



Schaeffler Aerospace Germany GmbH & Co. KG

Adrian Popp WI/FAB-EP

We pioneer motion

1

Mainshaft Bearings For Jet Engines

2

AM Bearings for Improved Efficiency

3

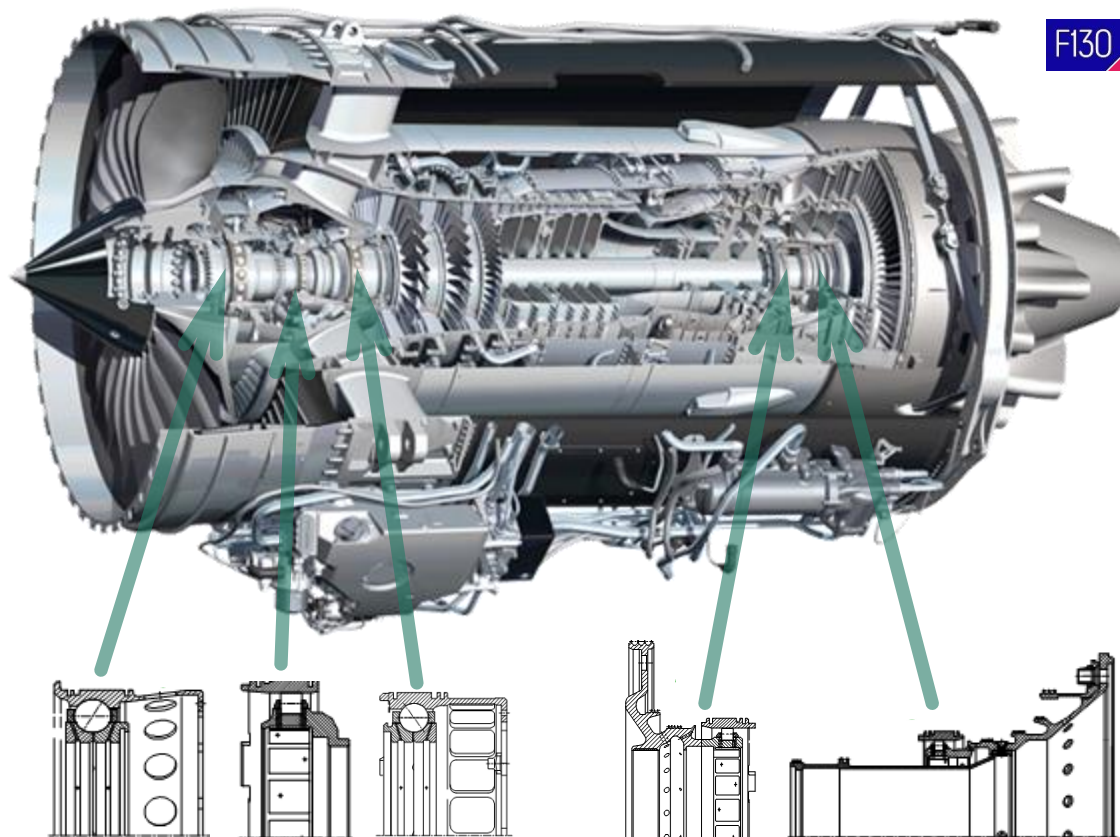
Aerospace Aviation Congress Interdisciplinary International - AACII

