Improvement of energy efficiency in heat production and distribution

Ernestas Abromas
ROCKWOOL Technical Insulation
ROCKWOOL
Technical Insulation

- Global producer of stone mineral wool
- Key segments:
  - Process industry
  - Marine & offshore
- Mission - To be your trusted partner and strengthen market leadership by offering:
  - innovative products
  - systems & solutions
  - partnership & service
The reasons for using insulation

**Stone wool insulation is a proven technology that:**

- Increases personal protection
- Improves working conditions (noise reduction)
- Reduces heat loss
- Raises the equipment effectiveness
- Limits the emissions (CO₂)
- Improves energy efficiency
Focus on insulation
Energy efficiency

- One of the most important keys to a low carbon future is **energy efficiency**
- Improvement of energy efficiency can be done by investing in high tech solutions as:
  - Cogeneration of heat & electricity
  - Heat recovery
  - Process optimization & automation
- Or **reducing the heat loss to a minimum**
- The **potential energy and CO₂ savings by using an existing ready solutions like insulation is not fully recognized yet**
The hidden potential

- Many installations have **30-year old insulation**
- **Heat losses** are greater than **150 W/m²**
- **Leaking insulation cladding**, in addition to unexpected loss of energy, can cause **corrosion**
- **Lack of insulation** on fittings and valves, increasing **energy costs**
- In many cases the insulation is not promptly and properly maintained, simply because it’s **not considered a risk or cost effective**
Heat losses from damaged insulation can be up to 8 times greater.

LP Steam pipe T 250°C: Pipe Diameter: DN80 (3inch), Ambient, temp.: 10°C, Energy costs: 0.03 EUR/kWh, Length=10km, static calculation.
Potential insulation effect

- Heat loss over surface without insulation and surface with damaged insulation
- Heat loss over insulated surface

- 620 PJ, 49 Mt CO₂ (Cost-effective insulation levels)
- 710 PJ, 56 Mt CO₂ (Energy-efficient insulation levels)

Current typical insulation practices

Heat loss in PJ per year

-66% reduction

-75% reduction
Potential gain of an insulated valve

- Steam pipe 220°C
- Pipe diameter DN 150
- Located outside 20°C
- Average wind conditions

- Annual energy losses without insulation 2900 €
- Annual savings with insulation 2300 €
- Improvement of energy efficiency 80%

- Payback time < 2 months
- Insulation cost ~200 €

Source: Nederlands Centrum Technische Isolatie
How to tap the potential?

- **Inspect & repair**: Insulate uninsulated and damaged parts

- **Go all the way**: Consider insulating today beyond today's cost-effect levels to be prepared for the future

- **Get the knowledge**: Involve insulation experts during the design phase

*The lowest hanging fruit*
Technical support
IR camera

An infrared camera allows to pre-identify potential overheats, lack of insulation under cladding, temperatures exceeding personal protection.
Heat transfer measurement

- Heat losses estimation
- Analysis of thermal energy flow paths
- Measurements made by a certified engineer
- The results and observations presented in the Energy Inspection Report
Calculation program

- Wide range of calculation options
- Simultaneous calculations in a single step
- The inclusion of thermal bridges associated with the insulation and installation
- Automatically recommends the most optimal product solution
- Calculation of CO₂ reduction and savings from insulation
- Calculations in conformity with the regulations: VDI 2055 and EN ISO 12241
Summary

As professionals, we strive for the best possible result. Our goal is to provide information taking into account the latest technical advances and follow market trends. Beside the sale of technical mineral wool products we offer also:

- Design and selection of insulation
- Energy inspections
- Technical consultancy
- Training

Please contact us: www.rockwool-rti.com