PRESS RELEASE

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Wear resistant thermal spray coatings from Thermaspray protect ball valves, extend service life

The HVOF (High Velocity Oxy-Fuel) thermal spray process from South Africa's foremost engineering and coating technology specialist, Thermaspray, helps to extend the service lifecycle and enhance the performance of metal seated ball valves, improving uptime and productivity for end-users.

Valves utilised by the chemical, petrochemical and mining sectors for example, are exposed to corrosive fluids containing wear particles which, when trapped between rotating and stationary surfaces, cause abrasion wear damage. In addition, the impact of particles with high velocities on exposed surfaces lead to erosion wear damage. This corrosion and wear of critical surfaces degrade the valve's performance forcing frequent replacement or repair of damaged valve components. "The subsequent cost implications are further exacerbated by downtime and losses in production," notes Paul Young

Metal seated ball valves are ideal for handling hot, abrasive and corrosive applications and owe their superior performance not only to their unique design but also to quality wear resistant thermal spray coatings. In the thermal spray process, a coating, most often metal alloy, carbide or ceramic that may vary in thickness, is applied onto a substrate through the projection of a molten stream of the necessary material. One of the many advantages of thermal spray technology is the ability to apply carbide based coatings. These carbides, also known as tungsten carbides (WC) or chrome carbide are a unique family of materials that combine the hardness of a ceramic with the toughness of a metal. Carbide coatings combine excellent wear properties with good corrosion resistance. Carbide particles are glued together with a metal matrix.

Thermaspray's extensive portfolio of world-class thermal spray coatings comprising thermal spraying, Plasma, HVOF and Arc Wire Spraying, protect new and refurbished components against wear, corrosion, oxidation of cavitation and deliver a host of cost saving benefits: Enhanced performance, extended valve service life through restoration of worn components to precise OEM dimensions, increased wear resistance against erosion, abrasion, increased traction, and increased resistance to chemical and high temperature corrosion.

"It therefore comes as no surprise," says Young, "that the thermal spray coating process applied to the contact surfaces of ball valves and seats has found wide acceptance with end-users. We apply the state-of-the-art HVOF coating process to protect all components of metal seated ball valves."

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Thermaspray supplies coated ball valves which include all components - end caps, ball valve, valve seats and valve shafts - to a longstanding key customer and leading valve manufacturer, stockist and distributor in Kwazulu-Natal, who in turn supplies the end-user with the finished product. According to Young, HVOF coated ball valves can compete and even exceed international products.

HVOF is a flexible dry-coating technology which constitutes two main carbide materials used in thermal spray processes in order to improve wear resistance and decrease coefficient of friction between various sliding components. HVOF exhibits higher densities and superior bond strength (typically greater than 80 MPa) and less decarburisation than many other thermal spray processes - making it possible to produce very dense and hard coatings with excellent coating adhesion. This, according to Young, is due to the higher particle impact velocities and relatively low peak particle temperatures associated with the HVOF process. “In this process particles actually travel faster than the speed of sound, generating the best bond strengths, density and hardness compared to other thermal spray processes.”

Because spraying parameters including standoff distances and spray angles are fundamental to controlling coating quality and uniformity, robotic manipulation is used for spraying complex components like ball valves. Thermaspray coating processes are applied at Thermaspray’s state-of-the-art facility in Olifantsfontein, Johannesburg, using impressive 6-axis robotic gun manipulation. In addition to ball valves, Thermaspray’s capabilities also extend to the coating of new and worn rotary, butterfly and gate valve components.

The local valve sector has been given a much needed boost thanks to the local designation of South Africa’s valves by the Department of Trade and Industry (DTI) as a priority product. The encouragement of local valve manufacture stimulates industries such as foundries and steel manufacturers as well as the wear coating, hardening, stelliting, chrome carbiding, rubber and allied sectors, bringing numerous benefits such as job creation and skills development. Thermaspray expects to see good growth in the local valves industry which already makes up a substantial share of the company’s thermal spray coating business.

Thermaspray, in a joint venture with Cape Town-based Surcotec, offers 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. The companies’ world-class quality wear- and corrosion-resistant thermal spray coatings, Plasma Transferred Arc (PTA) cladding and Polymer coatings (in partnership with Plasma Coatings USA and Diamant Metallplastic Germany) are augmented by a host of specialised allied services.

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About Thermaspray

Thermaspray, headquartered in Olifantsfontein, Johannesburg, has close to 20 years' experience in wear- and corrosion-resistant thermal spray coatings. In addition to providing a comprehensive range of support coating finishing technologies in the bespoke finishing shop, Thermaspray also refurbishes industrial components damaged by wear and corrosion. The company's 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. Thermaspray is a DQS ISO 9001 Quality Management and Eskom level 1 certified company.

About Surcotec

Surcotec is the oldest established thermal spray coating company in the Western Cape. The company has a wealth of experience in thermal spray coatings and mechanical component refurbishing. Surcotec's coating services are supported by a fully equipped engineering workshop and an on-site machining division. A level 1 B-BBEE company, Surcotec is TNV ISO 9001 Quality Management certified and is certified as a level 2 nuclear supplier to Eskom.

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