

# **COATSOL**

---

**Field joint coating systems for  
3LPP and 3LPE coated pipe**

# COATSOL

---

## Flame sprayed field Joint coatings

- Polyethylene - up to 80°C operating temperature
- Polypropylene – up to 110°C operating temperature

# COATSOL

---

- Design Aims

- Simple field joint coating application, avoid complex, expensive equipment, minimise carbon footprint.
- Avoid use of elevated preheat temperatures = speeds up the operation and eliminates risk of damage to line coating.
- Minimum steps in application procedure = easy to apply, easy to inspect = repetitive quality.
- Use of high performance Novalac liquid coating as base coat, guarantees high performance.
- Use of high performance, flame spray topcoats developed to give total melt/seal to outer 3LPE /3LPP coating.

# COATSOL

---

Traditional FJC system used in Canada on 3LPE needs 2 uses of induction coil to install, especially in cold weather.



# COATSOL

---

## Procedure:

- Apply Novalac base coat by brush or roller.
- Dry flock first PE/PP powder layer onto wet Novalac base coat.
- With IR heater heat FJC surface area to  $>50^{\circ}\text{C}$  to melt PE/PP powder and cure Novalac.
- Flame spray PE/PP topcoat.

# COATSOL

---

## Liquid Novalac base coat





# COATSOL

---

Flocking PP powder onto wet base coat



# COATSOL

---

Flocking PP powder onto wet base coat





# COATSOL

---

Flame spray Polypropylene



# COATSOL

---

Flame spray Polypropylene





# COATSOL

---

Flame Spray – up to 5 times faster than previous flame spray systems



