

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<sup>2</sup> areas that need to be insulated to save energy. Industrial process plant wall panels should be protected and we proposed few options:

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

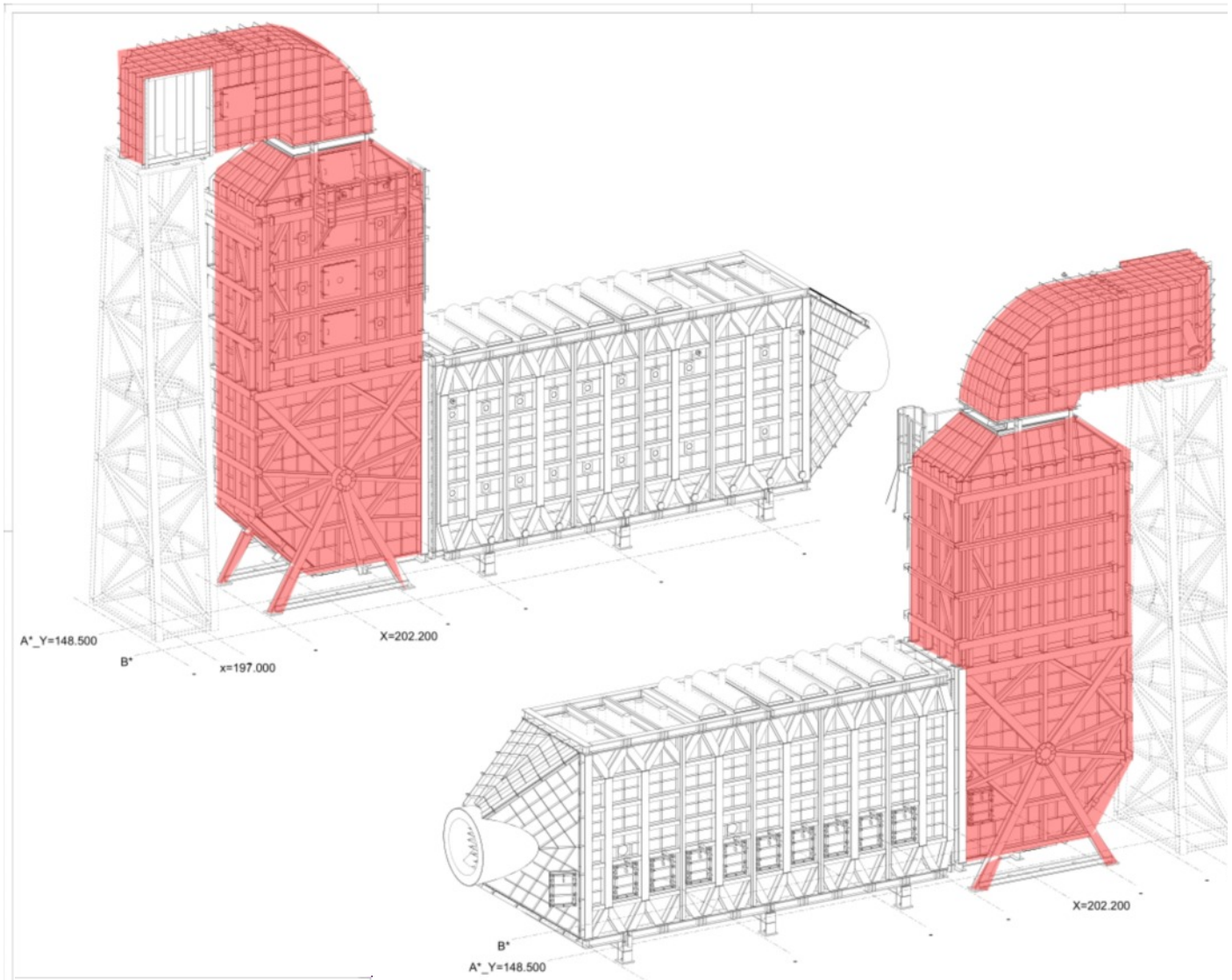
Serge Popovich  
DIRECTOR

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[c-coat.com.au](http://c-coat.com.au)

## 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  
Materialien: nach DIN-EN 10025-1:2004

Wenn nichts anders angegeben

Liegender Kanal: S235JR  
Eckteil: 16Mn3  
Stehendes Kanal: 16Mn3  
Verbindungskanal: 16Mn3

Befestigungselemente: 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**



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

SUBSTRATE



C-COAT T250

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

IGNL-4122-03-01C I01R00  
Date of Test: 20/08/2020  
ISSUED: 07/10/2020  
EXPIRES: 06/10/2025

Specimen Identification  
C-Coat  
Specimen Description  
The operator described the tested specimen as white spray on brick on masonry.

