Australian Industry WINS!

WTIA National Diffusion Network Project (NDNP) funded by the Federal and State and Territory Governments and industry

SUCCESS STORY NUMBER PE03: NEW VENTURE OFFERS THE LATEST IN LASER SURFACING – *From research in the Power Generation sector to new technology for all.*

The Challenge

A typical power station may contain over 60 major turbine valves. The spindles for these valves have a tendency to suffer seizure due to oxidation effects that reduce clearances. A recent research project investigated ways to extend spindle life and reduce maintenance by using an alternative coating process. The new process will be applied off-site to ex-service spindles, refurbishing them for renewed service – a significant cost saving.

Retired valve spindles

The research project was one of a suite of collaborative research activities generated through needs analysis by the WTIA's SMART Power Generation Industry Group, now part of the NDNP which is supported by the Victorian Department of Innovation, Industry and Regional Development through the then Minister for Industrial Relations, Hon Rob Hulls.

The project was managed by a joint committee of the Cooperative Research Centre for Welded Structures (CRC-WS), WTIA and industry, under the Chairmanship of Alan Beveridge from Loy Yang Power an NDNP member in Victoria. IRIS, ANSTO, CSIRO and Connell Wagner PPI all contributed research expertise to the project.

CRC-WS is currently assessing the commercialisation options for this technology, in cooperation with current stakeholders.

New Venture

In the meantime, a new joint venture company between the Industrial Research Institute of Swinburne (IRIS) and Hardchrome Engineering is offering industry advanced surfacing solutions based on laser technology.

Laser Surfacing Solutions Pty Ltd utilises a state-of-the-art laser facility based at Swinburne's Hawthorn campus in Melbourne, and comprises a high-power Nd:YAG laser delivered through a 0.6 mm diameter optical fibre. This has been combined with a four-axis integrated CNC system providing a wide range of manipulation options.

Laser surfacing offers a number of advantages compared to conventional surfacing technologies including:

- Low thermal input and controlled penetration and minimal component distortion;
- Control of thermal profile and shape and location of the heat affected region;
- Improved mechanical, physical and chemical properties;
- Selective surfacing of small areas;
- Chemical cleanliness and therefore minimal pollution.

This facility can provide advanced hardfacing or cladding options, especially on thin walled or heat sensitive substrates. The laser can also be used for surface alloying or surface modification by melting or heat treatment.

IRIS, an OzWeld Technology Support Centre, is recognised as a centre of excellence for laser technology in manufacturing. It has been involved in laser research for many years through Professor Milan Brandt who is a recognised world authority in the area.

This is an exciting development in the hardfacing market for both Victoria and Australia, bringing a very competitive combination of skills and experience together for the benefit of all industry, including the Power Generation sector.

For further information contact: The Technology Transfer Coordinator, WTIA PO Box 6165 SILVERWATER NSW 1811 Tel: 02 9748 4443 Fax: 02 9748 2858 Email info@wtia.com.au