



Thermal spray technology - a powerful tool for improving wear and corrosion resistance of critical surfaces in components and equipment

# Improving Wear and Corrosion Resistance

**Thermal spray technology has undergone rapid growth over the past 17 years and is an extremely powerful tool for improving the wear and corrosion resistance of critical surfaces in components and equipment within virtually any industry.**

**T**hermal spraying refers to the process of applying a coating - most often metal alloy, carbide or ceramic that may vary in thickness - onto a substrate through the projection of a molten stream of the necessary material.

“SA Mechanical Engineer” talks to Dr Jan Lourens, MD of Thermaspray, headquartered in Olifantsfontein, Johannesburg. The company has close to 20 years’ experience in wear- and corrosion-resistant thermal spray coatings and refurbishes industrial components damaged by friction, erosion, corrosion or cavitation.

**We are particularly proud of our impressive 6-axis robotic gun manipulation and High Velocity Oxy-Fuel (HVOF), plasma spray, electric arc spray, combustion wire spray, powder flame spray and spray and fuse which is used to apply the coatings.**

“Our in-house, metallurgical laboratory is the only dedicated facility of its kind in Africa’s thermal spray industry and is equipped to undertake world-class developments and quality control,” Jan tells us.

The company’s comprehensive range of thermal spray coating services include: thermal spraying, plasma transferred arc (PTA) cladding/welding, finishing, grinding, machining and burnishing services. Specialty services comprise the supply of wear and corrosion-resistant thermal spray coatings and specialised welding services to OEMs and end-users.

For end-user customers, coatings are used to refurbish components subjected to degradation by wear, corrosion, oxidation or cavitation, which reduce service life. Coating technology solutions also make it possible to modify the surface of engineering components to provide unique functional properties, such as non-stick, low or high friction, and electrical or thermal insulation properties.

## Benefits

Says Jan, “Customers benefit greatly through the restoration of worn components to precise original dimensions thus extending service life. Wear resistance against erosion, abrasion and sliding wear and to cavitation, chemicals and corrosion, high temperatures and oxidation is also increased, as is traction.

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## Plasma Transferred Arc (PTA) cladding

Cladding is complementary to the thermal coating process and the company specialises in applying advanced weld hard-facing using the PTA process. PTA welding is a hard-facing process that heats metals and merges them by means of arc constriction.

The advantages over other weld hard-facing technologies is that PTA weld deposits are characterised by low levels of dilution, inclusions, oxides and discontinuities, and the weld hard-facing closely mimics the corrosion resistance of the equivalent alloy.

Jan adds, “Rotating equipment requires careful monitoring to ensure that the rotating parts run within specification to prevent failures and damage. Our drive to improve the mechanical reliability of motors and generators, has led to our establishing in-service monitoring of both mechanical and electrical run-out.”

## Alternative coatings

Thermaspray, in partnership with USA-based Plasma Coatings, offers a new range of surface technologies and coatings to tackle the food, printing and packaging, tyre and rubber, paper and pulp industries. These coatings combine the advantages of

thermal spray (metal base) coatings with polymer top coatings to offer benefits of wear resistance, slip and traction.

Applied to aluminium, steel, stainless steel, tool steel, copper, ceramics, and synthetic materials, plasma coatings (non-stick and traction coatings) are designed to assist industry in decreased maintenance, higher outputs, and an increase in cost savings.

When it comes to Diamant Metalplastic (polymeric solutions), the company exclusively offers the metalworking industry high-quality polymeric solutions to restore functionality to castings and thereby significantly reduce scrap.

### Joint venture

Says Jan, "We offer extensive maintenance and repair of industrial components that have been damaged in service by friction, erosion and corrosion or cavitation through either thermal spraying or Plasma Transferred Arc cladding." He adds, "We recently entered into a joint venture with Surcotec to offer an extensive portfolio of engineering and thermal spray coating solutions that extend component life cycles to assist OEM and end-user clients across southern Africa in reducing costs and increasing production.

"With our facility in Gauteng and Surcotec's in the Western Cape, together we offer world-class quality wear and corrosion resistant thermal spray coatings, PTA cladding and polymer coatings, augmented by a host of specialised allied services. These include coating finishing technologies such as machining,



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grinding, diamond grinding, probe track burnishing, electrical run out measurements/reporting, finishing, and super finishing," Jan concludes.

### High-quality polymeric solutions to restore functionality to castings and thereby significantly reduce scrap

Thermaspray is a DQS ISO 9001:2008 Quality Management and Eskom level 1 certified company. Surcotec is DEKRA ISO 9001 Quality Management certified as well as a level 2 nuclear supplier to Eskom.

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