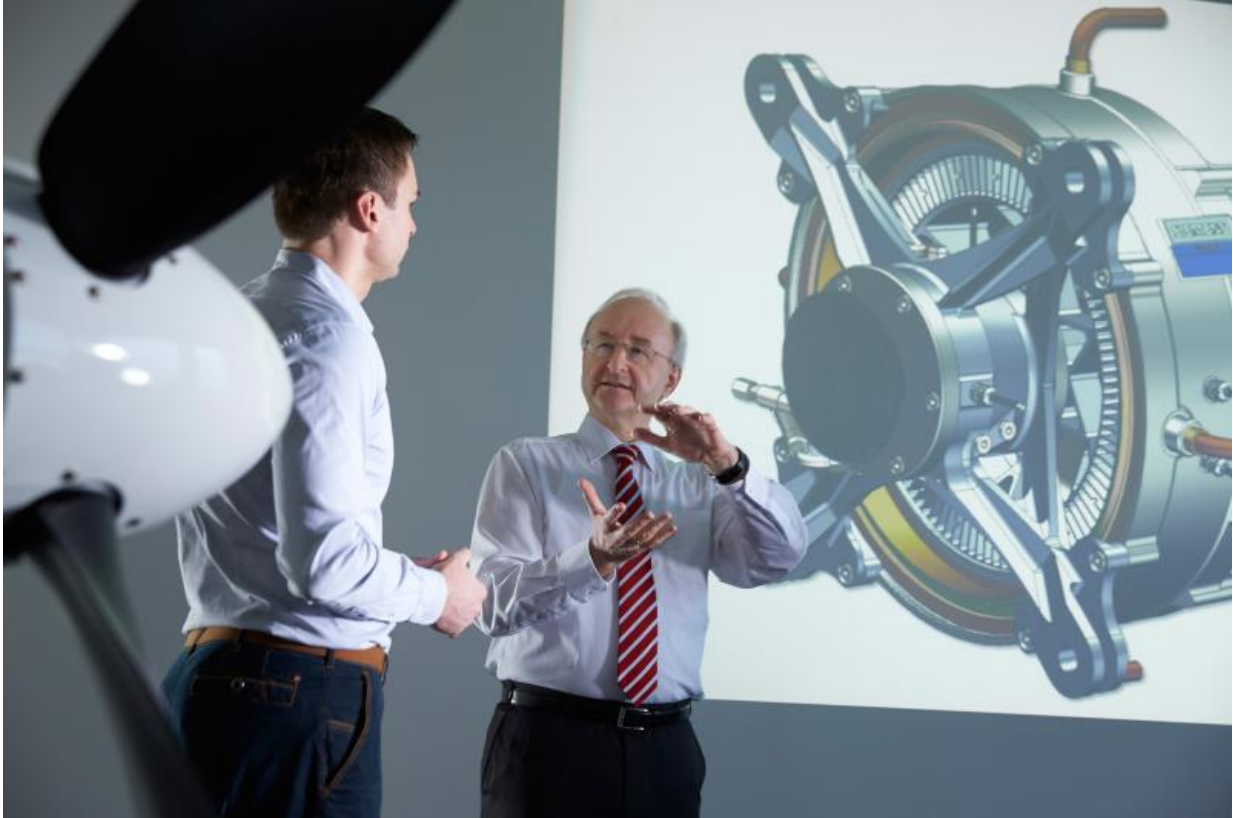


# World-record electric motor for aircraft

April 16 2015

---



To slim down the end shield, Siemens developed a special optimization algorithm and integrated it into the Siemens CAE-Program NX Nastran.

Siemens researchers have developed a new type of electric motor that, with a weight of just 50 kilograms, delivers a continuous output of about 260 kilowatts – five times more than comparable drive systems. The motor has been specially designed for use in aircraft. Thanks to its

record-setting power-to-weight ratio, larger aircraft with takeoff weights of up to two tons will now be able to use electric drives for the first time.

