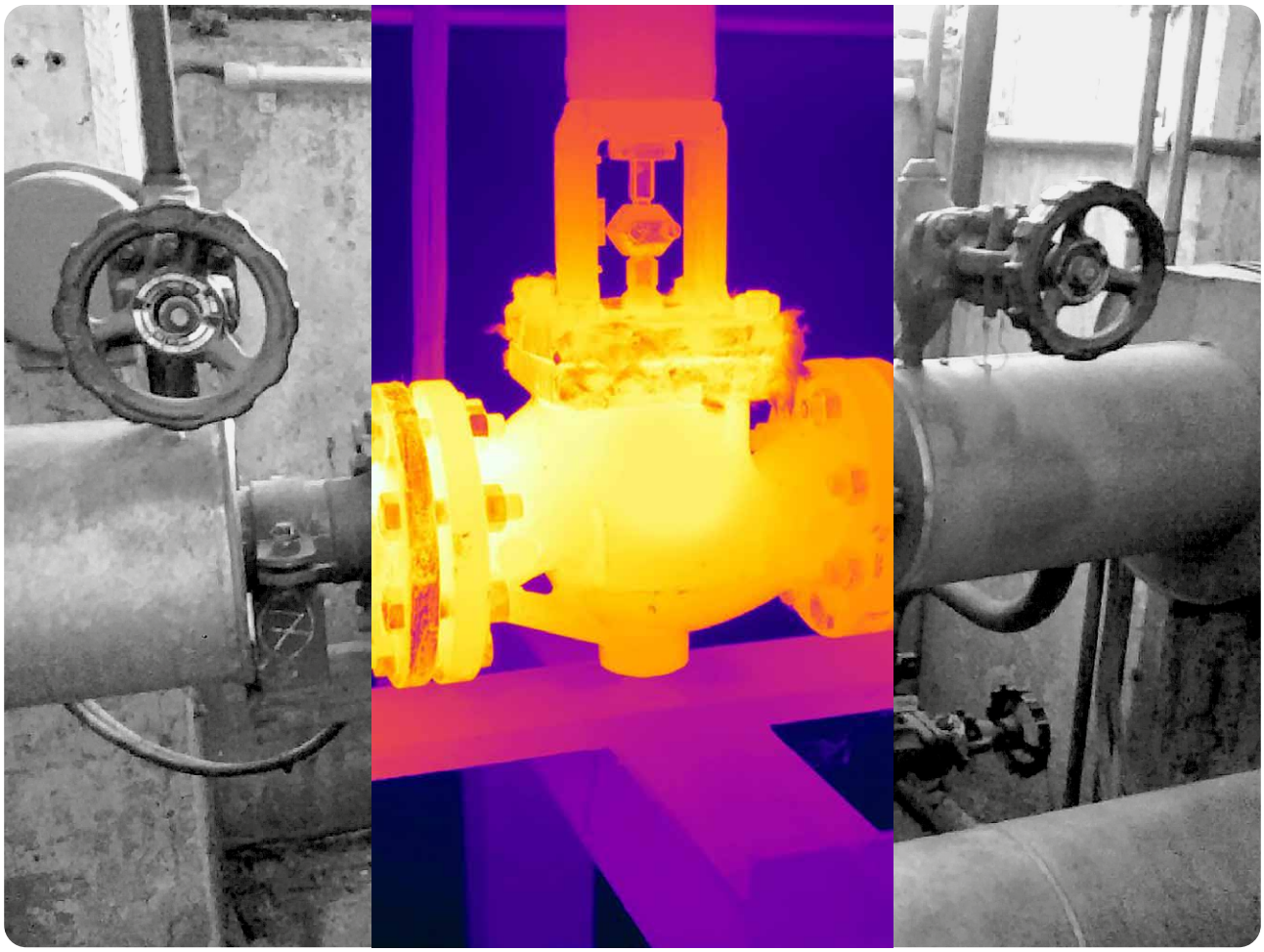
THE OVERLOOKED INDUSTRY DECARBONIZATION CHAMPION: TECHNICAL INSULATION

PROVEN EFFECTIVENESS: OVER 3.000 TIPCHECKS SHOW TECHNICAL INSULATION CUTS COSTS, REDUCES ENERGY CONSUMPTION, AND LOWERS CO_2 EMISSIONS



