HARDDST
DUPLEX SURFACE TREATMENTS

ULTIMATE SURFACE PERFORMANCE ON METAL PARTS

PRESS RELEASE

Overview

Hard Technologies (HARD) is in the field of surface engineering, which is a market estimated by the World Bank in 2004 to be worth in excess of US$169Billion p.a.

Surface engineering refers to the process of applying technologies to a metal substrate to provide cost effective performance enhancements to the underlying metal.

Surface engineering techniques are commonly applied to harden and / or toughen the surface of ferrous and non ferrous metals to make them more durable in intense engineering and industrial uses with improvements in wear, corrosion resistance and friction .

HARD is a metallurgical based research and development organisation working in partnership with Deakin University Waurn Ponds CMFI and the Victorian Centre of Advanced Materials and Mnufacturing (VCAMM).

HARD's vision is to become the major supplier of surface heat treatment processes for ferrous and non ferrous metals. Market Entry Strategy.

HARD's novel technology, Duplex Surface Treatment (DST) is highly innovative, provides a compelling value proposition when compared to competing products, and has global market potential across a number of different industries such as tooling; mining; aerospace; medical equipment; transport and oil and gas. DST's application is within the surface engineering market, which is estimated to be undertaken for up to 90% of ferrous metals used in manufacturing.

HARD with a grant from the Victorian Government under the VSA scheme and in conjunction with consortium partners, has recently completed a operating line in a joint venture with United Surface Technologies (UST) to provide the technology to

Australian Industry .(see Press release DST Technolgies Pty Ltd.)

HARD has moved from being a metallurgical based research and development organisation to achievement of first overseas sales of its technology with the commissioning of a plant in Detroit, USA .

HARD will initially market its DST technology to contract surface heat treatment providers who treat up to 90% of;Cold forming; Die casting; Plastic injection moulding; and Aluminium extrusion tools. These are expensive, high tolerance, distortion prone, relatively short life and complex profile steel tools that would preferably be, but are not technically, capable of being successfully treated by either Physical Vapour Deposition (PVD) or Chemical Vapour Deposition (CVD) processes.

HARD has commenced discussions with several leading contract heat treatment providers, representing greater than 10% of the approximately 5,000 plants worldwide.

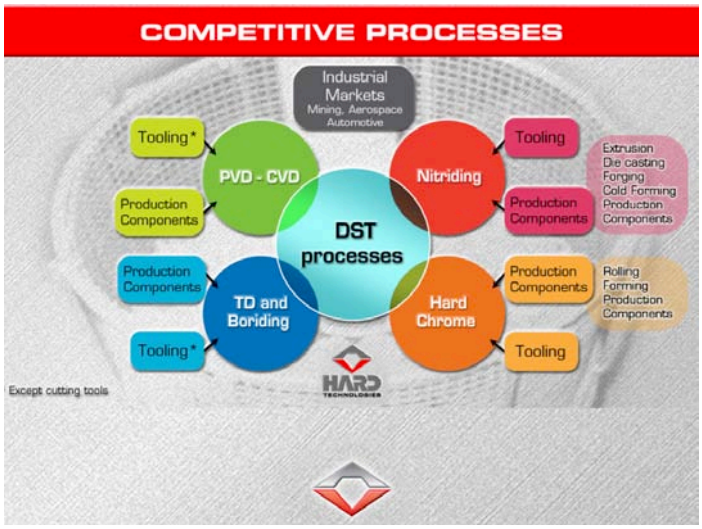
These contract heat treatment providers service several hundred thousand manufacturing customers worldwide.

HARD has also identified opportunities with in-house manufacturers, a market that is several times larger than the contract heat treatment market.

Key competitive processes and methodologies have been identified, none of which offer a process as robust and inexpensive as the DST technology.

Technical Overview

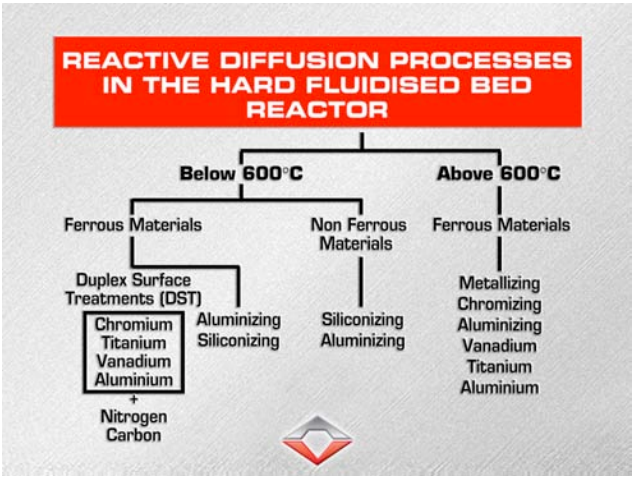
DST is a combination of two surface engineering techniques that is conducted in a Fluidised Bed Reactor (FBR) for heating and diffusing various elements into steel surfaces. DST is a thermo-chemical gas reaction which is not achievable in conventional atmosphere or vacuum furnaces.



PRESS RELEASE

A list off these processes developed and in the processof commercialisation at tempertures below and above 600 degrees C.

DST technology is a high end process that provides a significant improvement on existing technology by improving the wear and corrosive resistance of ferrous metals. Importantly the ability to process at a low temperature ensures the hardness of the core material is retained and distortion of the treated part is minimised. The superior performance and substantially lower cost, makes it suitable



as a replacement to other high end processes, such as Physical Vapour Deposition (PVD).

The fluidised bed reactors are computer controlled and capable of being operated, viewed and controlled externally. The benefit of this is that HARD can analyse and help customers to achieve optimum performance with reactors working in the USA from offices in Australia.

Performance testing of the DST technology undertaken on samples at Deakin University and DST Technologies has demonstrated that the DST offers a compelling alternative to existing surface treatment products and methodologies.

- DST has been shown to be
- superior to existing low temperature heat treatment processes (e.g. nitriding);
- more cost effective than high temperature Chemical Vapour Deposition (CVD) processes and low temperature processes such as PVD and chrome plating;
- less energy intensive as a result of being a lower temperature process; and
- able to increase the lifespan of treated products, and consequently reduce base metal demand due to less frequent scrapping and replacement of tools.

Core Capability

HARD has world class capability in heat treatment technologies arising from the internationally recognised expertise in Fluidised Bed Reactors and metallurgy of HARD's founder, Ray Reynoldson. Ray has assembled an integrated team with advanced manufacturing, surface treatment, engineering, R&D and technology commercialisation expertise. The team has researched, developed and analysed a suite of samples, generating proof of concept for a number of steel and non-ferrous alloys in metal working applications.

HARD, through its formal arrangement with Deakin University's Centre for Material and Fibre Innovation (CMFI), has access to extensive modelling expertise and leading-edge characterisation and testing facilities.

Surface analysis equipment including surface composition, hardness and structure characterisation has been used extensively to develop and demonstrate the utility of the DST process for a broad array of steel treatment applications.

HARD has the capability to conduct ongoing performance testing of samples for prospective customers worldwide using the FBR installed at Deakin University and DST Technologies Pty Ltd at Altona Victoria . Such performance testing is critical to the demonstration and subsequent market adoption of the DST process.

For further detailed information and photographs etc:

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