PITTSBURGH CORNING ENERGY ANALYSIS
AND INSULATION THICKNESS CALCULATIONS

FOAMGLAS®

Pittsburgh Corning

ENERGY ANALYSIS CALCULATIONS

Insulation thickness calculations

Insulation thickness may vary significantly for different applications – heat conservation, heat gain control, condensation prevention and personnel or fire protection can all have different requirements.

Calculating the correct thickness of insulation is complicated by local conditions – high humidity, extremes of temperature or wind, as well as by the choice of jacketing materials. Below ground applications bring additional complications.

The wide range of possible parameters which need to be considered means that expert assistance is often required in making reliable insulation thickness calculations.

Experience and expertise

Pittsburgh Corning has used well over seventy years of insulation experience to develop a unique suite of tailored energy analysis calculation programs, unrivaled in the industry. You can be sure that the correct FOAMGLAS® insulation design values will be used, and uncertainty about calculation methods is removed.

Our Technical Services systems engineers will work with you to determine the appropriate FOAMGLAS® insulation thickness, perform energy analyses and provide you with the optimal insulation solutions for your applications.

Applicable standards

Calculations are performed in accordance with national and international standards including ASTM C680, ISO 12241, ISO 13787, ISO 23993, VDI 2055, etc.

Energy Surveys

A Pittsburgh Corning Energy Survey will help detect system deterioration, equipment failure, and safety violations, so that you can take action before these become real problems.

The Energy survey results will be compared with our Energy Analysis results to give quantifiable recommendations in our Energy Analysis Report to empower you to improve your plant performance and safety.

Energy Analysis

Our Technical Service engineers will prepare Energy Analysis Reports in accordance with ASTM, EN, VDI or ISO standards to calculate:

- Insulation thickness for condensation prevention
- Insulation thickness to achieve heat gain or heat loss targets
- Insulation thickness for personnel protection
- Heat flow rates
- Heat transfer coefficients
- Temperature drop along flowing or static pipes
- Insulation thickness to delay freezing in flowing or static water pipes and equipment
- Heat gain / heat loss for buried pipes and through tank bases
- Operational energy losses
- Steam quality
- Emission reductions
- Effects of air gaps
- Fire protection simulations

Our Energy Analysis reports will enable you to be confident about the thickness of insulation required to maximize your facility's process system performance, energy efficiency and safety.

They will give you the benchmark of how your system should, or could, be performing.

Our professional engineers will work with you to achieve the best insulation solutions for your process applications.

Our specialist programs and experience mean that we can perform Energy Analysis calculations for many scenarios.

Condensation prevention is not possible for every situation but we will calculate the insulation thickness required for a given set of parameters including process temperature, ambient temperature/wind speed/relative humidity, surface emissivity/emittance and pipe/vessel size.

Heat flow rates can be calculated to show how **heat gain/loss control** can be achieved. The information required to make the calculations will include process temperature, ambient temperature/wind speed, surface emissivity/emittance and pipe/vessel size.

Heat gain/loss from buried pipes and through tank bases can also be calculated and requires additional information about the ground conditions and soil type.

Temperature drops along flowing or static pipes can be calculated provided that the fluid properties such as specific heat capacity, density, flow-rate are known in addition to the process temperature, ambient temperature/wind speed, surface emissivity/emittance and pipe size.

Insulation thickness to delay freezing in flowing or static water pipes and equipment can also be calculated.

Personnel protection from hot or cold surfaces is mandatory in many jurisdictions and the insulation thickness required can be calculated based on process temperature, ambient temperature/wind speed, surface emissivity/emittance and pipe/vessel size.

Steam outlet conditions and pressure drop, entropy and enthalpy losses can be modeled.

Energy saving and emission reduction calculations can be performed to help you to justify improving your ecological performance.

Fire protection simulations for UL1709, ASTM E-119, EN 1363-1, EN 1363-2 can be performed with calculations of the required insulation thickness for various fire conditions.
.
API 521, NFPA 30 and ISO 23251 guidance on use of FOAMGLAS® insulation to reduce heat input from fire exposure.

Our engineers understand that not all data on process or ambient conditions will always be available and we will assist you to make appropriate estimations.

Note: third-party thickness calculation software such as 3E Plus® is not supplied with correct design values for FOAMGLAS® insulation. Please consult Pittsburgh Corning Technical Services.

The Energy Analysis Report

The Energy Analysis Report will provide you with the information necessary to design new systems or re-evaluate existing process systems.

When the Energy Analysis Report is brought together with the infrared imaging, heat-flow measurements, and visual observations from a Pittsburgh Corning Energy Survey then you will be provided with a health report on your process pipework and equipment insulation which will clearly indicate areas where action can be taken to reduce energy consumption and to protect insulation integrity.

FOAMGLAS® - insulation that pays its own way

Pittsburgh Corning can use the results of the Energy Analysis and Energy Survey to estimate the payback period for your insulated systems. This period can be as brief as just two years.

FOAMGLAS® insulation is 100% inorganic and the only insulation with a zero permeability rating:

- The insulation that stays driest to resist development of corrosion under insulation
- The most effective insulation to prevent condensation problems and costly repairs
- The best insulation to prevent mold and mildew buildup
- The only cellular insulation to prevent both fire and smoke propagation
- Constant insulating efficiency and process temperature control over time

FOAMGLAS® insulation has undisputed performance, unmatched versatility, and high comprehensive strength and is the only reliable choice to give you peace of mind for your facility.

Request your Pittsburgh Corning Energy Analysis Report and find out how insulating with FOAMGLAS® insulation can pay for itself in as little as two years.

FOAMGLAS®

Pittsburgh Corning

Pittsburgh Corning Corporation

Global Industry Headquarters
800 Presque Isle Drive
Pittsburgh, PA 15239 USA

For web-based Sales and Technical Service inquiries,
please visit www.foamglas.com

To contact by phone or email:
Technical Services

Americas & Asia Pacific
+1 800 327 6126
Foamglastechnical@pghcorning.com

Europe, Middle East & Africa
+32 13 611 468
Industrytechnical@foamglas.com

SCAN FOR THICKNESS CALCULATIONS

http://www.industry.foamglas.com/en/industry/services/technical_services/insulation_thickness_

FI-330 Rev. 12/16