

# KNAUF INSULATION TIPCHECK AUDITS

Reduce CO<sub>2</sub> emissions & energy costs  
in industry and help save the planet.



# RECOGNISE UNEXPECTED SAVING POTENTIAL

**Industry experience in general shows that in a typical European plant 2-10% of insulation is damaged or missing.**

Industry experts point out that most plants are operated with insulation systems designed to meet safety criteria, that is defining the maximum surface temperature, condensation prevention, process needs or just a generic maximum density of the heat flow rate. Specifications that call for cost-effective and energy-efficient solutions are an exception. The impact of the heat flow rate of current insulation systems on surfaces without insulation or with damaged insulation gives a clear picture of the energy losses and great potentials for upgrade. The impact at different temperatures is shown in the table below.

Temperature level	Low temperature (<100 °C)		Middle temperature (100 °C - 300 °C)		High temperature (> 300 °C)	
	with insulation	with damaged insulation or uninsulated	with insulation	with damaged insulation or uninsulated	with insulation	with damaged insulation or uninsulated
Component surface						
Share in %	90	10	94	6	98	2
Average heat loss rate per unit of surface (W/m <sup>2</sup> )	100	1.000	150	3.000	150	10.000



# SAVING POTENTIAL PER COUNTRY

## UNITED KINGDOM

The industrial insulation energy savings potential by different energy sources (in ktoe):

- COAL: 127.0**
- GAS: 709.5**
- ELECTRICITY: 2.8**
- OIL: 213.0**
- HEAT: 16.9**
- BIOMASS: 113.9**

**Energy savings potential: 1,183 ktoe**

**Emissions reduction potential: 3,480 kt**

The total energy savings and emissions reduction potential by improving insulation solutions in industry

The industrial insulation potential to reduce the energy consumption and carbon emissions by industry sector:

Potential by sector in United Kingdom	Energy savings (ktoe)	CO <sub>2</sub> eq. emissions reduction (kt)
Electricity sector*	345	983
Chemical industry	27	82
Refineries	163	584
Paper & Pulp	128	315
Food industry	91	279
Non-metallic minerals	47	124
Steel industry	124	346
Machinery	12	34
Wood industry	76	205
Non-ferrous metal	13	31
Transport equipment	56	169
Textile	72	82
All other sectors	73	249
<b>TOTAL</b>	<b>1,183</b>	<b>3,480</b>

\*Gas, Coal, Oil, Biomass Technologies

**The national insulation savings potential\* is equivalent to the annual energy consumption of**

MORE THAN **863,000 HOUSEHOLDS**

MORE THAN **1.7 MILLION CARS**

## GERMANY

The industrial insulation energy savings potential by different energy sources (in ktoe):

- COAL: 737.4**
- GAS: 1,571.9**
- ELECTRICITY: 16.8**
- OIL: 394.8**
- HEAT: 283.5**
- BIOMASS: 461.6**

**Energy savings potential: 3,466 ktoe**

**Emissions reduction potential: 9,981 kt**

The total energy savings and emissions reduction potential by improving insulation solutions in industry

The industrial insulation potential to reduce the energy consumption and carbon emissions by industry sector:

Potential by sector in Germany	Energy savings (ktoe)	CO <sub>2</sub> eq. emissions reduction (kt)
Electricity sector*	836	3,071
Chemical industry	648	1,484
Refineries	303	1,044
Paper & Pulp	219	524
Food industry	261	689
Non-metallic minerals	264	814
Steel industry	247	600
Machinery	181	469
Wood industry	167	373
Non-ferrous metal	54	133
Transport equipment	128	303
Textile	26	69
All other sectors	132	309
<b>TOTAL</b>	<b>3,466</b>	<b>9,981</b>

\*Gas, Coal, Oil, Biomass Technologies

**The national insulation savings potential\* is equivalent to the annual energy consumption of**

MORE THAN **2.1 MILLION HOUSEHOLDS**

MORE THAN **5.2 MILLION CARS**

\* The calculation is based on the national average energy consumption provided by the Odyssee-Mure EU project ([www.odyssee-mure.eu](http://www.odyssee-mure.eu))

# FRANCE



**Energy savings potential: 1,288 ktoe**

**Emissions reduction potential: 3,423 kt**

The total energy savings and emissions reduction potential by improving insulation solutions in industry

The industrial insulation energy savings potential by different energy sources (in ktoe):



**COAL: 107.6**



**GAS: 729.2**



**ELECTRICITY: 8.1**



**OIL: 173.5**



**HEAT: 125.0**



**BIOMASS: 145.5**

The industrial insulation potential to reduce the energy consumption and carbon emissions by industry sector:

