Press release III / 2017
Fraunhofer IWS Dresden collaborates with a strong research partner in Singapore

The Fraunhofer IWS Dresden and the Singapore Institute of Manufacturing Technology (SIMTech) have signed a memorandum of understanding for international collaboration in the fields of laser-based additive manufacturing and diamond-like hard coating technology.

SIMTech is a research institute under Singapore's Agency for Science, Technology and Research (A*STAR). The collaboration between Fraunhofer IWS and SIMTech started last year following Prof. Christoph Leyens, director and business unit manager Additive Manufacturing of the Fraunhofer IWS in Dresden, visit to SIMTech under its fellowship scheme. "With the signing of this memorandum of understanding, our collaboration will reach the next level of intensity" says Prof. Leyens, "For us, the collaboration with a world-leading institute in Singapore opens up new horizons in the important fields of additive manufacturing and coatings technology, both from a scientific and an application-oriented perspective."

As a leading aerospace hub in the Asia-Pacific region, Singapore offers a huge market potential for these technologies. SIMTech also has strong links to industry through the A*STAR Aerospace Programme and partnerships with companies in the precision engineering, transportation, oil & gas, energy and electronics sectors. Fraunhofer IWS itself is a world leading-research institute in laser materials processing, surface and coatings technology; its mission is to support industry with innovative engineering solutions. "SIMTech's collaboration with Fraunhofer IWS will enable us to accelerate the transfer from research to commercialisation, as well as to develop partnerships with industry players, in Singapore and around the world.", says Dr. Jun Wei, programme manager at SIMTech.

Over the last few years Fraunhofer IWS has established a major research focus on additive manufacturing of metals, ceramics and polymers using various AM processes. The spectrum of applications ranges, among others, from aviation, space, medicine, energy, automotive, mechanical engineering and tool making. In collaboration with the TU Dresden, Fraunhofer IWS is running a unique innovation center for additive manufacturing.

Diamond-like carbon coatings are already being widely used in industry. Hydrogen-free DLC-coatings show an even better performance. The coatings are fabricated using the unique laser-arc PVD technology developed at Fraunhofer IWS. "Our coatings are significantly harder and exhibit substantially improved frictional properties relative to state-of-the-art coating solutions", says Prof. Andreas Leson, business unit manager PVD- and Nanotechnology at Fraunhofer IWS. "Since friction and wear occur virtually everywhere, the interest in our innovative coatings is enormous". The success story of the coatings development was awarded with the prestigious Joseph von Fraunhofer Prize.

Laser wire build-up of an expansion nozzle
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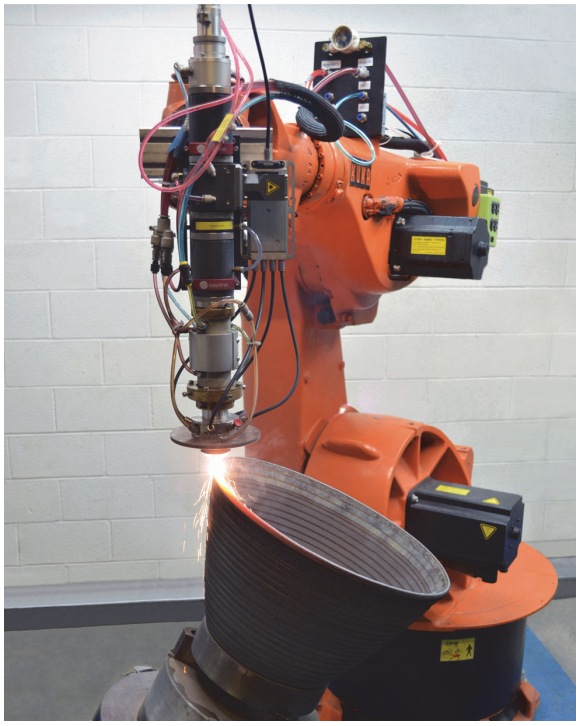

Laser additive manufacturing of an aerospace demonstration component
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Coating of gear components with super hard Diamor® films by means of laser-arc technology
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