

TIPCHECK

European Industrial Insulation Foundation

Thermal Energy Auditor

Become an EiiF certified TIPCHECK engineer



Offer thermal energy audits in line with EN 16247/ISO 50002

Become an expert in analysing the performance of insulation systems

Help industry to save money, energy and reduce emissions

WE POWER SUSTAINABILITY

“

You don't know
what you don't know,
until you know.

”

Typical reaction of a client realising
how much money and energy he is wasting
when reading the results of a TIPCHECK
thermal energy audit report.

Get yourself certified as a TIPCHECK engineer

EiiF-trained Thermal Energy Auditors help industry to save energy and reduce CO₂ emissions and production costs

The European Union has set itself an ambitious goal: to be climate-neutral by 2050, with net zero CO₂ emissions. Decarbonising EU industry is one of the major challenges to reach this target.

Considering the current annual level of CO₂ emissions in the EU 27 (EEA 2017: 3.853 Mt), it is clear that this goal can only be achieved with the support and participation of all key sectors including the EU's industry and energy supply, accounting for 49% (EEA 2017) of the EU's emissions.

The EiiF Study 2021 analyses that 14 Mtoe of energy can be saved by improving insulation standards in industry, offering the potential to reduce the EU's CO₂ emissions by 40 Mt every year.

Within the framework of its TIPCHECK (Technical Insulation Performance Check) Programme, the EiiF organizes qualification and training courses for insulation engineers to become EiiF-certified thermal energy auditors, so called TIPCHECK engineers. TIPCHECK engineers are trained to ensure high quality thermal energy audits focusing on the thermal performance of insulation systems, and are able to calculate - through the TIPCHECK and TBI tools - a facility's savings potential in terms of money, energy, and CO₂ emissions.

The TIPCHECK Programme has already resulted in EU-wide annual energy savings of more than **70 ktoe** or **814.000 MWh** - equivalent of the energy consumption of more than **50.000** European households*

EVALUATE

The amount of money and energy a facility is losing in its current state

QUANTIFY

The multiple benefits of a cost-effective and sustainable insulation system

DEMONSTRATE

All the benefits of a more efficient insulation system

Over 100 experts are already certified TIPCHECK engineers. See the list here: www.eiif.org/tipcheck/certified-engineers

*1.36 toe/household average energy consumption in the EU
Source: www.odyssee-mure.eu



Why TIPCHECKs offer multiple benefits to industry

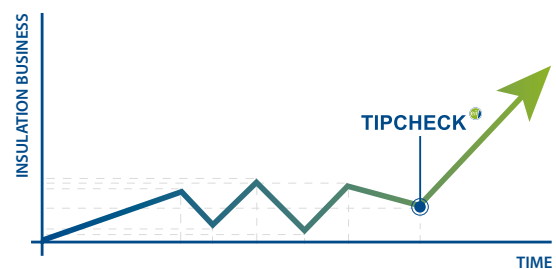
The TIPCHECK Programme is a non-invasive investigative tool that delivers multiple energy and non-energy benefits to the energy user, supply system and the economy

In any industry, the three top operating expenses are often found to be energy (both electrical and thermal), labour and materials. If one were to assess the manageability of the cost or potential cost savings in each of the above components, energy would invariably emerge as a top ranker, and thus energy management function constitutes a strategic area for cost reduction. However, clients are not necessarily and not always aware how much energy they are wasting, as they usually are not aware how easy and quick it is to stop the energy waste with properly insulated systems/installations.

Industrial insulation is a proven technology delivering multiple benefits:

- › reduces energy and production costs
- › increases energy efficiency
- › reduces CO₂ emissions
- › improves process efficiency
- › reduces safety risks for personnel and equipment
- › increases competitiveness

The aim of the TIPCHECK Programme is to provide industry with a standardized, high quality thermal energy audit tool in line with EN 16247 and ISO 50002 focusing on the thermal performance of technical insulation systems.



75% of the TIPCHECKs lead to insulation investments

50 million EUR was the total insulation contract volume generated by 2020 from about 2.500 TIPCHECKs*

The payback periods for the initiated TIPCHECK insulation projects were in most cases **2 years or even less**



“Decarbonising industry with rapid payback”

Eiif White Paper 2021

www.eiif.org/publications



Eiif National Fact Sheets

Country-specific total energy saving and emissions reduction potential after consequently improving insulation solutions in industry

www.eiif.org/publications

**estimation based on investments with an average payback of 2 years and an energy price of 0,03 €/kWh*



The proof: Case Studies

1. The TESLA example

Insulating ONE valve drives an electric car 20.000 km

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. High temperatures lead to high heat losses on uninsulated equipment adding to an intensive energy consumption of the system.