AS 1530.3 2009 SINGLE VERTICAL DETERMINATION OF FLAMMABILITY, FLAME PROPAGATION, HEAT RELEASE AND SMOKE DEVELOPMENT

Test Method  
One specimen was tested in accordance with Australian Standard 1530.3 Method for fire tests on building components and structures, Part 3: Single vertical determination of ignitability, flame propagation, heat release and smoke release, 1999. For the test, the specimen was clamped to the specimen holder in four places. A quartz metal radiant panel was used in line of ceramic tiles. The testing of a single specimen is outside the methodology for minimum number of specimens. As a result, this test certificate is based on an indication of performance for a single specimen and shall be used for guidance purposes only.

Observations  
Light smoke started after approximately 220 s and the centre of the panel started flaming at around 437 s. Cracking lines were observed at the centre of the specimen surface at around 665 s. No ignition was observed.

Parameter	Symbol	Unit	1	2	3	4	5	6	7	8	9
Ignition time	t <sub>i</sub>	min	NA	-	-	-	-	-	-	-	-
Flame propagation time	t <sub>f</sub>	s	-	-	-	-	-	-	-	-	-
Heat release integral	Q <sub>tot</sub>	kJ/m <sup>2</sup>	-	-	-	-	-	-	-	-	-
Optical density (mean ignitions)	D <sub>m</sub>	/m	-	-	-	-	-	-	-	-	-
Optical density (mean ignitions)	D <sub>g</sub>	/m	0.00	-	-	-	-	-	-	-	-
Smoke release (mean ignitions)	Log(SDR)	-	-	-	-	-	-	-	-	-	-
Smoke release (mean ignitions)	Log(SDR)	-	2.84	-	-	-	-	-	-	-	-

Calculation

Parameter	Mean	Standard Error	Comment
Ignition time	-	-	-
Flame propagation time	-	-	-
Heat release integral	-	-	-
Optical density (mean ignitions)	0.00	-	-
Smoke release	2.84	-	-

Result

Index	Range	Result	BCA Specification C3.10
Ignitability	0/10	-	-
Spread of Flame	0/10	-	9
Heat Release	0/10	-	-
Smoke Developed	0/10	0 to 1	8 Pass

Test Supervisor: Darren Laker  
Technical Lead: Mark Probert

Disclaimers  
These test results relate only to the behaviour of the test specimen of the material under the particular conditions of the test, and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use. The information contained in this document is provided for the sole use of the recipient and no reliance should be placed on the information by any other person. In the event that the information is disclosed or furnished to any other person, the ignis labs Pty Ltd accepts no liability for any loss or damage incurred by that person whatsoever as a result of using the information. Copyright © All rights reserved. No part of the content of this document may be reproduced, published, transmitted or adapted in any form or by any means without the written permission of the ignis labs Pty Ltd.

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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 / (m<sup>2</sup> \* 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:  $\alpha_{con} + \alpha_{rad} = 11.6 + 7(W)^{0.5} = 33.74$

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%**



### 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/(m<sup>2</sup>\*K)

Including components:  $\alpha_{con} + \alpha_{rad} = 11.6 + 7(W)^{0.5} = 33.74$

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/(m<sup>2</sup>\*K)

Including components:  $\alpha_{con} + \alpha_{rad} = 11.6 + 7(W)^{0.5} = 33.74$

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%**

**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/(m<sup>2</sup>\*K)

Including components:  $\text{alfa\_con} + \text{alfa\_rad} = 11.6 + 7(W)^{0.5} = 33.74$

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<sup>2</sup>) surface in m<sup>2</sup> 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°C)
- B) The coverage formula is: 1.4Lit/m<sup>2</sup> 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<sup>2</sup>] x 1.4 [Lit/m<sup>2</sup>] 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.