



TIPCHECK

INSULATION SYSTEM – ENERGY EFFICIENCY – COST OPTIMISATION

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TIME TO ACT

Climate change, scarce resources, energy efficiency and CO₂ reduction are buzzwords that are not just hotly debated in politics and society, they also affect every modern industrial company.



“In the international energy market, prices are rising, dependence on energy imports is growing and energy resources are becoming scarce. Meanwhile, the Swiss Federal Office for the Environment has set the overall strategic goal of reducing annual CO₂ emissions per inhabitant to between 1 and 1.5 tonnes with the first package of measures in the Energy Strategy 2050. This means that energy efficiency and CO₂ reduction will continue to grow in importance in the years to come. To accompany our customers in this process, we assist them by setting up and converting their plants into optimally energy-efficient manufacturing sites. By doing so, we create industrial plants that are modern, economical to operate and competitive, providing employment security. The modern insulation of process plants has immense potential for saving energy and reducing CO₂ emissions.”

Stefan Frefel, CEO
Bilfinger Industrial Services Schweiz AG



“The purpose of industrial insulation is not only to facilitate the flow of processes. It is also of considerable economic and ecological importance. It makes a major contribution to saving heat and energy losses and reducing greenhouse gas emissions. Installing the right insulation is a simple, effective and yet cost-effective way of increasing energy efficiency. Insulation measures in technical plants often repay their investment costs within just a few months – and the same is true in your company. We will be happy to advise you and develop the best and most economical solution for your individual requirements, working closely with you”.

Sven Ewert, Subsidiary Manager, Insulation Technology
Bilfinger Industrial Services Schweiz AG

ENERGY LOSSES

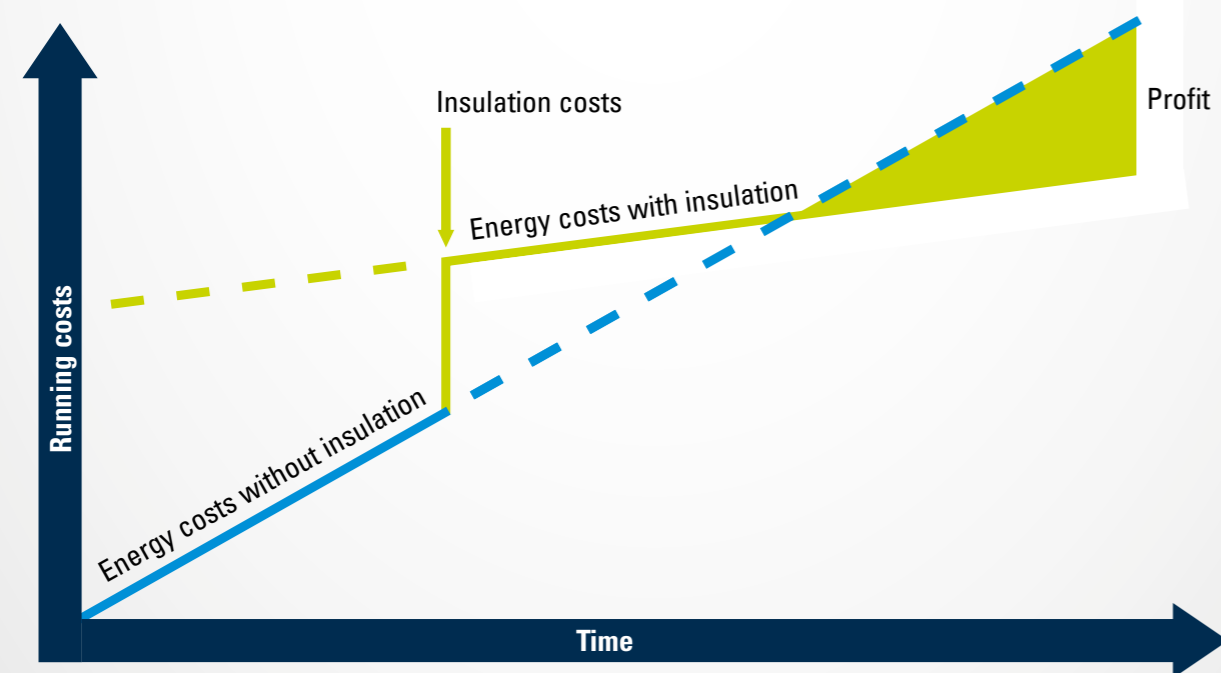
Today, no business can afford to squander precious energy due to inadequate insulation. This means making the right investments in optimising or, where necessary, or purchasing new insulation.

