

VaporTech's VT1500i CVD/PVD coating system



At the VaporTech booth, John Georgis introduced us to the company's VT-Series CVD and PVD coating systems.

The VT-Series uses a centrally mounted coating source with parts that rotate around the perimeter of a large, actively cooled chamber. Here the components are positioned around the outside of the cathodic arc unit while the anode surrounds the parts. The coating media being applied to the parts is therefore introduced towards the parts from the outside of the chamber. Georgis said, "This provides a very accurate and consistent coating application with high repeatability."

A gas manifold introduces the inert gases to the chamber from the top. Georgis said these are usually oxygen, nitrogen, methane or argon. Three heating elements inside the chamber distribute the heat evenly throughout the chamber to bring the substrate up to the required temperature to accept the coating.

He said, "As far as DLCs are concerned, there are several inert gases that can be used to create the best environment to deposit the coating to introduce an inert atmosphere. The type of gas used, and the amount and the blend of it, depend on the recipe of the coating.

"The coatings in the motorsport arena are typically things like chromium nitride on valves (particularly titanium valves). For such a coating, ionised coating particles such as titanium or chromium must travel across the chamber without interfering with any water vapour or carbon in the air and hit the target precisely. The inert gas means that when we do this, we are depositing on the substrate at a precise rate and thickness."

Within the chamber of the largest of the VT-Series machines, the VT-3000i, there are 16 racks to which the parts to be coated are attached to a carousel, so each rack has a planetary rotation. According to Georgis, that planetary rotation function improves the cycle time compared to systems without it, and that directly enhances the unit's throughput.

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