

Chromalloy Is Quietly Crucial

Chromalloy comes to Paris 2011 with expanded facilities for developing and applying products to lengthen the lives of turbine engines while still allowing them to run hotter and thus more efficiently – critical in this time of tight money and environmental pressures.

The firm maintains a major repair business too.

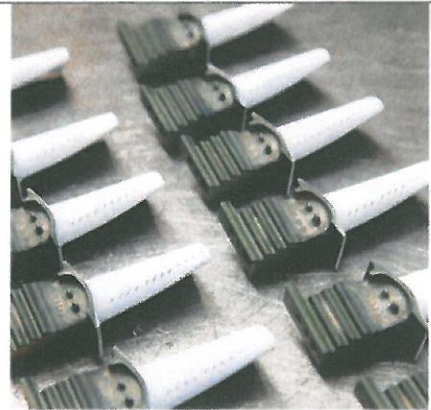
Besides celebrating its 60th anniversary this year, Chromalloy has marked such milestones as shipment of the 50,000th PMA high-pressure turbine blade by its Florida joint venture Belac; establishment of a new Technology Center of Excellence in Florida “dedicated to the research and development of services for gas turbine engines including repairs, parts and coatings,” and the groundbreaking in February, also in Florida, for a \$5-million, 40,000-sq ft ceramic core production facility in Tampa adjacent to the company’s new \$30 million, 150,000-sq ft investment casting foundry.

Chromalloy has joint ventures with GE Aviation, Pratt & Whitney and Roll-Royce, for which it performs what new VP and general

manager Dennis Orzel calls “coating assist work.” Chromalloy applies the coatings that boost the thermal endurance of a given engine component. “In many cases, we’ll even finish the part so it’s a complete part as delivered back to the OEM,” he says.

“Clearly, with these advanced coating systems, we’re improving the life of the jet engine, the gas path surfaces, especially in the hot section, reducing oxidation and corrosion within the engine,” Orzel says. “A big enabler is the thermal barrier coatings which basically reduce the metal temperature and slow down the oxidation and corrosion rates, obviously allowing the parts to last longer and keeping the engines on-wing for a longer period of time.”

Hotter engines burn fuel better too. “It’s big,



Chromalloy heat treatment of turbine blades.

Just Like Coming Home

Chromalloy gave word early last month that Pratt & Whitney veteran Dennis Orzel had joined the company, taking charge of engine part repairs and coatings work at facilities in the UK and New York. Early in his career at Pratt, Orzel says, he helped develop a variety of electron beam physical vapor deposition and low-pressure plasma spray coatings – in cooperation with Chromalloy.

“That’s where I cut my teeth,” Orzel told *ShowNews*, before he moved on to general management positions with Pratt & Whitney.

Following more than 20 years with the engine maker, Orzel worked at several companies, and most recently was COO at PAS Technologies, responsible for six sites in three countries.



Electron beam physical vapor deposition at Chromalloy facility in Orangeburg, New York.

CCAM Consortium with Rolls-Royce in Virginia

Chromalloy is an organizing member of the new Commonwealth Center of Advanced Manufacturing, a consortium comprising the University of Virginia, Virginia Tech and Virginia State as well as industry partners, among them Rolls-Royce. CCAM was formed “to bridge technology from the college and the university to the practical aspects of industry,” says Chromalloy’s new VP and general manager, Dennis Orzel.

The 50,000-sq ft CCAM research center is

in Crosspointe, Virginia, the site of a new Rolls-Royce jet engine manufacturing facility.

In addition to Chromalloy and Rolls, CCAM industry partners include Canon, Newport News Shipbuilding, Sandvik Coromant, Siemens and Aerojet.

“It’s the first time anything of this nature has been attempted on U.S. soil,” says Chromalloy marketing VP Andrew Farrant.

“It’s a really, really interesting, progressive way to develop technology.”

big medicine,” Orzel says.

Thus the star of the Paris show for Chromalloy is a new thermal barrier coating called RT-35 Low K. The product makes for lower thermal conductivity, which allows for higher engine temperatures without degrading the underlying structure. The trick is the addition of the rare earth neodymium to a more conventional zirconium-based thermal barrier material, effectively doubling the thermal conductivity.

RT-35 Low K is applied via physical vapor deposition to rotating parts with physical stresses, and by plasma spray to stationary engine components, says Ravi Shankar, Chromalloy coating and process technologies director. A coating just 4 mils thick “drops the metal temperature from the gas temperature by 100°,” he says. “It fools the part into thinking it’s running cold.”

RT-35 Low K was patented by Chromalloy in 2006 and FAA-certified last year for second-stage, high-pressure turbine blades on Pratt & Whitney’s PW4000. “Low K,” Shankar notes, refers to low thermal conductivity.

Chromalloy has 52 sales, repair and manufacturing locations in 17 countries. The New York State headquartered firm is at [Booth A39 in Hall 3](#), and at [Chalet D40](#).

—Rich Piellisch