THE OPPORTUNITY
Improved technical insulation offers an economically attractive opportunity to cut annual CO_2 emissions by 40 Mt in EU industry

THE SITUATION
Industries face the urgent challenge of decarbonizing to mitigate the impacts of climate change

THE SMART SOLUTION
Improving technical insulation of processes, guided by the insulation energy efficiency standard EN 17956, can deliver significant benefits to industry, society and climate

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THE OPPORTUNITY

EiiF Study 2021: 14 Mtoe (160 TWh) of energy can be saved every year if insulation in industry is upgraded to EN 17956 insulation energy efficiency class C.

Upgrading insulation to energy efficiency class C offers an economically attractive opportunity to **cut annual CO_2 emissions by 40 Mt in EU industry.**

The annual savings potential is equivalent to the annual energy consumption of **more than 10 million households.**

THE SITUATION

Industries worldwide face the urgent challenge of decarbonizing to mitigate the impacts of climate change. However, many if not most companies are not aware of the potential of technical insulation to reduce their carbon footprint

Many companies are searching for solutions but don't know the technical insulation potential to reduce their carbon footprint. The TIPCHECK experience shows that the energy efficiency level of insulation in industrial installations is still relatively low. Most often the existing insulation systems and technical requirements solely focus on process needs or on safety to keep surface temperatures below 55 °C. Moreover, many plants are aging and in a dire need for insulation repair.

Consistently upgrading industrial insulation systems to the EN 17956 insulation energy efficiency class C would quickly deliver multiple benefits not only for our climate but also for society and industry. The insulation technology needed exists and just has to be better utilised.

Supporting tailored policy actions in industry could significantly accelerate the uptake of energy-efficient insulation solutions and help industries to reduce their carbon footprint.

THE SMART SOLUTION

More than 3.000 TIPCHECKs carried out worldwide since 2010 show technical insulation cuts costs, reduces energy consumption and CO_2 emissions. In July 2024, EiiF analyzed the most recent 100 TIPCHECKs carried out in European plants:

ATTRACTIVE INVESTMENT FOR INDUSTRY

A one-off investment of €50.000 in technical insulation leads to the following results over a period of 10 years:

