C-COAT™
THERMAL INSULATING COATING SYSTEMS

To: XERVON Oberflächentechnik GmbH
Standort Bottrop
Schürmannstr. 2b, 46242 Bottrop, Deutschland

Re: **C-COAT Energy Saving coating System for processing plant walls and pipes**

Introduction:

C-COAT Insulation Australia Pty ltd is the worldwide leading supplier of cutting-edge Thermal Insulating Coating (TIC) systems and Fire Resistant Coating with a vision to make the world a better place by supplying revenue-positive systems to reduce energy usage and protect people, property and the environment.

This Australian-owned formulation, originally developed for the space industry and fine-tuned over several years, is created and produced by our innovative R&D team of professionals including engineers, physicists, technologists, chemists and our dedicated support staff.
C-Coat products are ideal for use in residential, commercial and a range of industrial settings such as process and petrochemical plants, gas and hot liquids pipelines, transport, marine, mining, aerospace and defence.

Saves on heating and cooling costs, reduces building maintenance by improving the insulating capacity of the building envelope, C-COAT reduces your energy bills and complements results proposed by solar and wind power systems.
In addition C-COAT has a unique ability to produce a 'safe-to-touch' finish when applied over hot metal surfaces, which helps prevent skin burn injuries.
C-COAT is a revolutionary new and modern generation of water-based energy-saving TIC system, water resistant, blocks condensation, protects against rust, decreases vibration and noise, is non-expanding, UV stable and comes with fire-resistant options.

Project description:

The project involves a number of 150m^2 areas that need to be inulated to save energy.
Industrial process plant wall panels should be protected and we proposed few options:

A) C-COAT System cosistant of TIC 300HH **2.0mm** (Winter and Summer)

B) C-COAT System cosistant of TIC 300HH **3.0mm** (Winter and Summer)

On following pages please find support details and attchements for review.

Kind regards,

Date: 16/06/2023

Signature:_____

Serge Popovich
DIRECTOR

C-COAT INSULATION AUSTRALIA PTY LTD
ABN 40 633 636 610

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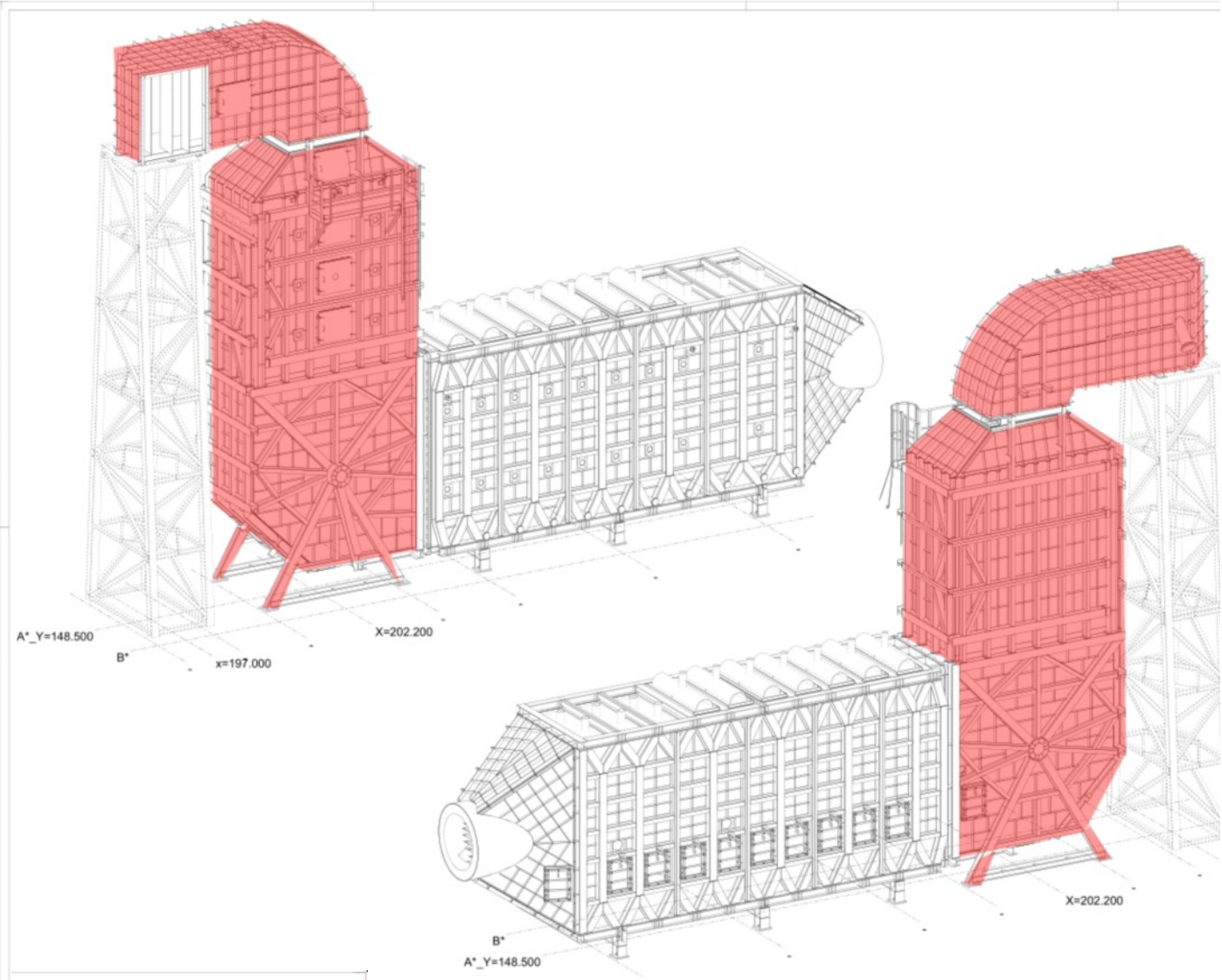
The Industrial process plant that requires energy savings - actual plans



