

TUBA NOVA – A NOVEL INDUSTRIAL EB-PVD COATER PLATFORM FOR STATE-OF-THE-ART TBCs AND MULTI-LAYER COATINGS

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Ceramic thermal barrier coatings (TBC) offer the potential to significantly improve the efficiency of aircraft engines and stationary gas turbines for power generation. Temperature gradients in the range of 100 to 150 K can be achieved on internally cooled turbine parts. State-of-the-art TBCs, typically consisting of an yttria-stabilized zirconia layer on a metallic adhesion layer, have been used primarily to extend service life of the hot section parts. The underlying technology of physical vapor deposition (EB-PVD) and related industrial processing equipment have evolved significantly in recent decades.

More recently, continued developments in turbine design and efforts to increase efficiency by raising operation temperatures have led to an increase in the number and mechanical complexity of coated parts and the development of advanced coatings.

The authors discuss how these growing demands can be addressed with novel EB-PVD equipment concepts that enable the production of advanced multi-layer coating stacks while improving process stability and homogeneity, increasing throughput, and reducing maintenance efforts.

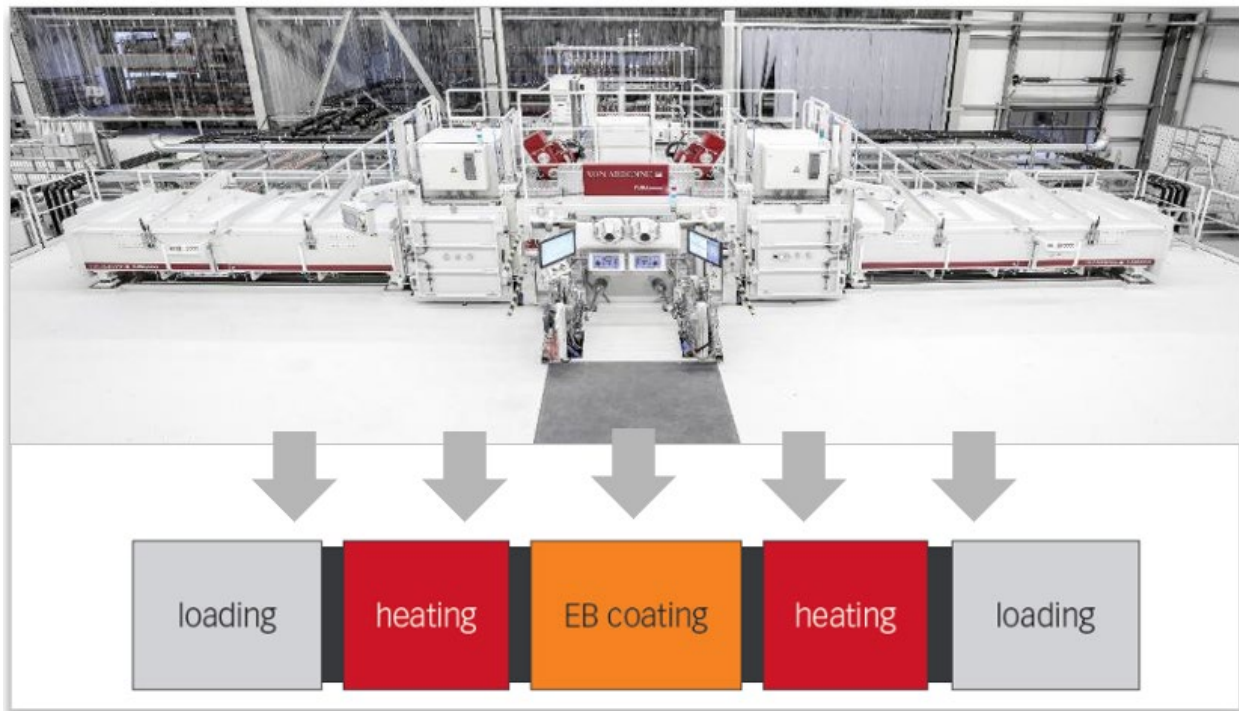


Figure 1 VON ARDENNE's TUBA Nova EB-PVD coating platform