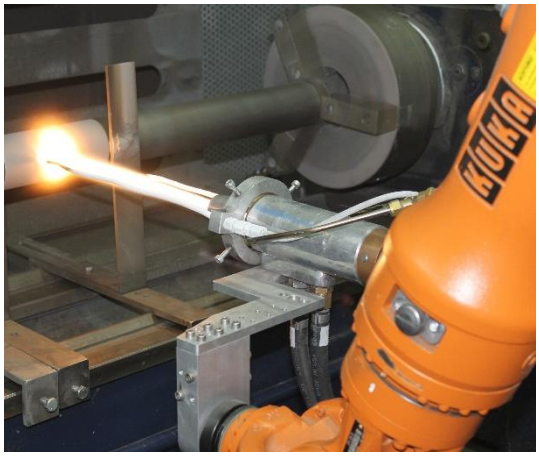
F153-16 – B&B Coatings HVOF Project

Metallisation and SciTeeX Deliver Successful Turnkey HVOF Project

Metallisation Ltd and SciTeeX S.p. z.o.o., have recently completed a major HVOF turnkey project with B&B Coatings. Metallisation has been providing thermal spray solutions around the globe for over 90 years. SciTeeX Group, has been active in the surface treatment industry since 1992 and today is an international organisation with a modern factory located in Poland.

B&B Coatings, based in Huddersfield, is a specialist in the application of thermal spray coatings. The company has extensive in-house manufacturing, analysis and test facilities, backed by an on-site Metallurgical Laboratory. B&B Coatings offers engineered coating solutions for a wide range of industrial applications and has extensive experience in thermal spray solutions.

The new blasting and HVOF spraying facility, delivered as a result of an engineering collaboration between Metallisation and SciTeeX, has enabled B&B Coatings to expand its service offering and increase the range of thermal spray solutions to its customers. There is already an established market for HVOF coatings, which they can now tap into and offer their quality service and coating analysis facilities. With their technical background and expertise they are also able to expand and develop previously undiscovered or underdeveloped applications to offer even more quality coatings and save clients' money.

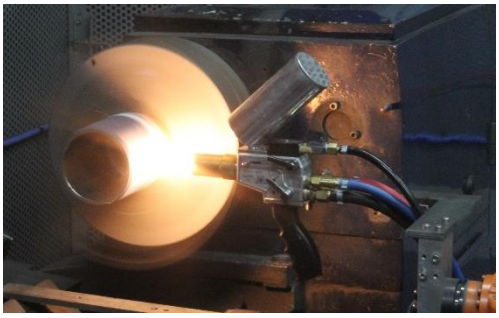


B&B Coatings has already transferred some of its customers from expensive solid Tungsten Carbide and Inconel625 parts to more effective steel items coated with WCCoCr and Inconel625 coatings respectively, as a result of the new equipment. Components metal sprayed by the company include, pump shafts, hydraulic pistons for agricultural machines and presses, pump rams for slurry pumps, chutes and guides for the aluminium casting industry, wire drawing blocks and guides and pump sleeves.

The unique aspect that Metallisation and SciTeeX offer is the involvement of the customer, in this case, B&B Coatings, from the initial specification, design and installation through to the thorough after sales service and technical support. B&B Coatings chose Metallisation following extensive discussion and comparison with a number of suppliers. The attraction to Metallisation was its ability to offer the complete design, project management, installation and commissioning of the project. Together, SciTeeX and Metallisation came out on top across the whole process.

The complete project included an Optiblast blast booth, spray room and extractor, as well as the Met-PCC (HVOF-L) liquid fuel spray system, an MK74 powder flame spray system and a Kuka robot.

Another key attraction for B&B Coatings was the Met-PCC (HVOF-L) system due to the easy operator interface providing a reliable, repeatable mass flow control in the background. The control of the HVOF unit is via an intuitive touchscreen interface that runs on Windows OS, which was easy to integrate into the existing factory network. The system provides full process SPC data that enables the operator to produce a 'birth certificate' for every job showing the parameters used at every stage of the coating. The simplicity of the METJET-4L HVOF pistol was also appealing to B&B Coatings and has since proven itself to be reliable, easy to operate and maintain. An MK74 hand held or robot mounted powder flame spray system was also supplied to enable the company to cost effectively market a good quality ceramic coating for a relatively small investment. A mass-flow powder feeder was also supplied that can feed either the HVOF or the MK74 powder flame spray pistol.



Initially B&B Coatings had considered project managing and sourcing each of the items separately. However, following a detailed discussion with Metallisation it was felt that it would be more cost effective and efficient to proceed with the turnkey facility. The Optiblast blasting room has in-floor grit recovery but sits on a flat floor at the B&B Coatings site, which meant that no civil excavations were required prior to the installation, saving both time and money. The grit is recovered, cleaned and recycled automatically back to the integrated blast pot. Dust is extracted via the integrated extraction system, which combined with the high quality in-booth lighting, significantly increases the operator viewing experience.