One of the determining factors in the corporate decision about implementing insulation services is an economic one – the thickness of the insulation. This includes the one-off investment costs for the installation of the insulation and the annual reduction in heat loss costs over the life of the system.

The economic insulation thickness can also be calculated by our TIPCHECK engineers for a specific time period, so that the calculation is based on a fixed amortisation period.

As the diagram clearly shows, insulation immediately contributes to reducing energy costs and is therefore an effective energy efficiency measure in industrial plants.

Additionally, improved insulation in your plant can reduce CO₂ emissions. Whereas other solutions are often very costly, according to a McKinsey study improved insulation can even save money due to energy optimisation after the initial installation.



ENORMOUS POTENTIAL

It is high time that companies brought their insulation systems up to date, because the market is changing.

The EiiF study conducted in 2019 calculated the potential annual savings from improved industrial insulation in Swiss industries at around 5 petajoules – equivalent to 1,389 GWh and 400,000 tonnes of CO₂ per year.

The energy saved could be used to power 85,000 households a year (18,000 kWh per household per year). The CO₂ that is saved annually corresponds to the annual consumption of 230,000 passenger cars (at 12,000 km per year and 150 gr CO₂ per km).

GOOD FOR THE CLIMATE & THE BUDGET

What benefits does the sustainable insulation of industrial plants really bring, and where are the greatest areas of potential? Examples of successful projects show the cost-effective measures that save energy and reduce costs in the long term.

In a chemical plant, the thermographic inspection carried out as part of an EiiF TIPCHECK (see p. 4) revealed that the insulation on 35 tank roofs was missing, even though hot liquids were being stored in the tanks at 150° Celsius. The operator invested around 100,000 euros to retroactively insulate the roofs.



Annual cost savings:
500,000 euros
Annual energy reduction:
12,600 MWh

As part of maintenance work in a refinery, the insulation on a distillation tower was newly fitted according to economic criteria. Based on the calculations of the EiiF TIPCHECK engineer, the thickness of the insulation layers was doubled.



Annual cost savings:
75,000 euros
Annual energy reduction:
2,020 MWh

Bilfinger Industrial Services employees calculated the savings potential for a customer from the process industry in the Netherlands by effectively insulating valves, flanges and steam pipelines. As well as heat losses, our engineers also pointed out burn hazards that the operator was unaware of.



Annual cost savings:
23,700 euros
Annual energy reduction:
950 MWh



TIPCHECK

Energy efficiency pays for itself – Bilfinger Industrial Services, together with the EiiF and its member companies, has launched TIPCHECK as an independent, Europe-wide standardised energy efficiency consulting programme for industrial insulation.

BUSINESS KNOWLEDGE

The TIPCheck has already been carried out at the öko energie AG wood mill. Steam collectors, cascades, feedwater tanks, valve stations and other equipment were inspected, evaluated and insulated.

At the premises of the customer öko energie AG, a wood mill in Uri, a total of 35 insulation measures were implemented. The amortisation period was less than six months.

After the actual situation had been captured, evaluated and agreed with öko energie AG, the customised insulation was installed. The results speak for themselves: Annual energy savings of 178,070 kWh and cost savings of CHF 17,807.