ALGEMEIN

Referenz

38-0.04405-20
38-0.04406-20

PROJEKT STANDARDS

Herstellung Stahlkonstruktion:	nach DIN-EN 1090-2
Materialen:	nach DIN-EN 10025-1:2004
Wenn nichts anders angegeben	
Liegender Kanal:	S235JR
Eckteil:	16Mo3
Stehendes Kanal:	16M03
Verbindungskanal:	16M03
Befestichungelemente:	nach DIN-EN-ISO 898-1 Feuer verzinkt
Schrauben:	ISO 4014 / ISO 4017
Muttern:	ISO 4032
Scheiben:	ISO 4089 (2x unter Schraube/Mutter)
Schweissen:	nach DIN-EN-ISO 3834
Standard Schweissnaht:	a=4
Schweissnaht Rippe:	Unterbrochen 100/100 gestaffelt Ohne Endkrater Materialenden müssen umschweisst werden

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C-COAT applied over the Wall Panels and Hot Steam Pipes in a processing plant - EU

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Support Test Certificates: Compliance to AS 1530.3 showing Spread of Flame and Smoke

C-COAT T250 TIC = **3.0 mm**

Test: **IGNL-4122-03-01C I01R00**

Test Certificate **AS 1530.3**

Test Results achieved: **SF(-) & SD(1)**

ignis labs

CERTIFICATE

Material Fire Test Certificate

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Calculation of energy efficiency depending on C-COAT insulation thickness

OPTION Reference: Plain substrate with no insulation - Type: above ground

Length of the pipeline: 150 m
Wall thickness: 6 mm.
Environment: air with temperature**: 6 °C** ***(+21°C)*** and wind speed: 10 m/s
Thermal conductivity coefficient: 54.4 W / (m * K). Number of insulation layers: 0.
insulation thickness of the layer: **no insulation.**
Coefficient of local heat losses: 1. Coolant consumption: 0 t/h, temperature: 270°C

--- Program calculation result ----------
Temperature on the surface of the pipeline: +269°C
Temperature on top of the insulation: n/a °C
Total heat transfer coefficient: 33.74 W / (m2 * K)
Including components: alpha_con + alpha_rad = 11.6 + 7 (W) ^ 0.5 = 33.74
Thermal resistance of the pipeline: 0.0022 (m * K) / W
---------- Total: 0.278 (m * K) / W.

Specific heat loss in the selected cross section: **1,218,500 W/m** **(1,149,300 W/m)**
Coefficient of insulation efficiency of the above-ground pipeline to the selected cross section: 0 %

OPTION A WINTER: 2.0 mm of C-COAT 300HH Thermal Insulating Coating

Length of the pipeline: 150 m
Wall thickness: 6 mm.
Thermal conductivity coefficient: 54.4 W/(m*K). Number of insulation layers: 1.
Insulation thickness of the 1st layer: **2.0 mm** with thermal conductivity coefficient: 0.0012 W/(m*K)
Environment: air with temperature: **6°C** (winter)
Local heat loss coefficient: 1. Heat carrier consumption: 0 t/h, temperature: 270° C

--- Program calculation result ----------
Temperature on the surface of the pipe: 269.5 °C
Temperature on the layer of insulation: 131.5 °C
Therefore, the numerical components are: alfa_con+alfa_rad= 11.6+7(W)^0.5= 33.74
Calculated thermal conductivity coefficient of the 1st layer: 0.06128 W/(m*K)
Thermal resistance of the pipeline: 0 (m*K)/W
Thermal resistance of the 1st layer: 0.0024 (m*K)/W
Thermal resistance from insulation of the surface to the environment: 0.0022 (m*K)/W
----------Total: 0.005 (m*K)/W
Total pipeline heat loss: 581,850 W