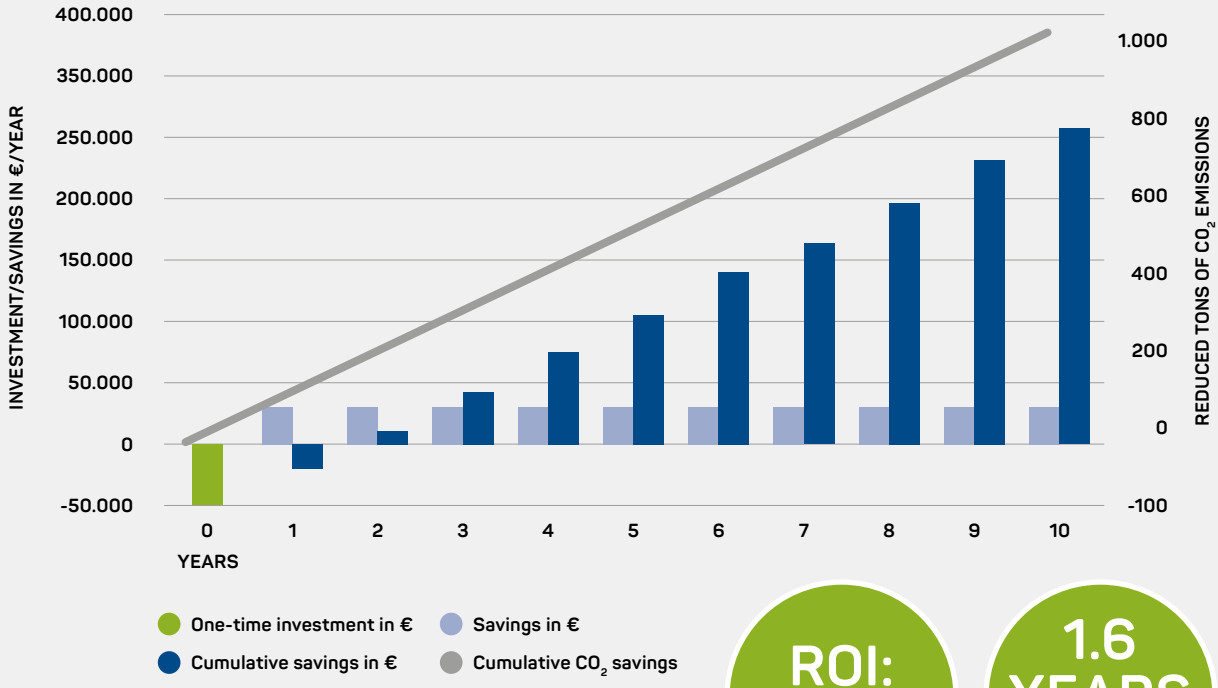
SAVINGS ACHIEVED:

CO_2 Reductions: **1.000 tons** (200 g CO_2/kWh)
CO_2 Cost Savings: **€60.000** (60 €/t)
Energy Savings: **5.000 MWh** (24/7 operating time)
Energy Cost Savings: **€250.000** (0.05 €/kWh)

VALUATION OF THE ENERGY RELATED INVESTMENT:

Simple Payback: **1.6 years**
Return of Investment (ROI): **520%**
Investment in CO_2 Reduction: **€50 t CO_2**

50 €/TON CO_2 – DECARBONIZING INDUSTRY WITH TECHNICAL INSULATION

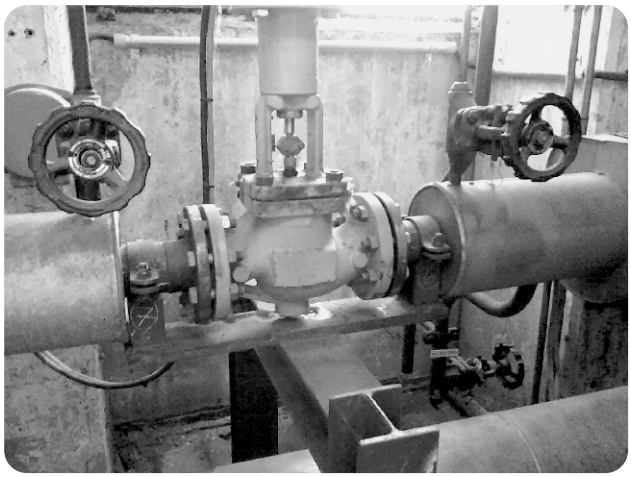


ROI: 520%

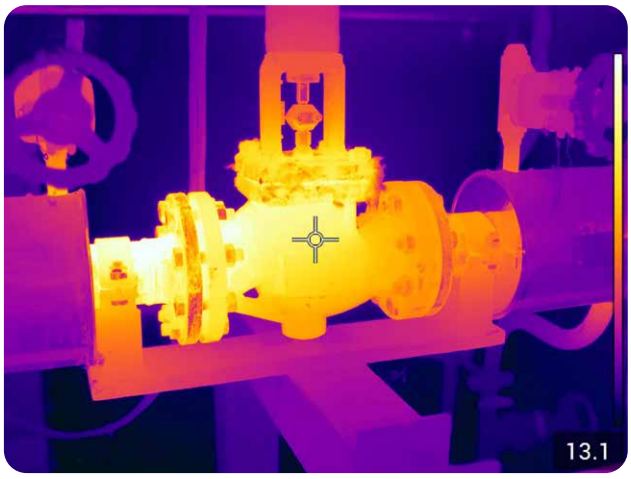
1.6 YEARS PAYBACK

THE POWER OF TECHNICAL INSULATION CASE STUDY

Industrial processes are energy-intensive: To keep process temperatures in industry at high levels (up to 600 °C and more), an intensive energy input to the system is needed. On uninsulated equipment high process temperatures lead to high heat losses:



ONE UNINSULATED PROCESS VALVE
Size: DN 150/6 inch
Temperature: 150 °C
Operational time: 8.760 hours
Annual energy loss: 10.500 kWh



TYPICALLY UNINSULATED EQUIPMENT
The TIPCHECK experience shows that valves and flanges in industrial plants are typically uninsulated. The energy loss can be detected and illustrated with infrared thermography.

BY INSULATING THE VALVE 10.000 KWH CAN BE SAVED
Transforming the saved 10.000 kWh thermal energy with a 40% thermodynamic efficiency into 4.000 kWh electric energy and using this to charge the battery of an electric car, one could **drive more than 20.000 km**.

TECHNICAL INSULATION INVESTMENT CASE STUDY

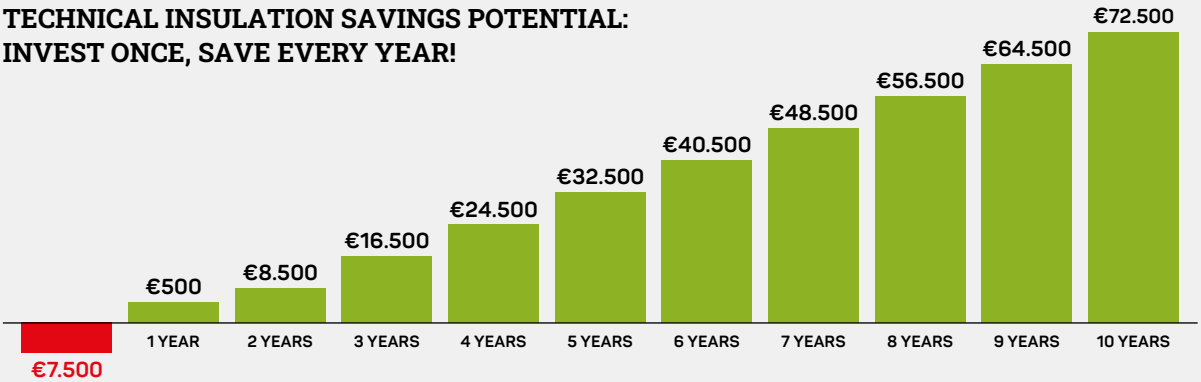
Over 3.000 TIPCHECKs conducted globally since 2010 reveal that nearly every audit identifies uninsulated equipment, offering significant energy savings and CO_2 reductions with rapid payback.

TIPCHECK

EXAMPLE: 30 UNINSULATED PROCESS VALVES (DN 80 – DN 200):

ENERGY EFFICIENCY: THROUGH IMPROVED TECHNICAL INSULATION

TECHNICAL INSULATION SAVINGS POTENTIAL: INVEST ONCE, SAVE EVERY YEAR!



Insulation Investments: €7.500 (30 valves)

Annual energy savings: €8.000 (0,032 €/kWh)

Payback time: less than one year

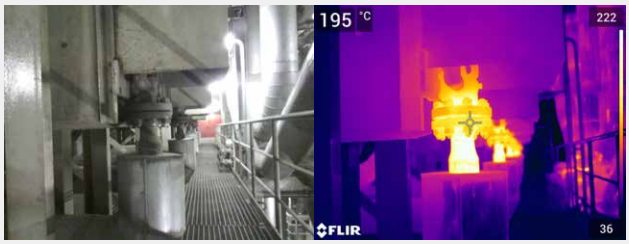
EiiF'S RECOMMENDATIONS

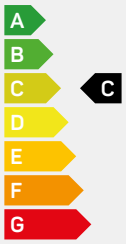
To tap the annual energy (14 Mtoe/160 TWh) and CO_2 emissions (40 Mt) reduction potentials, EiiF recommends a combined mandatory requirement for technical insulation improvements guided by EN 17956 and the stipulation of regular insulation scans.