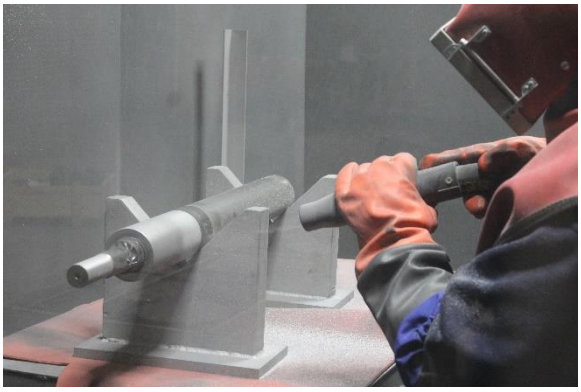
SciTeeX and Metallisation engineered the standalone spray booth and extraction system, which are produced in the factory in Poland. The acoustic spray room is 4.5m wide, 3.5m deep and 2.9m high. Particular consideration was given to the acoustic performance of the room, which is designed to reduce noise levels. This is a specific area of expertise offered by SciTeeX and it means that hearing protection is not required outside the spray room. This is an important aspect of the installation, as the HVOF process produces around 130dBa of noise. Similar high quality lighting, used in the blast room, was included in the spray booth to ensure a bright working environment. The extraction system supplied, complete with integral extraction hood, takes away virtually all of the process dust from the spray area resulting in a clean working environment but, more importantly, incredibly clean and uncontaminated coatings. A packaged water chiller was also supplied as part of the HVOF system. The chiller is a pre-assembled, self-contained, integral unit that pumps cooling demineralised water to the pistol via a water/water heat exchanger.

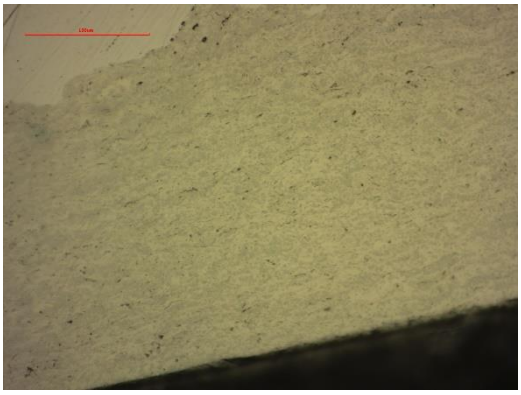
Steven Haigh, Managing Director at B&B Coatings is a qualified metallurgist and his experience has led to the move into the HVOF coatings market. As Steven explains “There is a huge business opportunity for a quality coating supplier who has a sound metallurgical understanding and we are excellently placed to maximise these opportunities. It’s all a part of our strong commitment to developing and optimising coatings and spray parameters. I see HVOF coatings growing rapidly, enabling us to save clients’ money and providing an even more diverse range of coatings. I am thrilled with the whole Metallisation service. We were consulted and involved in every single stage of the project, which has resulted in an excellent facility. I would happily recommend Metallisation and its expert team.”

With Metallisation’s High Velocity Oxygen Fuel (HVOF) Spray Systems, liquid fuel and oxygen are fed into a combustion chamber. In the chamber they are ignited to produce a hot, high pressure gas stream, which is passed through a converging /diverging nozzle. Powder is then injected into the accelerated gas stream which heats and accelerates the powder particles so that they impact with tremendous kinetic energy upon the substrate material. The HVOF process does not melt the powders, it just softens them, resulting in minimal oxidation and decomposition of the coating material. The heat source used in the Met-JET4L HVOF process is liquid kerosene and oxygen. Metallisation can also supply systems with gas fuel and oxygen.

Stuart Milton, Sales Director, Metallisation, says: “We were delighted to work in collaboration with SciTeeX to deliver the B&B Coatings project and are very proud of the final result. B&B Coatings has a very similar ethos to our own and they have a very strong focus on optimising thermal spray coatings. They have successfully repeatedly produced Stellite6 coatings with significantly less than 0.5% porosity – a fantastic achievement. It’s always a pleasure to see a project through from start to finish and to see such excellent results, particularly when the customer is so pleased with what we have achieved together.”

B&B Coatings' on-site full lab facility offers a huge advantage and enables the company to develop and optimise coatings and spray parameters. It also provides the facility to evaluate coating quality and offers a coating inspection and traceability service to its customers. This, alongside the new blast room and spraying facility, offers greater advantage to B&B Coatings and an improved service to its customers.





Lab and typical coating micro (WCCoCr)

Blasting a shaft and control console

For more information on Metallisation equipment or turnkey blast and thermal spraying systems, visit www.metallisation.com, www.sciteex.com, call Stuart Milton on +44 (0)1384 252 464, Armand Kehiaian on +48 22 864 07 24, or email Armand - ak@sciteex.com.