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## MTU Aero Engines and Pratt & Whitney develop Geared Turbofan

Paris, June 18, 2007 – It bases on an entirely novel technology and is thriftier, appreciably cleaner and quieter than conventional engines: the innovative Geared Turbofan™ engine. It is targeted at the next generation of short- and medium-haul aircraft. Developing and equipping it with the latest technologies are MTU Aero Engines and Pratt & Whitney. The engine demonstrator bases on the PW6000, the engine powering the narrowbody Airbus A318 transport. MTU contributes to the project its high-pressure compressor plus an innovative high-speed low-pressure turbine.

The new propulsion unit stands out by its reduction gear decoupling two of the engine's modules that used to be interconnected by a common shaft: the low-pressure turbine and the fan. Decoupling the two from each other permits the large-diameter fan to run slower and the turbine much faster. This lets either run to best effect, with the fan rotating at one third the speed of the turbine. The operationally optimized components much improve the engine's efficiency and reduce its noise levels. Another payoff is the reduced weight as the parts and stage counts have been cut in half. The environmental benefit is far from being shabby, either: fuel burn is reduced by more than 12 percent, perceived noise by 50 percent, and maintenance costs by 40 percent. The new design promises to reduce emissions of carbon dioxide by more than 12 percent and of oxides of nitrogen by up to 55 percent.

"With our high-speed low-pressure turbine we are developing a key component for the geared turbofan," explains Dr. Rainer Martens, MTU Executive Vice President and COO. The extremely high efficiency and low stage count are achieved by innovative design technologies, optimized structural mechanics as well as new materials and coatings. The high-speed low-pressure turbine is markedly quieter than conventional models. Says Martens: "This once again underscores the company's leadership position in engine technology."

The Geared Turbofan™ demonstrator will make its first run late this year and, after further ground testing, will fly in 2008. The tests aim to demonstrate the concept's design maturity and sell aircraft makers and operators on the desirability of the innovative engine. For its developers, the investment will pay dividends considering that the new generation of short- and medium-haul aircraft is prognosticated to garner a market share of



fully 70 percent. The Geared Turbofan™ will be ready for service as early as 2012.

MTU Aero Engines is Germany's leading engine manufacturer and ranks among the leading players worldwide. Taken across its affiliates, the company has 7,100 employees and, in fiscal 2006, had 24 billion euros in sales. Its maintenance segment is the world's largest independent provider of commercial engine maintenance services. In the military arena, MTU is Germany's industrial lead company for practically all engines flown by the country's military. The company excels in high-pressure compressor and low-pressure turbine technologies, engine control units, as well as manufacturing and repair techniques.

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