**COATSOL**

---

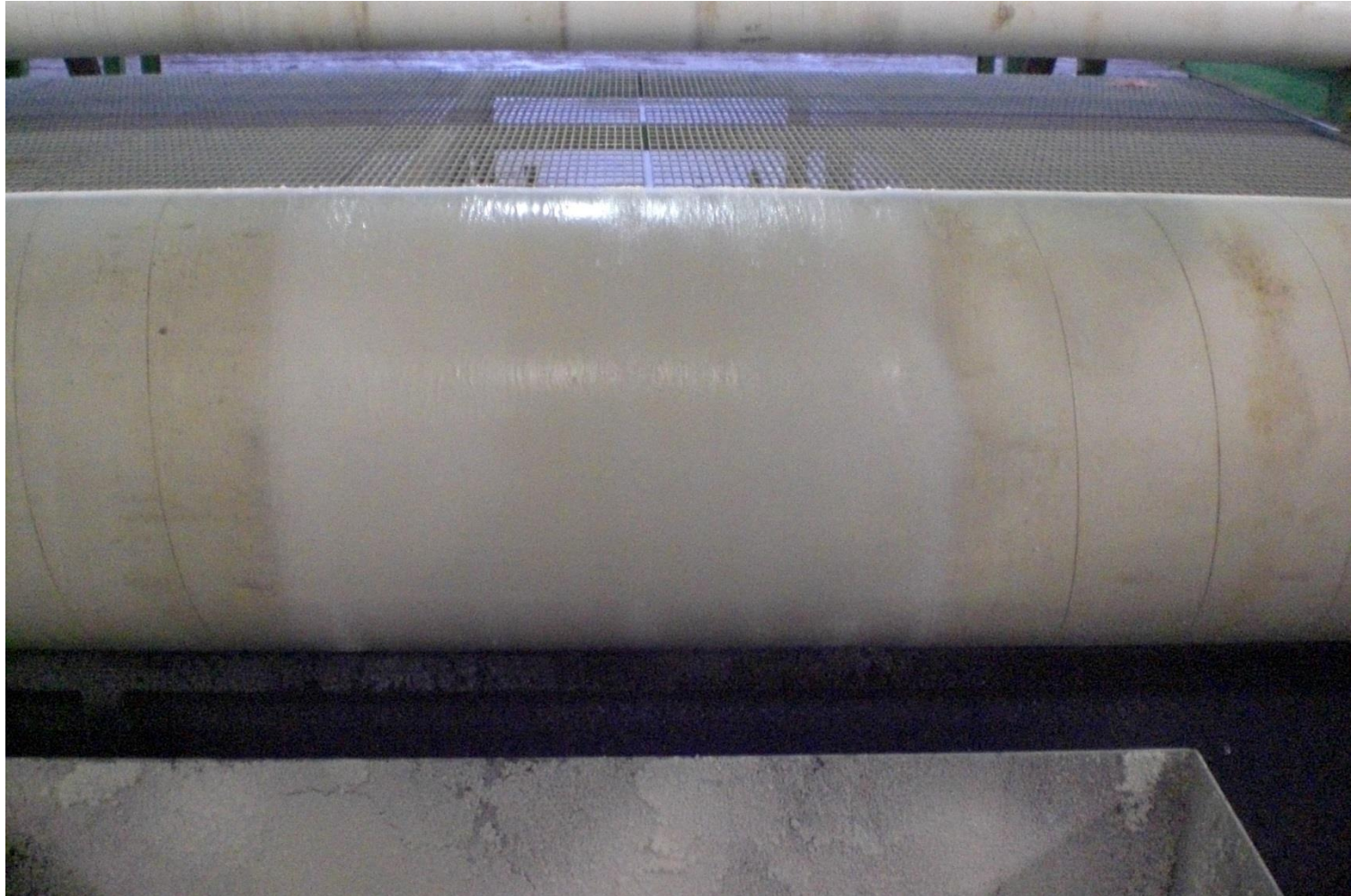




# COATSOL

---

Finished PP Field Joint 2–5mm thick



# COATSOL

---

## Finished PP Field Joint



# COATSOL

---

## Finished PP Field Joint





# COATSOL

---

Can be flushed immediately for tie-in burial or lay barge work

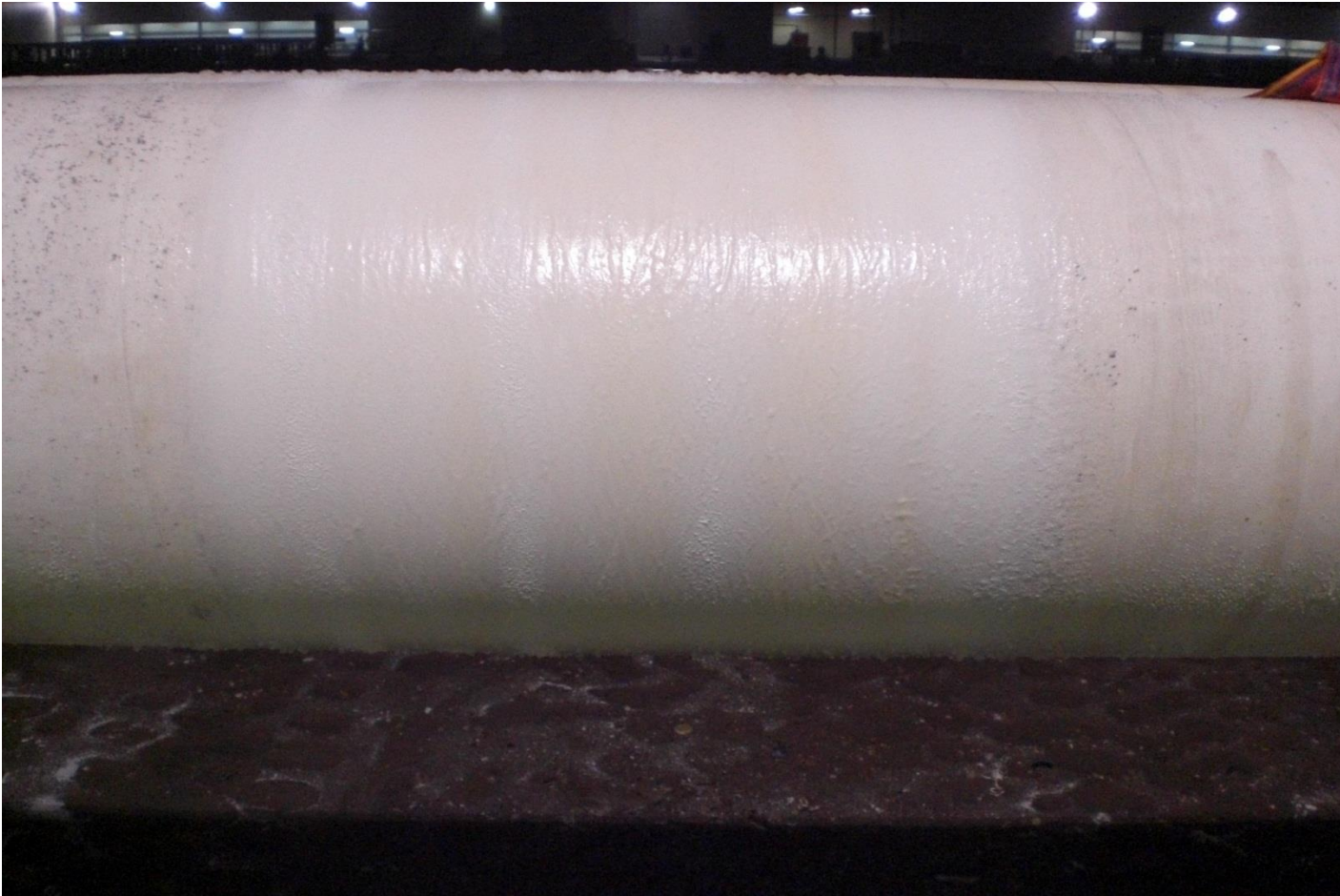




# COATSOL

---

Finished joint totally compatible with line coating



# COATSOL





# COATSOL

---

PE system basecoat applied and flock in process



# COATSOL

---

Flock layer melted and ready for top coat





# COATSOL

---

Finished PE joint 2.5-5mm thick



# COATSOL

---

IR heater for preheating and curing of Novalac.  
Lighter/cleaner/lower cost than induction coils





# COATSOL

---

Coatsol flame spray equipment crate with water and oil separators and dehumidifier. Connect to 30 CFM compressor and propane gas bottle to start work.





# COATSOL

---

Manoeuvrable and lightweight Installation Equipment



Oxidative Induction Time (at 220°C)	ISO 21809-1: (ISO 11357-6)	>40 Minutes
Cathodic Disbondment 28 days @ 90°C	CAN/CSA-Z245.20	<5mm radial
Adhesion after hot water soak 28 days @ 80°C	CAN/CSA-Z245.20	Class 1
Peel Strength @ 23°C (over Novalac)	ISO 2180-39: Annex D	>12 N/mm
Peel Strength @ 90°C (over Novalac)	ISO 21809-3: Annex D	>5 N/mm
Hardness @ 25°C	ASTM D-2240 Shore D	>60
Flexibility @ 0°C	CAN/CSA-Z245.20	No cracks @ 3°C PDD
Impact resistance @ 23°C	DIN 30670	>20 Joules
Tensile Elongation (at break) of topcoat @ 25°C (after flame spraying)	ASTM D-638	10%