MANDATORY UPGRADES TO EN 17956 INSULATION ENERGY EFFICIENCY CLASS C FOR INDUSTRY

1.

Insulate all equipment and piping to at least insulation energy efficiency class C according to EN 17956. This shall be mandatory for new installations (in the planning phase), installations under construction and for existing installations in industry if the payback period for the insulation improvement to class C is less than 5 years.





Equipment shall be always insulated to at least energy efficiency class C (pictures: uninsulated valves losing heat).

STIPULATE REGULAR INSULATION SCANS

2.

Option 1:
Introduce an insulation scan obligation (see the Netherlands: Energy Saving Investigation Obligation).

Option 2: Subsidies for qualified insulation scans (e.g. TIPCHECK).

Option 3: Awareness campaigns: Benefits of technical insulation scans & EN 17956.

FEASIBILITY ANALYSIS OF EiiF'S RECOMMENDATIONS

1. USING THE EN 17956 STANDARD TO SET MINIMUM PERFORMANCE REQUIREMENTS

To define maximum heat loss levels for standard insulation solutions using the EN 17956 standard is straightforward, product and service independent and tailored to industrial process needs. In addition, everybody is familiar with energy classes, and it is a simple 3-step approach to get to the minimum performance levels:

1. Select Insulation Energy Efficiency Class C (or better)
2. Specify Operating Temperature
3. Define Geometry (surface or piping and its size)

Check online: www.eiif.org/energy-efficiency-class-calculator

2. BUILDING ON THE SUCCESS OF 3.000 TIPCHECKS

More than 3.000 TIPCHECKs worldwide demonstrate the savings potential and return on investment:

- 3 out of 4 clients invest, reduction of 4 TWh & 1 Mt CO_2 emissions until today.
- TIPCHECK aligns with industry standards like EN 17956 and EN 16247.
- 160 certified TIPCHECK Experts qualified & ready to support industry.

CONCLUSION: MANDATORY IMPROVEMENT OF TECHNICAL INSULATION IS A WIN-WIN-WIN

Implementing a mandatory requirement for industries to improve technical insulation systems to EN 17956 insulation energy efficiency class C creates a Win-Win-Win scenario:

INDUSTRY
Realizes widely overlooked insulation efficiency opportunities and increases its competitiveness.

SOCIETY
Contributing towards net zero, job creation and workplace safety.

CLIMATE
Reducing energy consumption and thereby lowering annual CO_2 emissions.

ABOUT EiiF

The European Industrial Insulation Foundation (EiiF) is an international foundation headquartered in Switzerland. As a neutral and non-profit institution, EiiF promotes insulation as a top-of-mind method for enhancing sustainability and profitability.

Since its foundation, EiiF has established itself as a resource for industries that need to reduce CO_2 equivalent emissions and save energy. Its programme raises awareness of the multiple benefits of industrial insulation.

EiiF was established in 2009 by 12 Founding Partners. Nowadays, it comprises more than 70 leading industrial insulation companies from global players to small and medium sized companies.

GET IN TOUCH

Learn more about the EiiF Foundation and how to co-operate or participate:
www.eiif.org

EiiF Deed of Foundation:
Read here about the purpose and the primary task of the Foundation:
www.eiif.org/deed-of-foundation

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TIPCHECK
Technical Insulation Performance Check:
EiiF's energy auditing programme to evaluate the performance of industrial insulation systems:
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