Metallisation
Thermal spray equipment and consumables

PROTECTION OF IRON & STEEL AT ELEVATED TEMPERATURES

Application Data Sheet LE-AC-002

INTRODUCTION

Unprotected iron and steel surfaces oxidise and corrode rapidly at elevated temperatures in the presence of industrial atmospheres, hot gases and condensation products. Experience within the Metallisation Group has shown that nickel-chromium alloys and/or aluminium coatings give protection and increase the life expectancy of steelwork up to temperatures as high as 1200°C. Because oxidation rates depend on the temperature, atmospheres, gas flow rates and thermal cycles as well as the basis material, life expectancies are not easy to predict. Nevertheless, the protective systems devised within Metallisation have been proved over many years and are widely specified for structures such as chimneys, furnace and gas turbine exhaust ducting, fume extraction systems, motor vehicle manifolds and hot surfaces used within the food industry.

The Metallisation protective systems are designed to provide protection up to 550°C, 950°C and 1200°C (in the latter case for sulphurous environments as well as oxidising atmospheres). Each system is based on preparation to EN ISO 2063: 2005, EN ISO 8501-1 followed by the appropriate sprayed metal coating and finished by the application of a suitable Sealer.

* **Where environments and temperature cycles result in periodic condensation of acidic vapours, the life expectancy of the protective system will be impaired even so, it will still be superior to that of unprotected structural steelwork.**

APPLICATIONS

Protection up to 550°C

After preparation, Arcspray aluminium to 130 microns with Metallisation 140 Equipment and seal with Sealer Type 'E', Sealer Type 'F' (a silicone free sealer) or Sealer Type 'G' (for hot surfaces in the food industry)

Protection up to 950°C

After preparation, Arcspray aluminium to 130 microns using the Metallisation 140 Equipment and seal with Sealer Type 'E' or Sealer Type 'F' (where silicones cannot be tolerated).

It is possible to achieve similar results with combustion sprayed coatings but only at the expense of a different sealer and an expensive heat treatment operation.

Protection up to 1200°C

Non Sulphurous Atmospheres

After preparation, Arcspray Metallisation Nichrome to 325 microns and seal with Sealer Type 'F'.

Sulphurous Atmospheres

After preparation, Arcspray Metallisation Nichrome to 325 microns followed by 100 microns of aluminium and seal with Sealer Type 'E'.

EQUIPMENT

For manual operation: Metallisation Arc 140 or 340 Pistol

For automated operation: Metallisation Arc 528 Pistol

- REFERENCE TECHNICAL BULLETIN N°S :-

2.5.1 Sealers for Metal Sprayed Zinc and Aluminium