

POWER

BUSINESS AND TECHNOLOGY FOR THE GLOBAL GENERATION INDUSTRY

www.powermag.com

Vol. 151 • No. 8 • August 2007

GE F-class turbine breaks record

General Electric Co. reports that its installed fleet of F-technology gas turbines has now accumulated more than 20 million hours of commercial operation in power plants around the world.

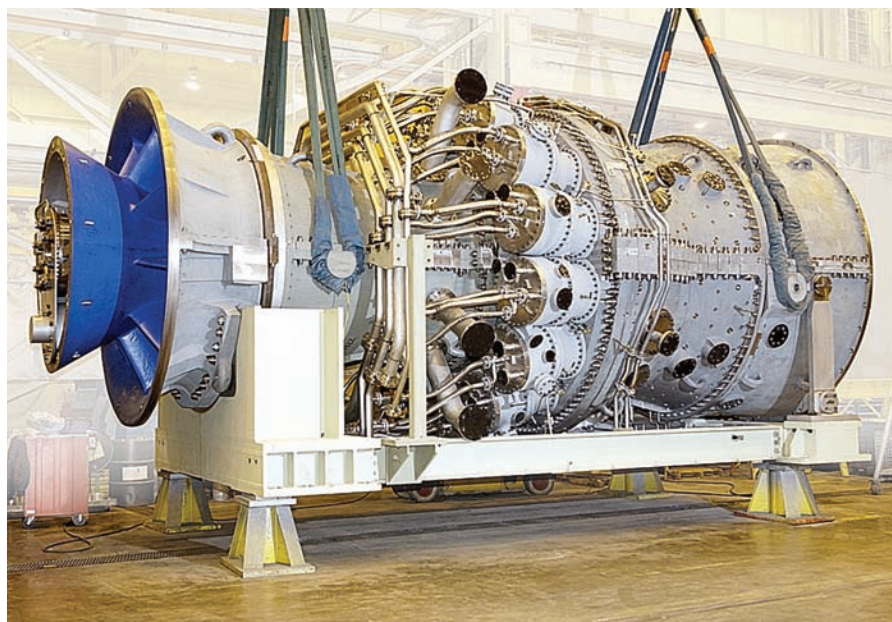
What's more, says GE Energy, the company is expecting to ship its 1,000th F-class machine this summer. Steve Bolze, GE Energy's power generation chief, said the F-class turbine (Figure 1) "has become an industry benchmark for efficient and reliable electricity production" over the past 20 years. A company press release adds that the machines "were the first gas turbines in their class to reach 40% turndown while maintaining single-digit NO_x and CO emissions."

GE introduced F technology in 1987, just as use of natural gas to generate electricity was beginning a worldwide boom. The first unit was shipped in 1988 and entered commercial service in 1990 at Dominion Virginia Power's Chesterfield site in Virginia. In 1989, Tokyo Electric Power picked F-class turbines for a 2,800-MW expansion of its Yokohama power station.

In 1994, notes GE, a 7FA unit at Korea Electric Power Corp. became "the first gas turbine in the world to reach 55% thermal efficiency in commercial combined-cycle operation." In late 1995 and early 1996, a Frame 7FA at Sifthe Energies' Independence plant in Oswego, N.Y., recorded 100% availability and reliability over 108 days of continuous operation.

Moving into the 21st century, in 2002, GE Frame 7s surpassed 5 million fired hours

1. F, for first. General Electric's long-lived, high-performing Frame 7 gas turbine has repeatedly raised the bar for efficiency since its introduction in 1987. *Courtesy: General Electric Co.*



in worldwide service. In 2004 and 2005, China's Gas Turbine Power Plants Construction Project picked GE to supply 20 F-class machines for the first two phases of its plan to meet growing electricity demand while limiting pollution. In late 2006 and 2007, Saudi Arabia said it would buy 35 F-technology gas turbines for power projects in the oil-rich kingdom.

According to data from GE's Operational Reliability Analysis Program, the 7F is the

most reliable F-class turbine and the first to achieve 99.1% reliability. According to GE, the newest member of the F family, the Frame 9FB, "has achieved combined-cycle efficiency exceeding 58%." Mated with GE's high-efficiency advanced technology (HEAT) steam turbine in a combined-cycle operation configuration, the 9FB "can produce more than 412 MW, a significant increase over the 9FA's combined-cycle output of approximately 390 MW."