

Sweet solutions for the sugar industry from Thermaspray

Thermaspray, South Africa's surface engineering and thermal spray coating technology specialist, offers a range of high quality coating techniques to assist in reducing maintenance costs for the sugar industry by protecting parts and components against abrasive, adhesive, erosive and corrosive degradation.

Costs faced by the Sugar Industry due to maintenance & downtime

Sugar including cane and beet sugar crushing, refining and packing is a multiple process industry and maintenance costs can make up as much as 10 percent of the value of goods produced. Equipment maintenance as a direct result of abrasion, adhesion, erosion and corrosion leading to rapid wear and corrosion and subsequently expensive downtime can account for as much as one third of plant maintenance costs that include replacement or repairs.

The importance of using a coating specialist

Knowledge of the correct coating technique, coating application using best practices as well as quality control of coating processes are fundamental to ensuring successful results. Thermaspray is a DQS ISO 9001 Quality Management and Eskom level 1 certified company with close to 20 years' experience in wear- and corrosion-resistant thermal spray coatings. The company's in-house, metallurgical laboratory is the only dedicated facility of its kind in Africa's thermal spray industry.

Why our solutions?

Cost saving benefits derived from the excellent protection offered by high quality, highly dependable coating solutions against surface wear and corrosion of both new and worn parts and components:

- Enhanced lifespan of equipment.
- Improved equipment and plant uptime, productivity and production.
- Reduced downtime, replacement and maintenance costs.

Coating Solutions for the Sugar Industry

The following methods are applied by Thermaspray to overcome abrasion, adhesion, erosion and corrosion in the sugar industry specifically:

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JOINT VENTURE:



THERMASPRAY

- **Thermal Spraying**

Thermal spraying (figure 1) is a generic term used to define a group of processes that deposit fine metallic or non-metallic materials onto a prepared substrate to form a coating. The coating material may be in powder, rod or wire form. The different processes are:

- **High Velocity Oxy-Fuel (HVOF)**

Invented in 1958 by Union Carbide (now Praxair) not commercially significant until early 1980s. Operate on continuous steady-state basis with continuous powder feed. The process is gas or liquid fuelled (Thermaspray offers both processes).

- **Wire Arc Spraying**

Developed by M.U Schoop in 1910 but only gained commercial acceptance in 1960s. Also known as twin-wire arc spray process. Direct current (DC) electric arc is used to melt the feedstock with compressed air behind the arc atomising the molten material. Higher thermal efficiency – wires are melted directly. Coatings are coarse with higher porosity.

- **Powder Plasma Spraying**

Plasma (4th state of matter) – consists of neutral and positive atoms and free electrons. Plasma gasses are heated as they ionise in the arc and high degree of melting and relatively high particle velocities are achieved. Finely structured coatings with high adhesion strength.

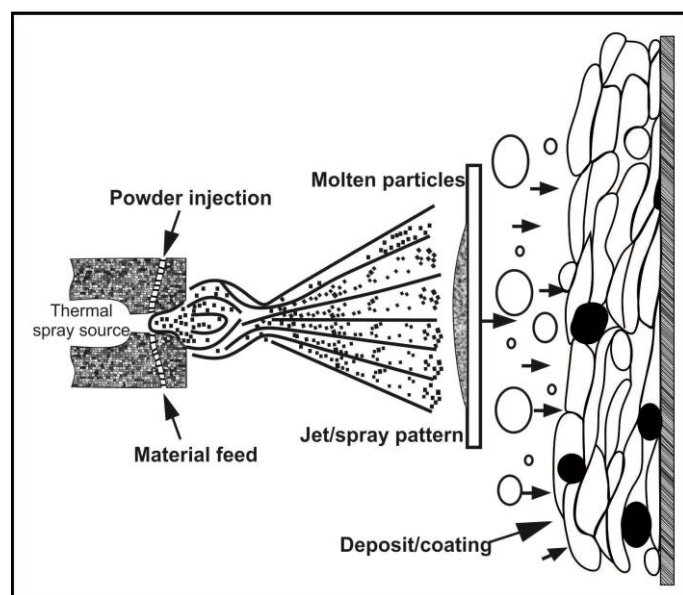


Figure 1: Schematic illustration of the Thermal Spray Process

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JOINT VENTURE:



- **Plasma Transferred Arc (PTA) Welding**

- The Plasma Transferred Arc (PTA) welding and hardfacing process (figure 2) provides a versatile method of depositing high quality, metallurgically fused deposits on relatively low cost substrates.

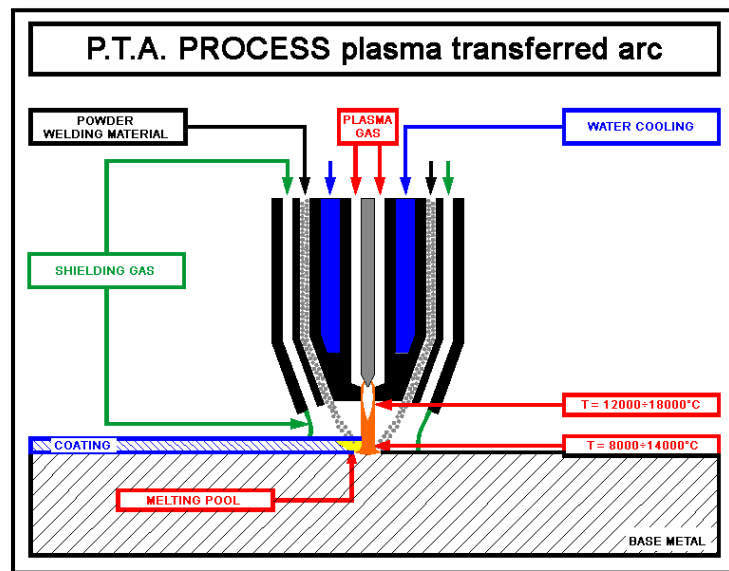


Figure 2: Schematic illustration of the Plasma Transferred Arc (PTA) Welding Process

- **Polymer Applications**

- **Plasma Coatings (Non-Stick and Traction Coatings)**

Thermaspray has undertaken a strategic partnership with Plasma Coatings in the USA to offer the South African market a new range of surface technologies and coatings to tackle the food, printing and packaging, tyre and rubber, paper and pulp, fempro/diaper, sugar and many more industries. These coatings are designed to solve many of the above industries' problems resulting in decreased maintenance, higher outputs, and an increase in cost savings.

These coatings combine the advantages of thermal spray (metal base) coatings with polymer top coatings to offer benefits of wear resistance, slip and traction. The above mentioned coatings can be applied to aluminium, steel, stainless steel, tool steel, copper, ceramics, synthetic materials.

- **Diamant Metalplastic (Polymeric Solutions)**

Thermaspray is the exclusive Southern African representative of

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DIAMANT Metallplastic GmbH, based in Germany. DIAMANT Metallplastic offers the metalworking industry high-quality polymeric solutions to restore functionality to castings and thereby significantly reduce scrap.

The DIAMANT polymeric solution includes products for:

- Impregnating and sealing leakages
- Repair of blow holes and surface treatments
- Wear protection and services

Typical Applications in Sugar Industry

- Knife and trash plate replacement components in sugar mill
- Shredder hammers
- Crushers rolls
- Trash plates
- Scrapers
- Pump casings
- Conveyer Screws
- Valves covers
- Flanges
- Bearings and bearing journals

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