Annual savings of:
 - 6 tonnes of CO₂
 - Equivalent to 15,000 litres of fuel oil
 - 178,070 kWh and CHF 17,807.-

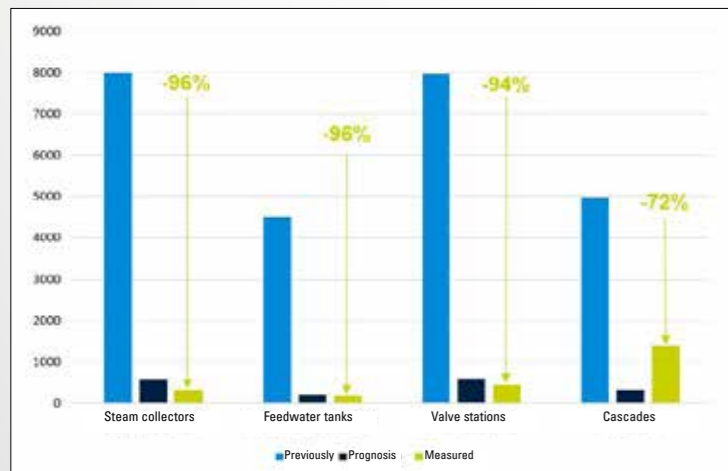
TIPCHECK stands for Technical Insulation Performance Check. A TIPCHECK examines and analyses the following areas:

- energy-saving potential
- options for improvements to processes
- increased efficiency
- minimisation of energy costs
- contribution to environmental protection through reduced CO₂ emissions
- detection of burn hazards in walkway zones and hence enhanced safety

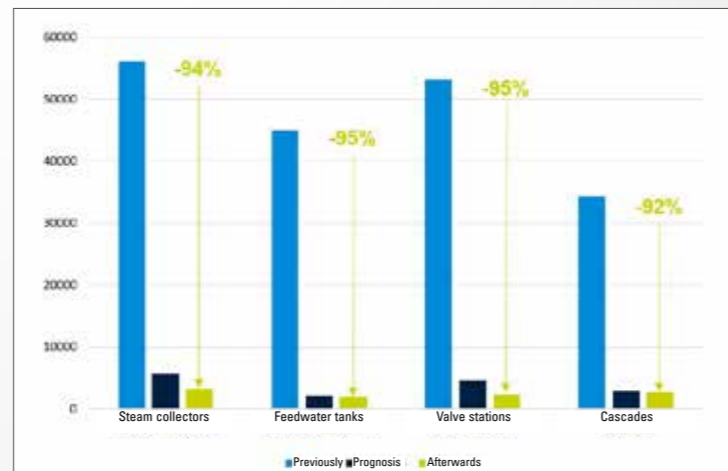
Energy audits are carried out by EiiF-certified TIPCHECK engineers who have specifically trained for the TIPCHECK. They identify inadequate, damaged or non-insulated components and calculate their potential for energy savings as a result of insulation. The purpose of a TIPCHECK is to identify the optimum solution for the plant operator, i.e. providing an energy-efficient, economically viable insulation solution.

To become a certified TIPCHECK engineer, you must have more than four years of professional experience in the insulation industry. Training covers material science, especially insulation materials and cladding, heat loss calculation and amortisation, process engineering, specialisation and user training in thermography.

Our TIPCHECK-certified engineers will be pleased to assist you in reducing your energy consumption and consequently your operating costs.



Effective annual cost savings



Effective annual energy savings

TIPCHECK 

HOW YOU BENEFIT

In addition to the opportunities for increasing energy efficiency, the TIPCHECK process can also be used to detect safety risks such as contact protection. A TIPCHECK not only saves on energy and costs, but also increases your plant's availability.

AN ONSITE TIPCHECK AT YOUR LOCATION INCLUDES:

1. Discussion with the plant operator

Relevant plant details are requested, a contact person within the plant is named and specific safety measures are clarified.

2. Recording of the current situation

Current insulation on pipes, vents and containers including thermal bridges is recorded directly in the system. Thermal imaging cameras, surface sensors and humidity sensors for refrigeration systems are used to take measurements.

3. Evaluation and calculation of current heat losses

Operating parameters and the data measured are transferred into our thermal calculation program and a report is created for each component of the plant inspected, including a report on thermal bridges. Summary of results and list of the total heat loss measured.

4. Development of proposed improvements

Proposals for optimisation such as subsequent insulation, disassembly and reassembly of insulation with changed insulation strengths, or reduction of thermal bridges through appropriate insulating systems are checked and evaluated. This is followed by amortisation calculations.

5. Handover and presentation of results

The TIPCHECK report is handed over and explained in detail.

This means that a TIPCHECK does not merely include a calculation relating to the current status, but also provides a reliably calculated forecast that indicates the savings to be made through optimised insulation.

