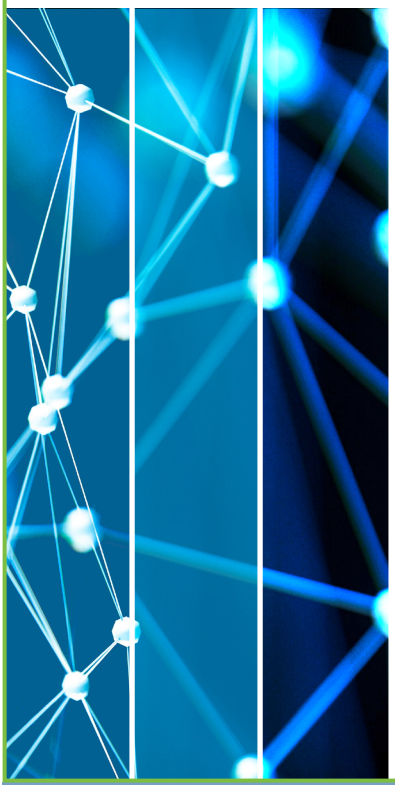
SUSTAINING ADVANCED MANUFACTURING SYSTEMS WITH MKS TRAPS AND EFFLUENT MANAGEMENT SYSTEMS

About the Customer

The customer is a global leader in military, commercial, business and general aviation technology with a strong, active research effort in the design and manufacture of jet engines and engine components. They have developed Ceramic Matrix Composite (CMC) materials as a replacement to certain metal components in the hot section of a jet engine. To support the production of CMC parts, the customer recently announced the opening of two new facilities to mass-produce silicon carbide (SiC) materials for use in manufacturing CMCs.



THE CHALLENGE

The fabrication process for CMC parts employs a vacuum process for fiber coating that requires a large-scale process solution for trapping process by-products present in the exhaust line. CMCs are generally extremely hard, abrasive materials; and, large amounts of CMC particles, precursor chemicals, and reaction byproducts from the fiber coating process can produce build up on the walls of the exhaust lines and damage downstream pumps and other components.

The customer was experiencing issues in their CMC fiber coating process that was traced to problems with the general-purpose particle trap. It was found that this large, unspecialized trap could not trap the mixture of abrasive solid particles and volatile chemical precursors without clogging. Clogged lines and traps reduced flow conductance, changing the process conditions within the coating chamber which led to out-of-spec product. The customer required specialized process technology expertise to develop a trapping solution to deal with both the unusual physical and chemical nature of the material being trapped and the large scale of the exhaust line trapping required.

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THE SOLUTION

MKS instruments' stepped up to this challenge, bringing unmatched industry expertise in specialized vacuum process and trapping solutions. MKS has developed advanced trapping and effluent management technology that is adaptable to many different scales and chemistries in vacuum processing. These trapping solutions have a proven record for maintaining clean exhaust lines in a wide variety of vacuum process settings.

MKS worked with the customer to define the key trapping requirements of their process. Using information on the customer's process characteristics and its broad expertise in technology-specific trapping technology, MKS designed a high-efficiency trapping solution for the customer that effectively trapped particles and chemical by-products, keeping them away from process pumps, gauging and other system components that could be damaged by abrasive particles and hardened by-products.

THE BENEFITS:

With a custom MKS trapping solution designed for this specific application, the customer achieved more reliable performance in their fiber coating process. They experienced greater uptime, safer cleaning and byproduct disposal, and higher yields.

LEARN MORE

To learn more about how MKS Trapping and Effluent Management Systems can help you improve productivity in your facility, go to:
www.mksinst.com/c/process-traps