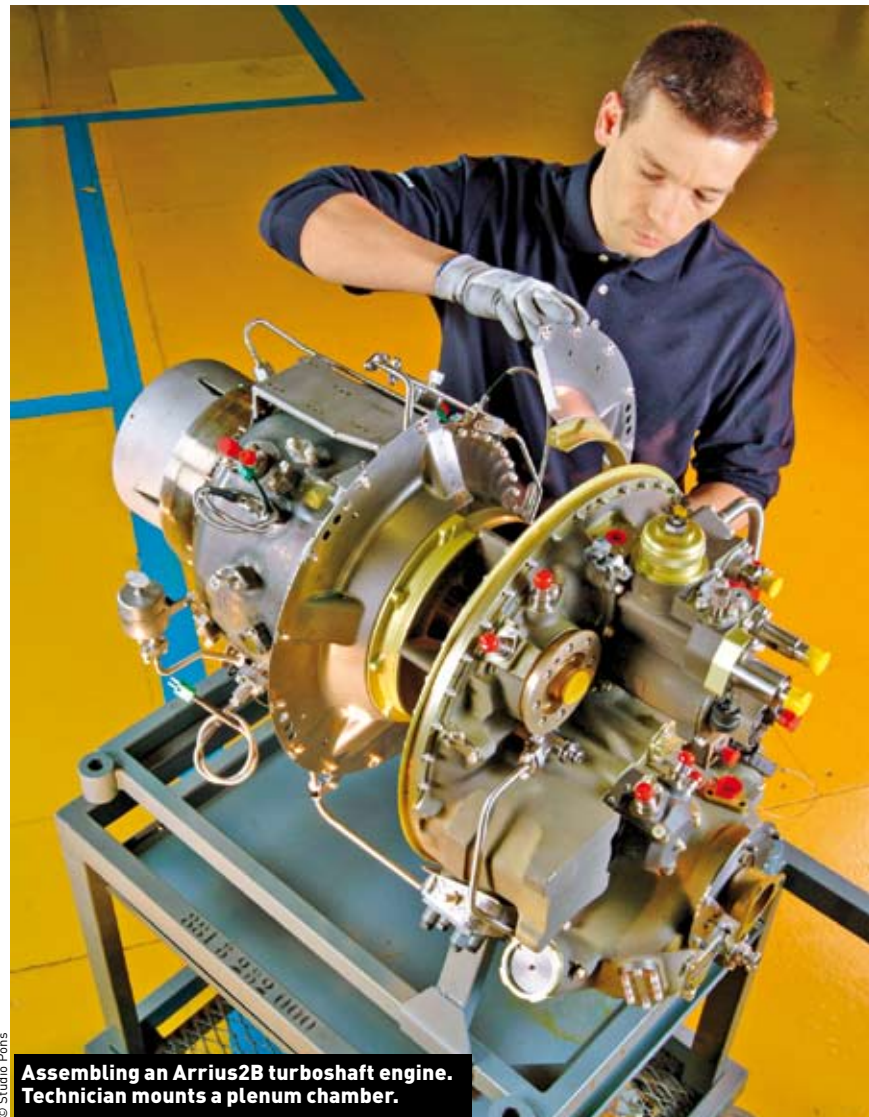


**GROWTH.** To keep pace with strong demand for its helicopter engines, Turbomeca has revamped its organization and made major capital investments. These moves have already generated significant improvements in terms of the number of engines produced and quality indicators.

## ENHANCING THE PRODUCTION PROCESS



Assembling an Arrius2B turboshaft engine. Technician mounts a plenum chamber.

**T**urbomeca, a Safran Group company, set a new record in 2007 by producing a total of 1,274 engines. This beat the previous record set some 28 years ago, a heady total of 1,230 engines produced in 1979. Turbomeca's impressive performance last year was the result of a well orchestrated plan, based on measures designed to meet a real two-pronged challenge: ensure a long-term rise in production rates to meet sustained demand while continuously improving both product and service quality.

Meeting this daunting challenge demanded changes in the production process itself. The first piece in the puzzle was "Turbo+", an approach designed to resolve any production problem as soon as it arises. Turbomeca also started setting up autonomous production units at the same time, in 2005. This also allowed staff to monitor problems and eliminate them as quickly as possible. "Through the autonomous units, we were able to move our methods and engineering departments closer to the production teams," recalls Pierre-Yves Morvan, vice president, integration and purchasing. By combining these two initial actions, Turbomeca generated some spectacular results (see box).

Next, Turbomeca expanded its production facilities to meet sustained market demand. The Eole project in Bordes (southwest France) will see the construction of a brand-new building spanning more than 57,000 square meters (615,600 sq ft). Replacing the

current facilities, it allows Turbomeca to group the production shops that were previously scattered in several locations, along with the design, quality and support units. International demand is so strong that new plants are being built outside France to meet this demand, and also to help Turbomeca break through in specific markets. "We are setting up facilities in strategic locations," notes Morvan. "Having production capacity on site allows us to expand our business."