Potential by sector in France	Energy savings (ktoe)	CO <sub>2</sub> eq. emissions reduction (kt)
Electricity sector*	156	471
Chemical industry	148	440
Refineries	121	397
Paper & Pulp	97	242
Food industry	222	637
Non-metallic minerals	122	366
Steel industry	90	256
Machinery	64	184
Wood industry	34	82
Non-ferrous metal	19	43
Transport equipment	40	108
Textile	16	73
All other sectors	158	154
<b>TOTAL</b>	<b>1,288</b>	<b>3,423</b>

\*Gas, Coal, Oil, Biomass Technologies

The national insulation savings potential\* is equivalent to the annual energy consumption of



MORE THAN **900,000 HOUSEHOLDS**



MORE THAN **1.9 MILLION CARS**

# NETHERLANDS



**Energy savings potential: 956 ktoe**

**Emissions reduction potential: 2,720 kt**

The total energy savings and emissions reduction potential by improving insulation solutions in industry

The industrial insulation energy savings potential by different energy sources (in ktoe):



**COAL: 77.1**



**GAS: 475.0**



**ELECTRICITY: 1.8**



**OIL: 277.1**



**HEAT: 92.2**



**BIOMASS: 33.0**

The industrial insulation potential to reduce the energy consumption and carbon emissions by industry sector:

Potential by sector in Germany	Energy savings (ktoe)	CO <sub>2</sub> eq. emissions reduction (kt)
Electricity sector*	183	589
Chemical industry	377	988
Refineries	139	470
Paper & Pulp	21	50
Food industry	110	279
Non-metallic minerals	22	63
Steel industry	43	124
Machinery	23	61
Wood industry	3	8
Non-ferrous metal	5	10
Transport equipment	5	13
Textile	6	14
All other sectors	20	52
<b>TOTAL</b>	<b>956</b>	<b>2,720</b>

\*Gas, Coal, Oil, Biomass Technologies

The national insulation savings potential\* is equivalent to the annual energy consumption of



MORE THAN **780,000 HOUSEHOLDS**



MORE THAN **1.4 MILLION CARS**

\* The calculation is based on the national average energy consumption provided by the Odyssee-Mure EU project ([www.odyssee-mure.eu](http://www.odyssee-mure.eu))

# TIPCHECK ENERGY AUDITS

## SHORT AMORTISATION TIMES – UNCOVER POTENTIAL WITH THE RIGHT TOOLS

The European Industrial Insulation Foundation (Eiif) TIPCHECK experience, with about **2,500 thermal energy audits** carried out over the past 10 years, shows that industry is using insulation systems that are neither cost-effective under current market conditions nor energy efficient. Old and outdated technical specifications, mainly focusing on process and safety requirements, are still widely used in industry today. It is also observed that, in many cases, thermal insulation in industry is poorly maintained and parts remain uninsulated. This practice results in excessive heat losses and, as a consequence, high levels of avoidable greenhouse gas emissions.



### Insulation of one industrial valve

DN: 150

Working temperature: 150°C

Saving potential in one year: 10.000

kWh = 900 m<sup>3</sup> gas

Insulation costs: 250 - 300 EUR

**Amortization time: < 1 year**

### Insulation of one HVAC valve

DN: 150

Working temperature: 90°C

Saving potential in one year: 4.600 kWh

= 415 m<sup>3</sup> gas

Insulation costs: –ca. 166 EUR

**Amortisation time: ca. 1.5 year**



**10,000 kWh of thermal energy could be transformed with efficiency of 40% into 4,000 kWh of electric energy.**  
**An electric car could drive more than 20,000 km with 4,000 kWh of energy.**



# COST-EFFECTIVE INSULATION IN INDUSTRY WITH OUR POWER-TEK® PRODUCTS

An average industrial plant operates for 8,760 hours per year with maintenance-free operating times over 10 to 20 years. The requirements of planners, building owners and the materials used are correspondingly high. Our high-performance insulation materials for technical insulation in industrial plants meet these requirements without compromise.

Excellent Mineral Wool solutions for the insulation of installations in industrial plants (power stations, process industry, chemical and petro-chemical industry, plant construction) assure lower heat losses, energy costs and CO<sub>2</sub> emissions, and ensure the stability of process temperature as well as personal protection against high temperatures, passive fire protection and sound insulation.

Over the years, we developed highly efficient Power-tek products applicable for the insulation of pipes, furnaces and other equipment, tanks (walls, roofs, heat storage), boilers and cryogenic applications.

**Our Power-tek products provide up to 95% cost saving in comparison with uninsulated plants.**

## Main characteristics of our materials

- Maximum service temperature: up to 700°C
- Fibre melting point > 1000°C
- Maintenance-free, long life and high performance capability
- Certificates: CE / VDI 2055 / EUCEB / RAL / ASTM certified / Declare
- ECOSE® Technology



POWER-TEK

INDUSTRIAL INSULATION

Knauf Insulation Power-tek product for insulation in industry: wired mats, pipe sections, pipe belts, lamella mats, rolls, flocks.

