



BELAC NEWS

A Chromalloy Joint Venture Company

From the President of BELAC LLC

More and more operators are taking advantage of the significant cost savings of using BELAC blades vs. original equipment manufacturer new blades, with typical cost savings in excess of \$25 per engine flight hour.

In addition to the cost savings, operators also experience improvements in engine reliability with BELAC blades. HPT blade distress is known to be a leading cause of poor engine performance and unscheduled engine removals. On the CF6-80C2, it is estimated that more than 50 premature removals per year are caused by turbine blade problems.

Yet with more than 50,000 blades in service, there has never been a reported removal due to problems stemming from a BELAC part. Further, BELAC blades have shown to provide a much higher yield at repair, averaging over 93 percent repairable vs. the industry average of 66 percent.

The industry has also seen a growing market for multiple run and overhauled BELAC blades. One operator recently purchased five sets, and BELAC continues to receive inquiries into the availability of surplus blades. These sales are coordinated through Chromalloy Material Solutions.

This is truly a testimonial to the superior quality of BELAC Parts Manufacturer Approval HPT turbine blades achieved through utilizing in-house castings, improved processes, advanced coatings, tighter tolerances and stringent quality control.

Chong Yi
President

BELAC delivers 50,000 High Pressure Turbine blades — and saves aircraft operators \$200 million

BELAC has announced delivery of the 50,000th High Pressure Turbine blade to an airline operating in Europe. “BELAC equipment, which performs as well as or better than the OEM parts, is a source of significant savings — up to 40 percent off the OEM catalog pricing. That and the proven safety and reliability of the equipment has resulted in more and more carriers — and the U.S. Air Force — choosing our parts,” said Chong Yi, President.

Formed in 1998, BELAC is a Chromalloy joint venture with Lufthansa and United Airlines. It began manufacturing and shipping HPT blades in 2002.


“The savings to operators using BELAC components has been approximately \$200 million,” said Yi. “BELAC components provide a very cost effective

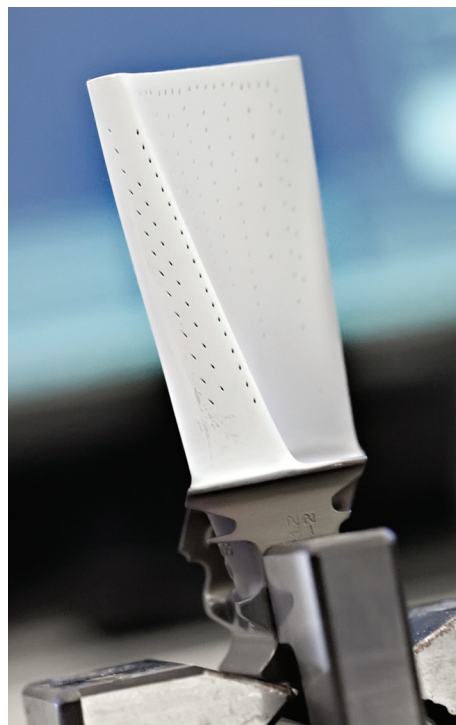
alternative to components from the original equipment manufacturers.”

“BELAC originally produced and shipped replacement blades to commercial carriers in the U.S. and Europe,” Yi said. The strongest growth region for equipment sales during the past few years has been airline operators in Asia.

In 2010 BELAC also announced its first military contract — the first-ever award of its kind to a producer of PMA hot section components. The U.S. Air Force contract, announced in September 2010, was followed several weeks later by a second Air Force award to BELAC for additional HPT blades for the F108 engine. The F108 is the military variant of the CFM56-2 commercial engine and utilizes the same HPT blade as the CFM56-3.

PMA replacement parts are FAA-certified to meet or exceed the performance, reliability and durability specifications of original equipment manufacturer parts for gas turbine engines.

BELAC parts are subject to the same FAA requirements and scrutiny as original equipment manufacturer blades. The company produces the following HPT blades for carriers around the world: CFM56-3 (first stage); CF6-50 (first and second stage); CF6-80A2 (first stage); CF6-80C2 (first and second stage); and PW4000 (first stage). 



From the BELAC Technical Team

Editor's note: The BELAC Sales and Technical staffs respond regularly to questions on a variety of topics, from products, pricing and availability to technical questions about repairs, exchanges, and operation of BELAC parts. A question appears in each edition of *BELAC News*, with a response provided by a BELAC expert.

If you have a question for the BELAC staff, please visit the BELAC website at www.belac.com/contact/ to submit it. You will receive an individual response by providing your contact information. General questions and answers may appear in upcoming editions of *BELAC News*.

Question: Are there exceptions to which parts require Federal Aviation Administration (FAA) PMA?

BELAC: Yes. Under rule FAR 21 Section 21.3903, the rule defines the various ways an aircraft owner/operator can produce parts. They are: 1) OEMs are issued a Type Certificate and a Production Certificate. The holder of such certificates obviously would not require a PMA on top of these certificates; 2) The owner or operator of an aircraft can produce parts. They still require approved or acceptable data and they also must prove they have the capability to do so; 3) TSOA is another type of approval issued by the FAA. TSOA approves both the design and the fabrication of the part. Examples of such parts are auxiliary power units, tires, radios, navigation equipment and life support equipment; and 4) standard parts. 🌐



For information about pricing and availability, contact

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BELAC successfully completes industry audit

BELAC recently completed a four-day recertification audit for ISO 9001 2008 and AS9100 Revision C certification.

The audit gauges compliance to the newest revision of the standards set forth by ISO and AS, which are required of aviation, space and defense

manufacturers. The audit determines compliance through a comprehensive review of companies' Quality Management Systems.

"BELAC completed the audit without findings," said John McFadden, BELAC Quality Engineer, who managed the audit process.

Among the ISO and AS requirements are a clarification that organizations develop a proactive Quality Management System with special requirements to support the introduction and potential chain of flow of manufacturing.

Revision C to the AS9100 is a significant change to the existing standard, adding other new provisions. For example, a provision was added regarding the organizational environment of companies and its potential risk as part of the Quality Management System design and implementation. The revision also adds statutory requirements to the existing regulatory requirements. 🌐



Chromalloy and BELAC brief Latin American and Caribbean Air Transport Association

Chromalloy's Regional Sales Director and the BELAC quality leader recently addressed ALTA, the Latin American and Caribbean Air Transport Association gathering in Miami, Fla.

John McKirdy, Chromalloy Regional Sales Director, Americas, and Dennis Piotrowski, Vice President, Quality, provided a technical briefing to ALTA members regarding the benefits of Parts Manufacturer Approval (PMA) equipment over Original Equipment Manufacturer (OEM) parts for the aircraft engine.

Airline attendees included TACA, COPA, LAN, TAM and Mexicana. In addition to BELAC, other PMA manufacturers, including HEICO and Wencor, presented technical briefs. Topics included the use of PMA on leased aircraft engines, changing lease agreements to allow use of PMA equipment and benefit of PMA over OEM equipment.

ALTA membership includes more than 30 commercial airlines serving the region. 🌐



BELAC provides technical program review to Pakistan International Airlines

BELAC company leaders recently presented a technical program review to officials at Pakistan International Airlines. The airline uses BELAC Parts Manufacturer Approval (PMA) equipment in the engines of its commercial fleet.

Dennis Piotrowski, Vice President, Quality, and Ron Smits, Chromalloy Middle East Sales Manager, presented a technical review of BELAC High Pressure Turbine (HPT) blades for the airline's Product Support engineers and senior managers. 🌐