### A new plant in the U.S.

For instance, Turbomeca has built a 108,000 sq ft plant in the United States, in Monroe, North Carolina, on a 16 hectare (40 acre) site. Scheduled for completion in mid-2008, it will produce components for the Arriel engines (blades, compressors, mechanically-welded housings) that power the U.S. Coast Guard's HH-65 and the U.S. Army's UH-72A Lakota helicopters. In addition to meeting growing demand, this plant will also help reduce Turbomeca's exposure to the current unfavor-

able euro/dollar exchange rate.

Similar reasons were behind the creation of a joint venture with Chinese manufacturer Changkong. Started in 2007, this joint venture already has 20 employees and will be in charge of assembling control units. As Pierre-Yves Morvan explains, "This is another case of supporting our business development by staking out a position as a constructive and above all local partner." Turbomeca already powers one out of every two helicopters in the pivotal Chinese market.

### Uniting to meet common goals

To further improve its cost-effectiveness, Turbomeca has totally outsourced the procurement, purchasing and quality control of commodity parts such as nuts and bolts. Considered "Class C" hardware, these components account for some 3,000 parts numbers out of a total of 16,000. This is a global initiative, spanning all of the company's facilities worldwide.

One of the main instigators of this



The Eole project will give Turbomeca a brand-new facility covering over 57,000 m<sup>2</sup> in Bordes, southwest France.

### TURBO+, SPEARHEADING QUALITY

The approach embodied in the Turbo+ initiative was borrowed from the auto industry, but is rarely seen in the aircraft industry. Led by Philippe Larrauri, vice president, quality at Turbomeca, this approach is based on the early detection of problems and their immediate resolution. As soon as a defect is observed, the line is stopped and secured. Teams characterize the problem, then design and apply an action plan to eliminate it. Implemented in 2004, this method has delivered impressive results. In just two years, engine returns have plummeted by 80%, while quality claims have dropped 60% and production delays 30%. These figures are even more impressive since production jumped 30% over the same period.

### TIGHTER RELATIONS WITH SUPPLIERS

While reducing the number of suppliers by 20%, Turbomeca will also focus on closer relations. A dedicated website will be opened during the first half of 2008, providing access to technical specifications, orders and supply plans. Turbomeca will no longer have to check procurement timetables itself, since each supplier can now do this directly online. Negotiating procedures will only be activated if there is a problem. "That will help accelerate information flows," predicts Pierre-Yves Morvan, vice president, integration and purchasing. "Suppliers will have the right documents immediately, which will help us boost productivity and reliability, while focusing on our financial performance."



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The current Bordes plant.

decision was the creation in 2005 of a procurement center, consolidating the procurement, purchasing and quality control departments. Sharing office space, they quickly learned to work together. According to Pierre-Yves Morvan, this was an irresistible process: "In the beginning they just coordinated their actions in relation to suppliers, then they started to carry out joint visits, and now they set common goals!"

Another key to the effectiveness of the new organization is an increase in staffing, from 45 in 2005 to 90 today. These additional resources and change in methods have borne fruit. The defect rate has dropped from 10,000 ppm (parts per million) in 2005 to 2,500 ppm in 2007. The missing parts rate (parts missing when needed for assembly) has become negligible, dropping from 20% in 2005 to 1.8% today.

But Pierre-Yves Morvan has no intention of resting on his laurels. "Now that we have established the conditions needed to handle production growth and ensure quality, we will reduce our supplier base and strengthen our relations so we can focus on further boosting performance (see box)." In

particular, Turbomeca has set up specialized centers of industrial expertise for each type of part (see box). Today's sustained market demand means that Turbomeca will continue to set new

records, and it will also continue to apply the measures needed to stay on track. ■

G. SEQUEIRA-MARTINS

## CENTERS OF EXPERTISE FOR EACH TYPE OF PART

Turbomeca is accelerating improvement by setting up centers of industrial expertise to group everybody involved in a given family of parts. By consolidating all disciplines and resources (engineering, production, purchasing, management control, human resources, etc.) at all Turbomeca sites, these centers will handle the development, production and support of their assigned parts. Turbomeca created the first two centers in 2007, for control systems and assembly/testing. In early 2008 it will set up centers in charge of reduction gearboxes, air ducts, rotating assemblies, combustion, structures and hydromechanical assemblies.



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Turbomeca USA's plant in Grand Prairie, Texas includes the original building (in the foreground) and an extension built in 2006 (in back), for total floorspace of 10,400 m<sup>2</sup>. Part of the building houses subsidiary Microturbo.