## TIPCHECK AT KNAUF INSULATION TECHNICAL SOLUTIONS

Perfectly equipped to tackle all insulation challenges, we take part in various national and international incentive schemes to recognise and push potential savings in industry.

Every year, the EiiF organises qualified training for insulation engineers, asset owners, energy auditors, energy managers and consultants to train them how to perform standardised high-quality thermal energy audits, so-called TIPCHECKs.

**Our certified TIPCHECK auditors will help you to recognise the saving s potential of your plant.**

Having usually a very fast return on investment, 3 out of 4 TIPCHECK clients immediately invest or plan to

invest in the recommended insulation solutions after a TIPCHECK audit. Taking into the account the very short payback periods, the improved insulation is a very attractive investment.

**Are you ready to take part and co-create your new greener environment? Apply for a TIPCHECK audit and get ahead of the competition and in line with the 2050 net-zero EU agenda at the same time.**

Apply here:

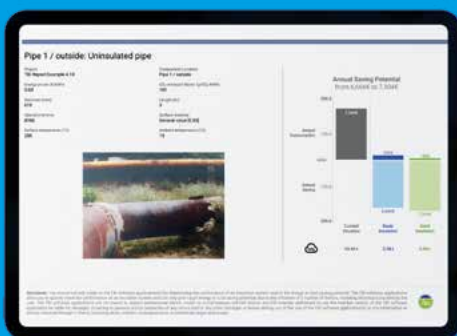


»Within TIPCHECK, it's possible to carry out thermal energy audits to quantify the amount of energy and money an industrial facility is losing with its current insulation system (including uninsulated parts). The result: tailor-made insulation proposals that demonstrate the environmental and financial value of industrial insulation, which is nowadays a modern, cost-effective and easily-achievable first step to meet sustainability objectives with payback times of just one year or even less«, explains **Laura Raggi**, certified TIPCHECK Expert at Knauf Insulation.



Experience gained over the course of about 2,500 TIPCHECK thermal audits carried out worldwide shows that insulating uninsulated equipment and repairing damaged insulation offers payback periods of two years on average and often just a few months.

**Be part of the community to save our planet. If you carry out an energy audit on your system, you will be surprised at the potential savings in energy costs and CO<sub>2</sub> emissions – at short payback times.**



With the help of the TBI app, developed by experts of the EiiF association (European Industrial Insulation Foundation), you can easily get started in just a few steps. Recognise and evaluate potential savings by self-inspection. With an intuitive menu navigation combined with graphic presentations, you can create reports with an initial assessment of the savings potential on your own.

Any questions?

We will be glad to advise you.

✉ [ts-service@knaufinsulation.com](mailto:ts-service@knaufinsulation.com)

🌐 [www.knaufinsulation-ts.com/service/tipcheck-audits](http://www.knaufinsulation-ts.com/service/tipcheck-audits)





Our products save energy, cut emissions and are designed to make sure buildings and applications are good for the environment and keep people healthy, safe and well. Across our company, we have been working on sustainability for over a decade. We have focused on zero harm, reducing our energy use and emissions, recycling our production waste, incorporating circular economy principles and constantly campaigning for better and more sustainable buildings and applications. Over the past decade, we have achieved great things and we are proud of how we have changed our company, helped our colleagues, communities and customers and reduced our impact on the environment. But sustainability is a process of continuous improvement. We must do more for our people and our environment. That's why we've created our new sustainability strategy. We call the new strategy **'For A Better World'** because it builds on the success of our mission statement: "Our vision is to lead the change in smarter insulation solutions for a better world."



## LIVING WITH A GREEN HEART

### LIVING WITH A GREEN HEART

The "Living with a Green Heart" initiative promotes a comprehensive approach to sustainable development with **emphasis on societal and social sustainable development**, placing an informed individual at the forefront of sustainable transformation of society. "Living with a Green Heart" presents a unique story and approach that encourages companies, organisations, and individuals to:

- ✓ Create sustainable products and solutions which can transform grey cities into green oasis, build safe and comfortable homes and lead to a better world for all of us.
- ✓ Lead social sustainability actions, cocreating a more informed and kinder future for ourselves and those that come after us.
- ✓ Build a friendlier and more responsible environment for employees at all levels and in all aspects, appreciating the diversity and improving our relationships, as well as the way we work, collaborate, and coexist within our environments.

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### COMPANY PROFILE

Knauf Insulation is one of the most respected names in the insulation industry worldwide with over 40 years of experience and still growing fast. Over 5.500 employees in more than 40 countries and 27 manufacturing sites. Being part of the family-owned Knauf group, Knauf Insulation Technical Solutions provides solutions for customers' requirements in industry, marine applications, heating, ventilation and air conditioning. A profound market understanding and insulation know-how enables us to provide a broad range of products to meet your specific needs.

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challenge.  
 create.  
 care.