Insulation efficiency coefficient: 52.25%

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OPTION A SUMMER - 2.0 mm insulation of C-COAT 300HH Thermal Insulating Coating

Length of the pipeline: 150 m
Wall thickness: 6 mm.
Thermal conductivity coefficient: 54.4 W / (m * K). Number of insulation layers: 1.
Insulation thickness of the 1st layer: **2.0 mm** with thermal conductivity coefficient: 0.0012 W/(m*K)
Environment: air with temperature: **21°C** (summer)
Local heat loss coefficient: 1. Heat carrier consumption: 0 t/h, temperature: 270° C

--- Program calculation result ----------
Temperature on the surface of the surface: 269.6 C
Temperature on the 1st layer of insulation: 140.7 C
Total heat transfer coefficient: 33.74 W/(m2*K)
Including components: alfa_con+alfa_rad= 11.6+7(W)^0.5= 33.74
Calculated thermal conductivity coefficient of the 1st layer: 0.06264 W/(m*K)
Thermal resistance of the pipeline: 0 (m*K)/W
Thermal resistance of the 1st layer: 0.0023 (m*K)/W
Thermal resistance from insulated surface to environment: 0.0022 (m*K)/W
----------Total: 0.004 (m*K)/W
Total pipeline heat loss: 555,230 W

Insulation efficiency coefficient: 51.69%

OPTION B WINTER - 3.0 mm insulation of C-COAT 300HH Thermal Insulating Coating

Length of the pipeline: 150 m
Wall thickness: 6 mm.
Thermal conductivity coefficient: 54.4 W / (m * K). Number of insulation layers: 1.
Insulation thickness of the 1st layer: **3.0 mm** with thermal conductivity coefficient: 0.0012 W/(m*K)
Environment: air with temperature: **6°C** (winter)
Local heat loss coefficient: 1. Heat carrier consumption: 0 t/h, temperature: 270° C
--- Program calculation result ----------
Temperature on the surface of the surface: 269.6 C
Temperature on the 1st layer of insulation: 100.7 C
Total heat transfer coefficient: 33.74 W/(m2*K)
Including components: alfa_con+alfa_rad= 11.6+7(W)^0.5= 33.74
Calculated thermal conductivity coefficient of the 1st layer: 0.05664 W/(m*K)
Thermal resistance of the pipeline: 0 (m*K)/W
Thermal resistance of the 1st layer: 0.0038 (m*K)/W
Thermal resistance from insulated surface to environment: 0.0022 (m*K)/W
----------Total: 0.006 (m*K)/W
Total pipeline heat loss: 439,240 W

Insulation efficiency coefficient: 63.95%

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OPTION B SUMMER - 3.0 mm insulation of C-COAT 300HH Thermal Insulating Coating

Length of the pipeline: 150 m
Wall thickness: 6 mm.
Thermal conductivity coefficient: 54.4 W / (m * K). Number of insulation layers: 1.
Insulation thickness of the 1st layer: **3.0 mm** with thermal conductivity coefficient: 0.0012 W/(m*K)
Environment: air with temperature: **21°C** (summer)
Local heat loss coefficient: 1. Heat carrier consumption: 0 t/h, temperature: 270° C
--- Program calculation result ----------
Temperature on the surface of the surface: 269.7 C
Temperature on the 1st layer of insulation: 112 C
Total heat transfer coefficient: 33.74 W/(m2*K)
Including components: alfa_con+alfa_rad= 11.6+7(W)^0.5= 33.74
Calculated thermal conductivity coefficient of the 1st layer: 0.05845 W/(m*K)
Thermal resistance of the pipeline: 0 (m*K)/W
Thermal resistance of the 1st layer: 0.0037 (m*K)/W
Thermal resistance from insulated surface to environment: 0.0022 (m*K)/W
----------Total: 0.006 (m*K)/W
Total pipeline heat loss: 422,140 W

Insulation efficiency coefficient: 63.27%

NOTE:

As we are not completely sure about the actual (150m^2) surface in m^2 and the number of vessels please use the following formula to calculate the required volume of C-COAT depending on selected thickness.

A) We suggest use of C-COAT 300HH modification (temperature resistance 300^{o}C)
B) The coverage formula is: 1.4Lit/m^2 for 1.0mm thickness and we suggest to add 10-20% for over-spray and/or waste when applying with airless Spray gun equipment equivalent to GRACO 795 Mark II

AREA [m^2] x 1.4 [Lit/m^2] x 1.2 [over-spray] x Thickness [mm] = [Lit] of C-COAT 300HH

After deriving the total amount of Lit required please send your volume request to us for supplying you with volume based discount for your project.

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