Typically uninsulated equipment

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



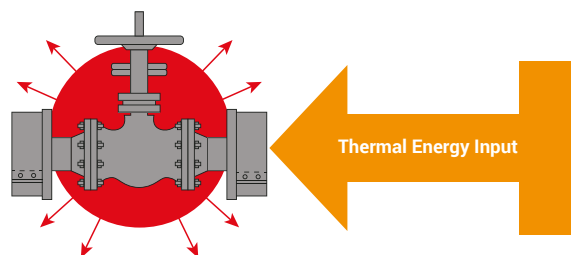
One uninsulated valve:

Size: DN 150/6 inch

Temperature: 150 °C / 302 °F

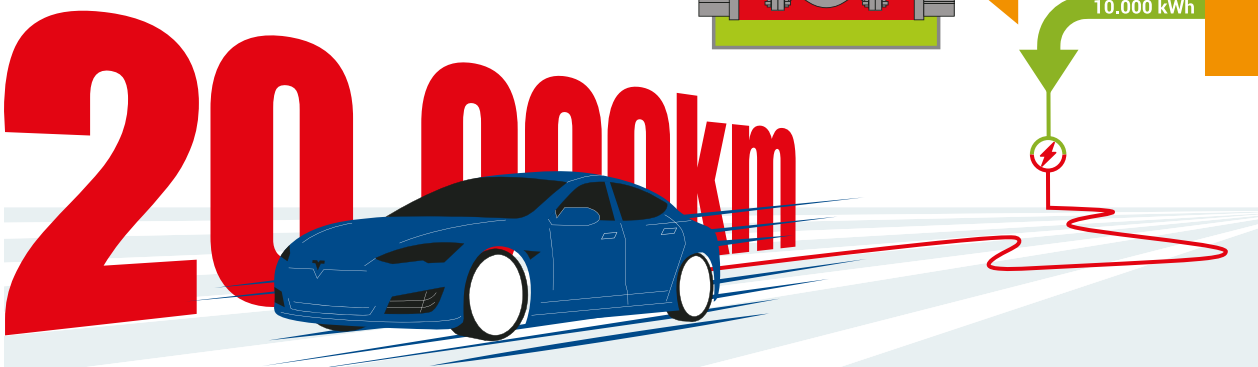
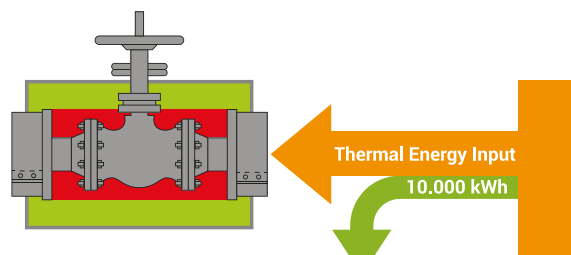
Operational time: all year (8.760 hours)

Annual energy loss: 10.600 kWh



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 a TESLA Model S, one could drive more than 20.000 km.



2. Refinery | Oil storage tank roof

Storage temperature: 60 °C / 140 °F

Before

Old and damaged insulation on the roof

CUI problems: roof sheets heavily corroded

The roof had to be replaced

After the TIPCHECK

Saved **7.500 MWh** of energy / year

Saved **€185.0000** per year

Payback time less than **2,5 years**

CO₂ emission reduction potential **1.500 t/year**

Results against uninsulated with an optimised insulation applied with a technical solution avoiding CUI problems

3. Chemical Plant

Process temperature: from 75 °C/ 167 °F to 150 °C/ 302 °F

Before

650 m of piping with missing or damaged insulation

300 uninsulated pairs of flanges

160 uninsulated valves

3 uninsulated tanks

After the TIPCHECK

Saved **11.100 MWh** of energy / year

Saved **€200.000** per year

Payback time less than **1 year**

CO₂ emission reduction potential **2.240 t/year**

4. Sugar Beet Processing Plant

Process temperature: 100 °C/ 212 °F

Before

198 infrared pictures taken

419 hot spots/pieces of uninsulated equipment identified, e.g. boilers, evaporation and cooking pans, heat exchangers, pumps and valves