When should we help you to stem the flow of your energy losses?

Our certified TIPCHECK engineers will be pleased to provide you with an estimate for carrying out this engineering service.

TIPCHECK REPORT

The detailed report presents you with the actual/target situation for each thermographed component and hence for your entire plant.

This means that our TIPCHECK engineers are able to make exact calculations of potential savings, make recommendations and calculate the potential CO₂ savings.

The report delivers conclusions:

- Current heat loss
- Optimised heat loss
- Energy-saving potential
- Cost effectiveness
- Amortisation





EXPERTISE DECIDES

At Bilfinger, we make every effort to continuously adapt our products and services to the meet the latest technological standards so that we can offer you optimum services and solutions.

Bilfinger Industrial Services is a founding member of the European Industrial Insulation Foundation (Eiif). The charitable foundation is committed to the international use of sustainable insulation systems in industrial plants and environments, with the aim of saving energy and reducing CO₂ emissions.

The foundation's primary concern is to promote the potential of sustainable insulation solutions to decision-makers from business and politics and to instigate energy efficiency projects. Energy efficiency is a kind of "fifth source of fuel" – but despite the demand for an environmentally friendly and sustainable energy supply, this is still frequently ignored.

These initiatives are not just a matter of our identity as a qualified service provider, they also specifically benefit our customers. This enables both us and our employees to ensure the highest quality in accordance with the currently valid DIN, AGI and VDI regulations and your individual factory standards. We produce insulation both for new construction projects and conversions and for repairs and maintenance, i.e.

PHARMACEUTICAL INDUSTRY
FOOD INDUSTRY
PETROCHEMICAL INDUSTRY
CHEMICAL INDUSTRY
PRODUCTION INDUSTRY
PAPER INDUSTRY
POWER PLANTS



Interview with Andreas Gürtler,
Foundation Director of the European
Industrial Insulation Foundation (Eiif)

Mr Gürtler, what are the aims of the Eiif?

A. Gürtler: Our aim is to demonstrate the potential savings to be achieved by insulating industrial plants and provide solutions.

In the Government's Energy Saving Ordinance (EnEV) there are clear directives for action. Why is there also a need for a foundation?

A. Gürtler: EnEV, as it is known, applies first and foremost to buildings. Quite simply, there is no corresponding regulation that applies to industrial plants. As well as this, up to now companies have had little opportunity to find out from a neutral source how they can save energy in the most efficient way.

How do you demonstrate the potential benefits?

A. Gürtler: We use best practices and our EU study, which we commissioned from the reputable Ecofys Institute, to prove them. The results unambiguously demonstrate the large amounts of CO₂ that could be avoided in industry. (Please note: see page 4).

“ MAJOR SAVINGS AS A RESULT OF INSULATING INDUSTRIAL PLANTS ”

TIPCHECK engineers are certified by the Eiif. What makes them special?

A. Gürtler: TIPCHECK stands for Technical Insulation Performance. Usually, TIPCHECK engineers have a degree in engineering and a minimum of four years' professional experience in the industry. They are trained by international experts on the basis of a Europe-wide standardised procedure and are able to analyse the savings potential of industrial plants impartially. They devise economically viable insulation solutions to help companies reduce their CO₂ emissions and save energy and costs in the long term.

Does it make sense for industry to invest in insulation in view of the enormous competitive pressure on individual companies?

A. Gürtler: The very rapid amortisation periods of under a year or even just months in some cases mean that this economical and energy-efficient insulation solution is a clear competitive advantage for any company, reducing overall operating costs as well as protecting the environment. A logical “imperative” for responsible operating companies.

So do the companies that have commissioned a TIPCHECK view it that way?

I can answer that question with a resounding “yes”: our certified TIPCHECK engineers have carried out over 300 TIPCHECKs. It is worth noting that in around 95% of the plants we inspected, we also found potential for making economically viable savings. Consequently, 3 out of 4 TIPCHECK customers immediately invested in the measures that were recommended.

Andreas Gürtler is the Foundation Director of the European Industrial Insulation Foundation (Eiif). He was instrumental in setting up the foundation.

More information about the Eiif online: www.eiif.org



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