

Peculiarities of the Gas Dynamic Spray Applications in Russia

Dr. Alexander Shkodkin

OCPS, Russia

Huge distances and cold climate influence the Russian industry development. Long transportation and old worn equipment at old plants causes the search for the simple and convenient technologies of parts restoration. Various unique products often include some long complex technological processes to be simplified and improved.

Gas dynamic spray or Cold spray process has advantage of metal deposition with low heat input, dense uniform deposit of any thickness, local deposition to limited area, simple deposition to any metal surface.

Unfortunately high pressure cold spray had limited success in Russia. It is determined mainly by the limited customer possibilities in use of high pressure gas at high gas flow rates.

Low pressure cold spray technology (DYMET) was invented to achieve the compromise between the customer possibilities and cold spray abilities. The DYMET equipment with minimal requirements allows customer to get new tool for the variety of the production and repair processes.

Gas dynamic spray applications include both production and restoration.

Typical production applications cover local coatings at objects of electrical engineering, electronic engineering and various small-batch production parts. Local coatings are applied to welding lines after the welding of hot galvanized metal structures. Local anti seizure coatings coats the screws at oil-well tubing and at marine ship propeller shaft.

Unique coatings are applied to special heating glasses for ships, airplanes and railroad locomotives. Some elements of optical electronic devices are created by gas dynamic spray.

Important application of the technology in question is the repair of the casting defects. Both casting defects and machining defects removal by spraying save small-batch or unique production. The restoration of defected or worn bearing seats allows avoiding the replacement of the scarce or expensive parts.

Casting moulds restoration or modification become easy with the gas dynamic spray process. Any defect may be easily removed to save production quality. The same advantage is used also to remove defects at the surfaces of the huge rolls for paper and polyethylene film production.

The service of worn and old equipment becomes much easy and simple with the use of gas dynamic spray. Sealing up the leakages, shape restoration, defects elimination are carried out not only at plants, but also at small automotive workshops.

Low pressure gas dynamic spray is widely used for the restoration of antique objects both technical as cars and airplanes, and art as metal sculptures.

Careful customer training and technical support, search for the new applications and customer replies makes us to believe to the wide spread of the gas dynamic spray technology.