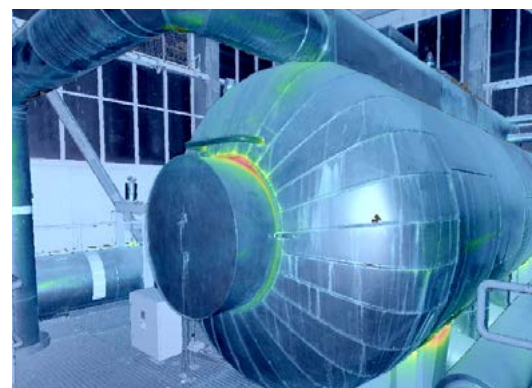
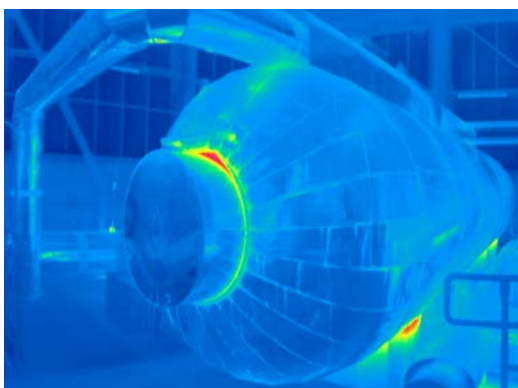
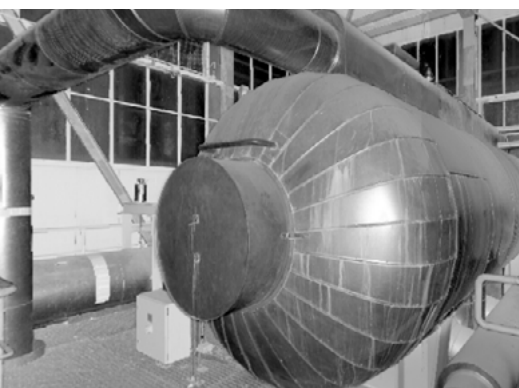
After the TIPCHECK

Saved **8.200 MWh** of energy per year

Saved **€37.000** per year

Payback time about **2 years**

CO₂ emission reduction potential **1.400 t/year**



Structure and contents TIPCHECK Training Package

Since 2010 EiiF has trained more than 200 professionals from some of Europe's most successful insulation related companies.

Our courses are designed to give a competitive advantage: attendees gain the skills, knowledge, and insights to better understand the principles of heat loss calculations and the organisation of an EN 16247/ISO 50002 aligned and standardized thermal energy audit.

Besides the training offers an inspiring and fruitful interaction with some of the best experts and technical insulation professionals: all courses are practical, and 'hands-on', taught by industry experts, in a collaborative and open environment enabling industry peers to exchange ideas and knowledge.

COURSE CURRICULUM

1. About EiiF and TIPCHECK

2. TIPCHECK training & simulation

- › TIPCHECK marketing & sales
- › TIPCHECK execution and project management (EN 16247/ISO 50002)
- › How to measure (incl. an introduction to thermography)
- › How to calculate heat losses with the TIPCHECK calculator software
- › Rules of Thumb to quickly estimate saving potentials
- › How to write and present a TIPCHECK report

3. TIPCHECK insulation theory

- › Thermal conductivity and basic principles of heat loss calculations
- › Insulation materials and their application (overview)
- › Processes & components offering saving potentials

4. TBI introduction

- › TBI-App and TBI-Software - introduction
- › How to perform a TBI Inspection
- › How to generate and present a TBI-Report

5. Guided tour: FIW München laboratories

TRAINING COURSE FEATURES

- › Face-to-face interactive training
- › Complete simulation of a TIPCHECK
- › Practical workshops
- › Small class sizes
- › Industry professionals as trainers
- › Checklists, guidelines and templates

BENEFITS FOR TIPCHECK ENGINEERS

- › TIPCHECK Calculator licence
- › TIPCHECK Creator & Viewer
- › TBI-Software annual licence
- › Post-training technical support
- › Regular online refresher trainings



Candidates who successfully complete the programme and pass the final exam also receive the **TIPCHECK engineer certificate**



WHO CAN ATTEND?