Taber Abrasion topcoat	ASTM D-4060/84, H18 500Gm load 1000 cycles	55 mg weight loss
Vicat Softening Point	ISO 306	116°C
Applied thickness for system	Min' recommended	2.0 mm

# COATSOL

---

## Key Advantages

Excellent in-service performance properties

Low pre-heat temperatures <50°C. No risk to line coating integrity

Low carbon footprint

Lightweight, manoeuvrable, installation equipment

No electric power required

Easily installed in cold weather without induction heating

Manpower reduced compared to other systems

Complete melt with line coating at overlap

Superior performance to sleeves, FBE based alternatives

Simple inspection – unlike sleeves or FBE based systems



# COATSOL

---

## Key Advantages

- Environmentally friendly. Low carbon footprint. VOC free base coat and inert topcoat powders
- Easy inspection ensures quality every joint; no possibility of entrapped air as with shrink sleeves or other laminated systems
- Fast and easy repair method

# COATSOL

---

## Main applications

- Field joint coating on 3LPE + 3LPP
- Repairs to damaged 3LPE + 3LPP
- Coating of induction bends and accessories on 3-layer coated projects
- Rehabilitation of live pipelines to replace failing plant coating or FJC. No need to stop flow in the line

# COATSOL

---

## Application Limitations

No Limit on size of pipe. Bigger = more difficult for sleeves in terms of voids and for FBE based systems, bigger = larger coils and cost rises greatly. There is no practical size limitation for either of the two Coatsol flame sprayed systems described