Metallisation
Thermal spray equipment and consumables

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Metallisation Protecting Playground Equipment

A Metallisation Arcspray system has been used to protect playground equipment from corrosion and to create an excellent base for the powder coated finish. SMP (Playgrounds) Ltd has selected Metallisation's Arcspray system and zinc coating process, to protect its wide range of outdoor playground equipment. SMP has been designing, manufacturing and building playgrounds throughout the world for 40 years.

The safety of the finished surface is critical to SMP, as is the long-term protection against corrosion provided by the zinc metal spraying process. Since 1999, updated safety standards for play equipment design have been introduced in Europe. It is a priority for SMP to be compliant with these new standards.

The European Standard for children's playground equipment EN1176 states that the equipment must be protected from corrosion and no toxic paints are to be used. SMP uses a multi-stage process to offer optimum protection and a safe, compliant coating in their playground equipment. To start with, the equipment is grit blasted to a cleanliness of SA2.5. The Metallisation Arc140/S250 system is then used to manually apply 100microns of zinc. The 250-amp energiser allows the operator to apply the coating in a controlled method to small profiles. A 10m supplies package enables good access for the operator to spray larger structures.

Grit Blasting

The zinc coating itself is all that is required to protect the steelwork from corrosion but to ensure added protection, a zinc rich primer is also applied to a thickness of 60-80 microns. As there is no curing time for the metal sprayed coating, the play equipment can move immediately on to colour powder coating so the process is very efficient. The complete process is also within the control of SMP so they are assured that their high standards of quality and safety are met on all of their equipment.

Zinc Spraying

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Powder Coating

The appearance of the zinc coating and primer does not lend itself to children's playgrounds so the play equipment is finished with a 60-80micron thick, high gloss powder coating. A common issue when powder coating over metal sprayed coatings is the appearance of bubbles in the surface. This is due to the porosity that is always present in arc and flame sprayed coatings expanding during the powder coat curing time in the oven and the bubbles rising to the surface. There are 3 main solutions to this issue. Firstly, you can use special powders with anti-gassing additives. These stop the surface of the powder coat hardening too quickly and hence allow the bubbles to escape before the powder coat cures. The second option is to de-gas the coating before powder coating, which basically involves pre-heating the items to be coated to expand the gases before powder coating. This is not a popular choice, as it requires additional ovens and / or time. The third option practised by SMP is to ensure that the coating is as smooth as possible with minimal porosity. SMP has honed the Metallisation equipment and spraying process so well that they are able to spray very smooth coatings with 2mm wire and do not have problems with bubbles.

Finished Panels

A number of factors allow SMP to achieve the smooth coatings. The Metallisation equipment is designed solely for metal spraying and the energiser produces a very even power supply. When combined with an accurately controlled Arc140 pistol, the result is a very stable arc and hence a high quality coating. The quality equipment, combined with using the optimum parameters, excellent housekeeping and maintenance procedures, including a twice yearly Metserve preventative maintenance contract, ensure that the systems are always in optimum condition.

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The complete coating process enables SMP to offer a 5-year corrosion guarantee on its range of coated equipment but it would actually expect a time span of around 15 years before corrosion is an issue.

In the Metallisation Arcspray process the raw material, in the form of a pair of metallic wires, is melted by an electric arc. This molten material is atomised by a cone of compressed air and propelled towards the work piece. The molten spray solidifies on the component surface to form a dense, strongly adherent coating suitable for corrosion protection and wear resistance.

In March 2006, SMP Playgrounds purchased its second Arc140/S250 system. Both systems will be used instead of flame spray systems and SMP report noticeable cost savings over flamespray now that they are using the two Arc140 systems. This is because the arcspray systems do not use gas and oxygen and only need electricity and compressed air to run. Fewer consumable spares are also needed with arcspray systems. Metallisation supply the zinc spray material as 2mm wire in 2 x 250kg drums, which allows them to spray for long periods of time without the need to change the wire supply.

SMP designs and manufactures a diverse range of playground equipment suitable for public parks, leisure areas, holiday centres, hotels, and schools. The equipment ranges include everything from swings, roundabouts and slides, through to specially designed structures for very young children and stylish futuristic equipment for older kids. The equipment ranges are designed to encourage interactive play, stimulate imagination and physical activity and allow accessibility for children of all abilities.

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Robert Wilson, Production Director at SMP, says: “We understand the responsibilities and challenges facing playground providers and operators today. Our aim is to help them create a successful playground area that is fun, challenging, safe, durable and as vandal resistant as possible. The finished surface of our equipment is critical and the corrosion protection offered by the Metallisation process helps us to achieve the required results. The Metallisation equipment is very reliable and is also covered by a Metserve preventative maintenance contract. This ensures that our high quality coatings and production is maintained with the minimum of unplanned downtime, which is critical to customer service.”

Further information on the metal spraying process and products can be obtained by contacting +44 (0)1384 252 464 or visiting www.metallisation.com.

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