Our training is open to all industrial businesses - from small businesses to large corporations - and are designed for:

- insulation experts with at least 2 years of experience in industrial insulation projects
- asset owners and their senior management, their sustainability and environmental staff, operations and facilities managers
- certified energy auditors and energy managers
- consultants

Our courses are also suitable for energy efficiency service providers, industry associations, business groups, local councils and non-profit organisations.

REQUIREMENTS & TITLES

TIPCHECK assistant

An engineering degree or similar. Ability to calculate and design industrial insulation systems. No previous insulation experience is required.

TIPCHECK engineer

An engineering degree or similar. Ability to calculate and design industrial insulation systems. At least 2 years of insulation experience.

TIPCHECK senior engineer

A TIPCHECK engineer who participated in TIPCHECK Refresher courses, has more than 7 years of insulation experience and did at least 3 big or 5 small TIPCHECKs.

TIPCHECK Ambassador

Sales and marketing specialists of EiiF Member companies who are joining either the engineer or a tailored communications and sales training.

TIPCHECK auditor

TIPCHECK trainings are also open to non - EiiF members if candidates are certified energy auditors, certified energy managers or employees of an energy-related department of insulation users.

TIPCHECK Expert

The TIPCHECK Expert trainings are aimed at energy managers or equivalent of companies who want to use TIPCHECK internally.

	TIPCHECK assistant	TIPCHECK engineer	TIPCHECK senior engineer	TIPCHECK Ambassador	TIPCHECK auditor	TIPCHECK Expert
EiiF Member	●	●	●	●		
Ability to calculate and design industrial insulation systems	●	●	●			
Insulation experience		≥ 2-4 years	≥ 7 years			
Engineering degree or similar	●	●	●			
TIPCHECK course	● with final exam	● with final exam	● with final exam	●	● with final exam	● with final exam
TIPCHECK experience			3-5 TIPCHECKs			
Refresher course			●			



TIMETABLE EXAMPLE: DAY # 4

TIME	SUBJECT	DESCRIPTION
08.00-08.45	Theory	Economics
08.45-09.45	Theory	Insulation materials
09.45-10.00	Coffee Break	
10.00-11.00	Practice	FIW laboratory: Materials and testing
11.00-12.00	How to TIPCHECK	Step 5: Analysis, solutions and costs
12.00-12.45	Lunch Break	
12.45-13.30	How to TIPCHECK	AGI Q 07 Inspection intervals
13.30-14.30	How to TIPCHECK	TIPCHECK Calculator
14.30-14.45	Coffee Break	
14.45-15.30	How to TIPCHECK	TIPCHECK Creator & Viewer
15.30-16.30	How to TIPCHECK	Steps 6 and 7: Writing the TIPCHECK Report and presentation
16.30-17.00	General	Open questions

TRAINING

5-day training schedule
Monday to Friday

Location
FIW München Laboratories
Lochhamer Schlag 4
D-82166 Gräfelfing, GERMANY

Training fee
2.500 EUR (TIPCHECK engineer, assistant, Expert, auditor)
1.500 EUR (TIPCHECK Ambassador)*



Upcoming courses
Check the dates of the next TIPCHECK Training courses
www.eiif.org/agenda



Book your place
Download the TIPCHECK Registration Form or email tipcheck@eiif.org

* The TIPCHECK ambassador participation is designed for sales and marketing specialists of EiiF Member companies who are joining the training together with one or more engineers from the same department / company.





WE POWER SUSTAINABILITY

The European Industrial Insulation Foundation (EiiF) is an international Foundation headquartered in Switzerland.

As a neutral and non-profit institution, it promotes insulation as a top-of-mind method of enhancing sustainability and profitability.

Since its foundation, the EiiF has established itself as a resource for industries that need to reduce CO₂ emissions and save energy. Its programme raises awareness of the growing, much needed multiple benefits of insulation.

The EiiF was established in 2009 by 12 Founding Partners. Nowadays, it comprises more than 50 leading industrial insulation companies from global player size to small and medium-sized companies.



EiiF Membership

See here which companies have already joined the EiiF network:

www.eiif.org/members



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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Visit: www.eiif.org



► **TIPCHECK**

EiiF's energy auditing programme to evaluate the performance of industrial insulation systems:

www.eiif.org/tipcheck

► **TBI Tools**

EiiF's insulation self-inspection and reporting tools to quickly check technical insulation systems:

www.eiif.org/tbi