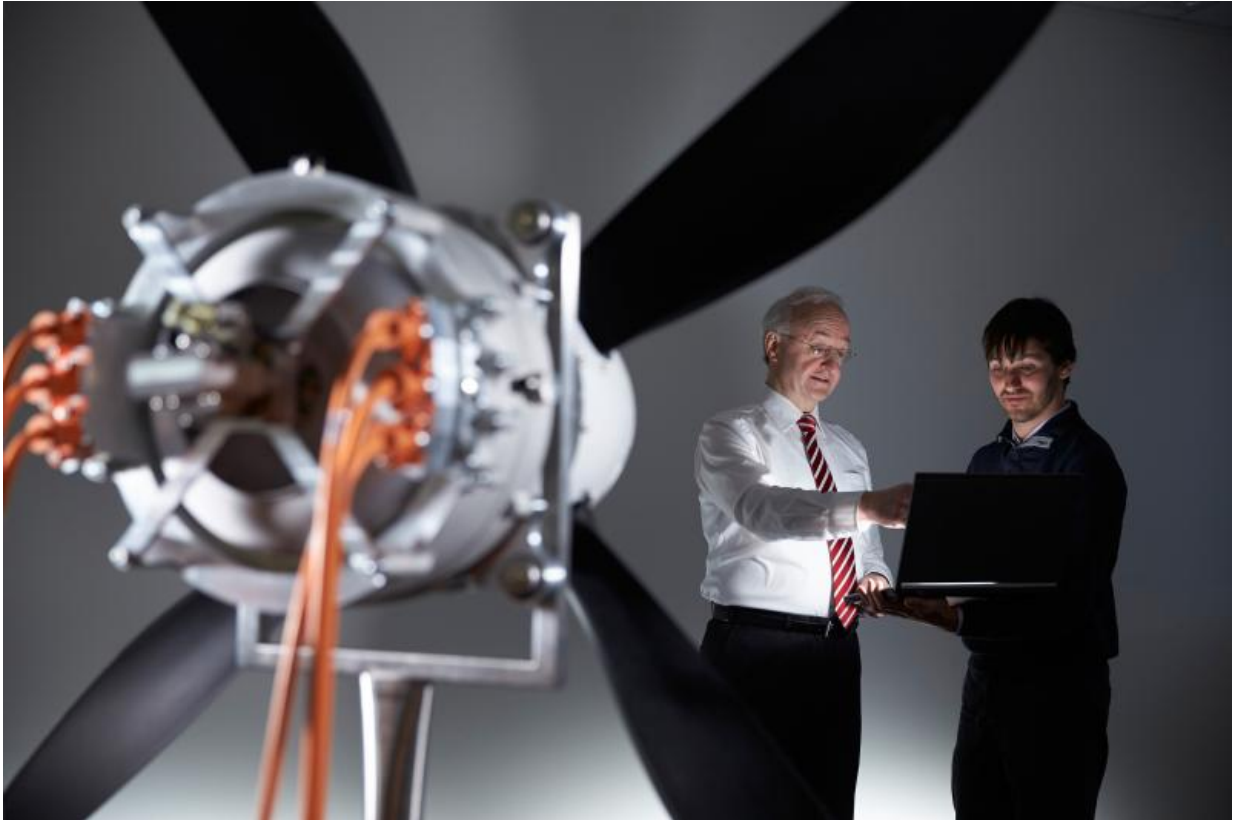
To implement the world-record motor, Siemens' experts scrutinized all the components of previous motors and optimized them up to their technical limits. New simulation techniques and sophisticated lightweight construction enabled the drive system to achieve a unique weight-to-performance ratio of five kilowatts (kW) per kilogram (kg). The electric motors of comparable strength that are used in industrial applications deliver less than one kW per kg. The performance of the drive systems used in electric vehicles is about two kW per kg. Since the new motor delivers its record-setting performance at rotational speeds of just 2,500 revolutions per minute, it can drive propellers directly, without the use of a transmission. "This innovation will make it possible to build series hybrid-electric [aircraft](#) with four or more seats," said Frank Anton, Head of eAircraft at Siemens Corporate Technology, the company's central research unit. The motor is scheduled to begin flight-testing before the end of 2015. In the next step, the Siemens researchers will boost output further. "We're convinced that the use of hybrid-electric drives in regional airliners with 50 to 100 passengers is a real medium-term possibility," said Anton.

The development of this motor was supported by the German Aviation Research Program LuFo in a project of Grob Aircraft and Siemens.

In 2013, Siemens, Airbus and Diamond Aircraft successfully flight-tested a series hybrid-electric drive in a DA36 E-Star 2 [motor](#) glider for the first time. The test aircraft had a power output of 60 kW.



Since the new motor delivers its record-setting performance at rotational speeds of just 2,500 revolutions per minute, it can drive propellers directly, without the use of a transmission. "This innovation will make it possible to build series hybrid-electric aircraft with four or more seats," said Frank Anton, Head of eAircraft at Siemens Corporate Technology, the company's central research unit.



Thanks to its record-setting power-to-weight ratio, larger aircraft with takeoff weights of up to two tons will now be able to use electric drives for the first time.

Provided by Siemens

Citation: World-record electric motor for aircraft (2015, April 16) retrieved 25 April 2024 from <https://phys.org/news/2015-04-world-record-electric-motor-aircraft.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.