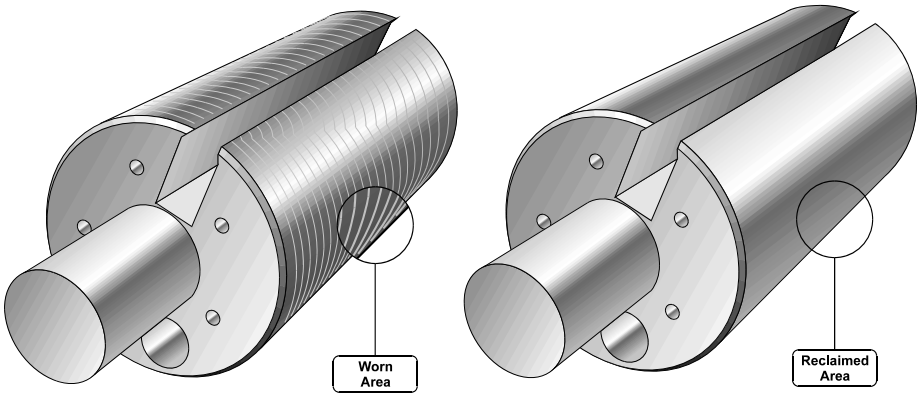
Metallisation
Thermal spray equipment and consumables

RECLAMATION OF BLANKET CYLINDERS, WEB OFFSET LITHO PRESS

Application Data Sheet PP-DR-003



INTRODUCTION

In the offset litho printing process, there is a requirement to use a mixture of water and ink to achieve the correct density of print.

The introduction of water onto any printing process will inevitably lead to corrosion problems.

The blanket cylinder is one of the main casualties of this corrosion, where the moisture seeps under the edges of the composite blanket. It will cause the blanket cylinders surface to corrode away allowing the blanket to be unstable in use.

It is possible to refurbish the corroded blanket cylinders by applying a coating of stainless steel using the Metallisation Arcspray Process bringing the cylinder back to its original size for a fraction of the replacement cost and reducing the chance of future corrosion problems.

The Metallisation Arcspray deposits possess a higher degree of bond strength than most other sprayed deposits and the use of compressed air and electricity alone mean more economic coatings.

EQUIPMENT

Metallisation 528E, 340 or 140E Arcspray

MATERIALS

Bond Coat Arcspray

Metallisation 75E Nickel Aluminium

Specially formulated Arcspray bonding wire which gives an exothermic reaction during spraying producing very high bond strength coatings.

Main Deposit

Metallisation 84E 316 Stainless Steel

Used to produce a dense corrosion resistance coating.

METHOD

Cleaning

(A) Remove blanket retaining strip

(B) Remove composite blanket

(C) Degrease by solvent vapour process if equipment available

(D) Pay particular attention to holes and blanket retaining slot

(E) Inspect for cracking and longitudinal distortion

Pre-Machining

(A) Rough turn diameter being sprayed to a depth of 1.25mm (0.050") leaving a witness of original diameter at both ends of 2mm (0.080") width

(B) Remove sharp edge along both sides of retaining slot forming a small radius

Cleaning

(A) Degrease by solvent vapour process if available

(B) Check holes and retaining slot are free from contamination and debris

Preparation

(A) Mask all machined surfaces adjacent to area requiring treatment with heavy duty masking tape

(B) Plug threaded holes with tapered rubber plugs

(C) Thoroughly inspect for contamination prior to blasting

(D) Thoroughly blast with clean no. 30-36 grade aluminium oxide grit

(E) Ensure that area to be treated is thoroughly blasted paying particular attention to both ends of blanket retaining slot.

Application of Sprayed Coating

Masking

(A) Apply Sprayshield masking fluid, using a small paint brush to all areas adjacent to the area being sprayed (small amounts of masking fluid on areas to be sprayed can be removed with emery cloth)

(B) Check thoroughly area to be sprayed for contamination

(C) **IMPORTANT:** Area to be sprayed should not come into contact with chains, rope slings, hands or any other form of contamination. Delays between blasting and spraying should not exceed 20 minutes.

Bonding

(A) The Arcspray Equipment should be set up in accordance with the Metallisation Manual for the spraying of 75E Nickel Aluminium Wire

(B) The area to be sprayed should be cleaned with a suitable vacuum cleaner or clean air blast to remove any loose particles of grit

(C) Apply 75E Bond Coat to a depth of 75μm-100μm (0.003" – 0.004")

(D) The blanket cylinder should be rotated to give a minimum surface speed of 18 metres/minute

(E) The Arcspray Pistol should be set so that the spray stream is at 90° to the surface being coated and traversed at an even speed giving a uniform coating.

NOTE

It is recommended that both edges of the blanket retaining slot are sprayed with the cylinder stationery ensuring both ends are completely covered.

Spraying Parameters Bond Coat

(i)	Range	100mm (4")
(ii)	Nozzle air pressure	3.7 bar (55 psi)
(iii)	Voltage before spraying	38V
(iv)	Voltage during spraying	34V
(v)	Amperage	200A

NOTE: Parameters may differ in accordance with length and type of powder cables and hoses being used.

Main Deposit 84E (To be applied immediately after bond coat)

(A) The Arcspray Equipment should be set up in accordance with the Metallisation Manual for spraying 84E (316 Stainless) Wire.

(B) Apply 84E final deposit to the specified thickness including grinding allowance

i.e. finished ground dimension plus:

0.375mm - 0.5mm (0.015" - 0.020")

(C) The blanket cylinder should be rotated to give a minimum surface speed of 18 metres/minute.

(D) The Arcspray Pistol should be set so the spray stream is at 90° to the surface being coated and traversed at an even speed to give a deposit of not more than 0.13mm (0.005") per pass.

(E) Using pre-set callipers, check final sprayed deposit thickness to ensure there are no areas below finished sprayed diameter

(F) Remove loose particles on surface with wire brush or clean air blast

(G) Allow to cool thoroughly, preferably whilst rotating

Spraying Parameters - Main Deposit

(i)	Range	150mm (6")
(ii)	Nozzle air pressure	4.3 - 4.6 bar (65-70 psi)
(iii)	Volts before spraying	38V
(iv)	Volts during spraying	35V
(v)	Amperage	250A

Sealing

(A) Apply Sprayseal 'M' in accordance with Metallisation Sprayseal 'M' instructions. Keep surface wet by re-application for a period of approximately one hour.

(B) Allow to dry thoroughly

(C) Remove all uncured sealer from surface with clean, disposable cloths or paper towels.

Demasking

(A) Remove all masking tape and rubber plugs

(B) Remove all overspray taking care to prevent coating damage

(C) Remove all traces of Sprayshield with solvent

Finish Grind

(A) Grinding wheel type n° 46 grit blue V grade

(B) Wet grind to final diameter taking light cuts using feed and speed in accordance with grinding machine manufacturer's instructions

(C) Reform radius along edges of blanket retaining slot.

Inspection

(A) Check dimensions

(B) Check for cracks, defects in sprayed coating, i.e. large pores or protrusions and loose particles.

Finish Cleaning

(A) Clean to remove any traces of grinding abrasive and loose particles

(B) Wash with petroleum spirit/paraffin

(C) Dry the surfaces with clean, disposable cloths or paper towel

(D) Final inspection prior to packing

(E) Wrap in clean polythene sheet

(F) Pack and despatch

- REFERENCE TECHNICAL BULLETIN N°S :-

2.3.12 Metallisation 75E Nickel Aluminium

2.1.12 Metallisation 84E 316 Stainless Steel

2.5.2.1 Metallisation Sprayseal M