



Press Release

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Hardide Coatings selected to present at NACE CORROSION 2010

Hardide Coatings (AIM:HDD) has been selected to present a paper at the world's largest corrosion conference CORROSION 2010 Conference and Expo, March 14-18, 2010 in San Antonio, Texas, USA. Dr Yuri Zhuk, Hardide's Technical Director will present 'Nano-structured CVD coating HARDIDE protects against wear and corrosion' in the 'Advances in Metallic Coatings and Hardsurfacings for Oilfield Applications Symposium'.

Commenting on his paper's acceptance, Dr Zhuk commented: "It is an honour to be selected to present a paper at such a prestigious event. Hardide is a family of CVD (chemical vapour deposition) tungsten carbide coatings proven to increase tool life and reduce downtime and drilling operation costs particularly in new frontier, severe drilling environments. As a cutting edge coating with an unrivalled combination of protective properties, it is highly relevant to this symposium."

The Hardide-T coating variant consists of tungsten carbide nano-particles dispersed in a metal tungsten matrix. It has enhanced hardness in excess of 1100Hv and abrasion resistance up to 12 times better than hard chrome (ASTM G65 testing). The coating can be produced on stainless steel, low alloy and some tool steels, and Ni-, Co- and Cu- based alloys with a coating thickness up to 100 microns, which is unique for hard CVD coatings. As a nano-structured material, it demonstrates outstanding toughness, and crack and impact resistance by withstanding 3000 microstrain deformations without any damage. This deformation will crack or chip any other thick hard coating.

The gas phase CVD process enables the coating of internal surfaces and complex designs such as valves, hydraulic components and pump cylinders. The pore-free coating is resistant to acids and aggressive media and its resistance to H₂S is proven by NACE TM0177-2005/ASTM G39 testing. After 30 days of exposure to H₂S, salt and acetic acid solution, Hardide coated samples made of 17-4PH and 316 steels did not exhibit evidence of cracking, degradation or de-lamination. The samples were strained to the stress levels of 2000 $\mu\epsilon$, 2500 $\mu\epsilon$ and 3000 $\mu\epsilon$.

ASTM B117-07a Neutral Salt Spray testing was carried out with Hardide-coated samples of commercially available hard chrome plating and HVOF spray coatings produced on the same substrates. The Hardide samples passed the test with very little staining observed while all the HVOF samples showed heavy or very heavy rust stains at the end of the 480 hour testing. The hard chrome samples had to be removed from the test after just 288 hours when very heavy rust stains showed the coating had lifted in some areas due to severe corrosion developing beneath the coating.

Oilfield customers include Weatherford International, the Expro Group, FMC International and other leading energy services companies.

The conference and expo is being held at the Henry B Gonzales Convention Center, San Antonio, Texas, USA from March 14-18, 2010 (www.nace.org).

www.hardide.com

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For further information:

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Note to Editors:

The Hardide Technology

The Hardide coating process is performed in a Chemical Vapour Deposition (CVD) furnace and is applied to customer supplied components which are heated to approximately 500°C/930°F depending on the substrate and the application. Once at the desired temperature, a controlled mixture of gases is pumped into the furnace. In the furnace chamber, a chemical reaction takes place between the gases which crystallises on the surface of the components producing a smooth layer of binder-free tungsten carbide coating with abrasion, erosion and chemical resistant characteristics. This process uniquely enables all parts of the component including internal surfaces to be coated.