4

Apprenticeships at Schaeffler

AGENDA

Todays Mainshaft Bearings For Civil Jet Engines



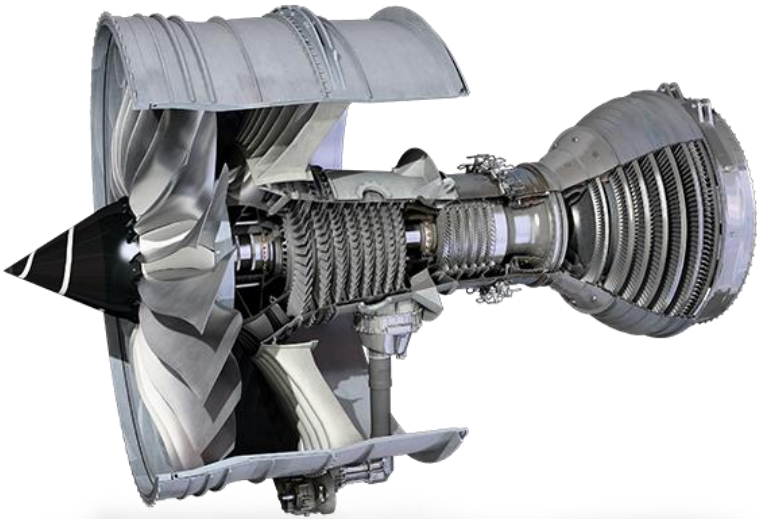
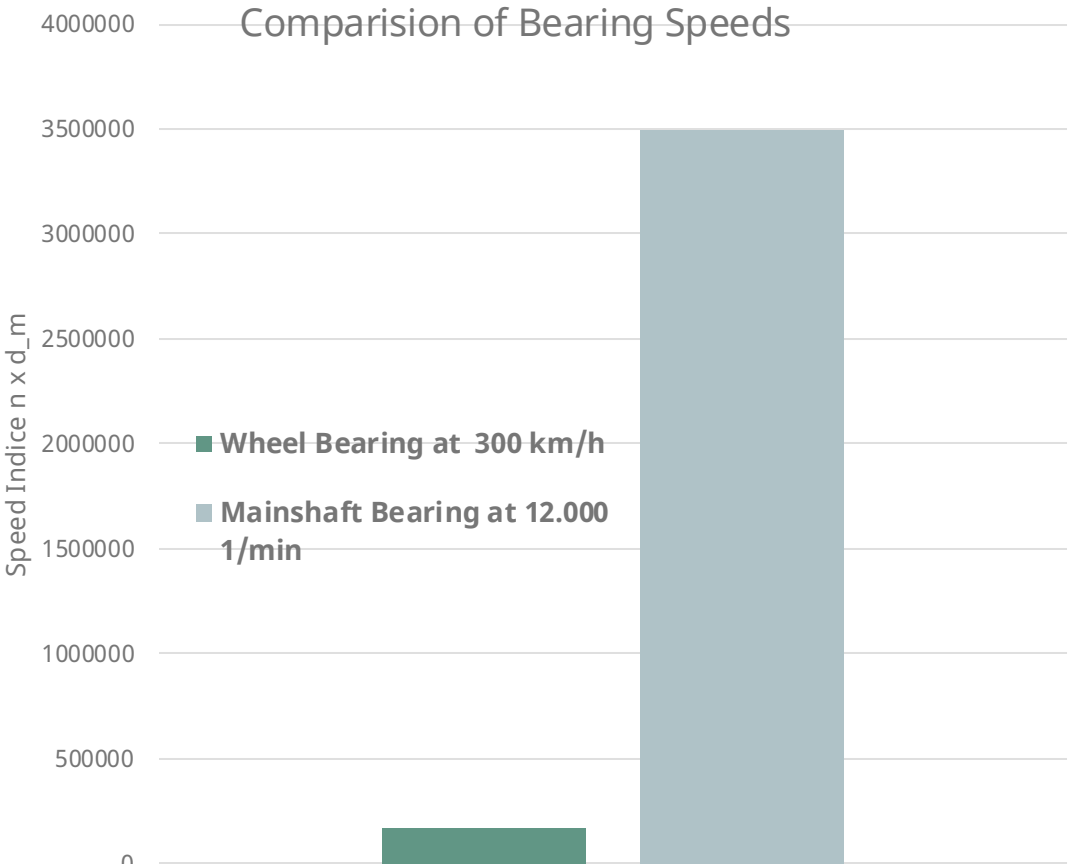
F130

Operating conditions & requirements on main shaft bearings:

- Speed indices (DN) up to **3.6M mm/min** (trending > **4M mm/min**)
- Highly loaded thrust ball bearings (**130+ kN**) and gearbox bearings
- Rolling contact temperatures up to **250 °C**
- High rolling element centrifugal forces
- Power losses for ball bearings at take-off between **30 and 60 kW**
- Integrated designs and Schaeffler technical and manufacturing know-how provide bearing systems with:
 - Reduced weight
 - Reduced cost
 - High reliability:
 - In-Flight Shutdown < **0,25 ppm**
 - Unscheduled Engine Removal UER < **1 ppm**
 - Excellent wear resistance & spall propagation properties

Highly engineered and custom-made precision bearing systems
(design, material, product & production know-how)

Todays Mainshaft Bearings For Civil Jet Engines



KerTwk (Keramik im Triebwerk)

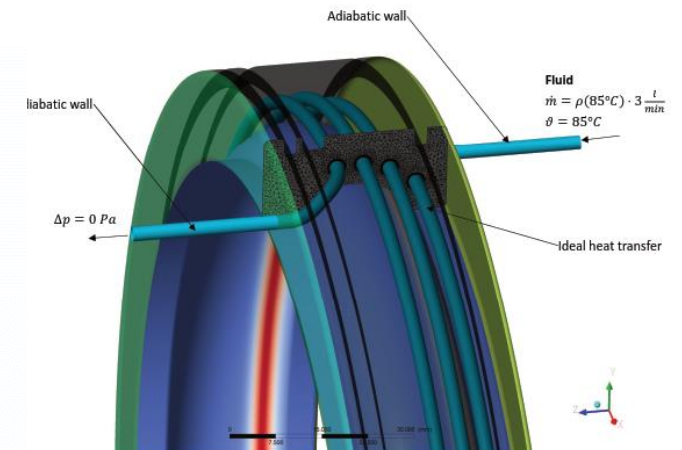
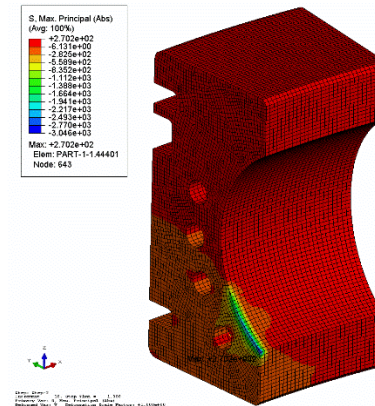
PROJECT CONTENT:

- Design & manufacturing of an outer ring with integrated cooling channels
- Process development for additive manufacturing of **M50NiL** powder
- Full-Scale test of high performance bearings
- Improvement of **3D printed** cooling channels
- Increased **efficiency** of mainshaft bearings
- Heat transfer improvement of up **to 35 %**



Federal Ministry
for Economic Affairs
and Climate Action

S: Max. Principal (Abs)
(Avg: 100%)
+2.702e+02
-6.131e+00
-2.529e+02
-5.589e+02
-6.329e+02
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-3.046e+03
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KerTwk gets awarded with AACII award

ADRIAN POPP GETS AWARDED WITH

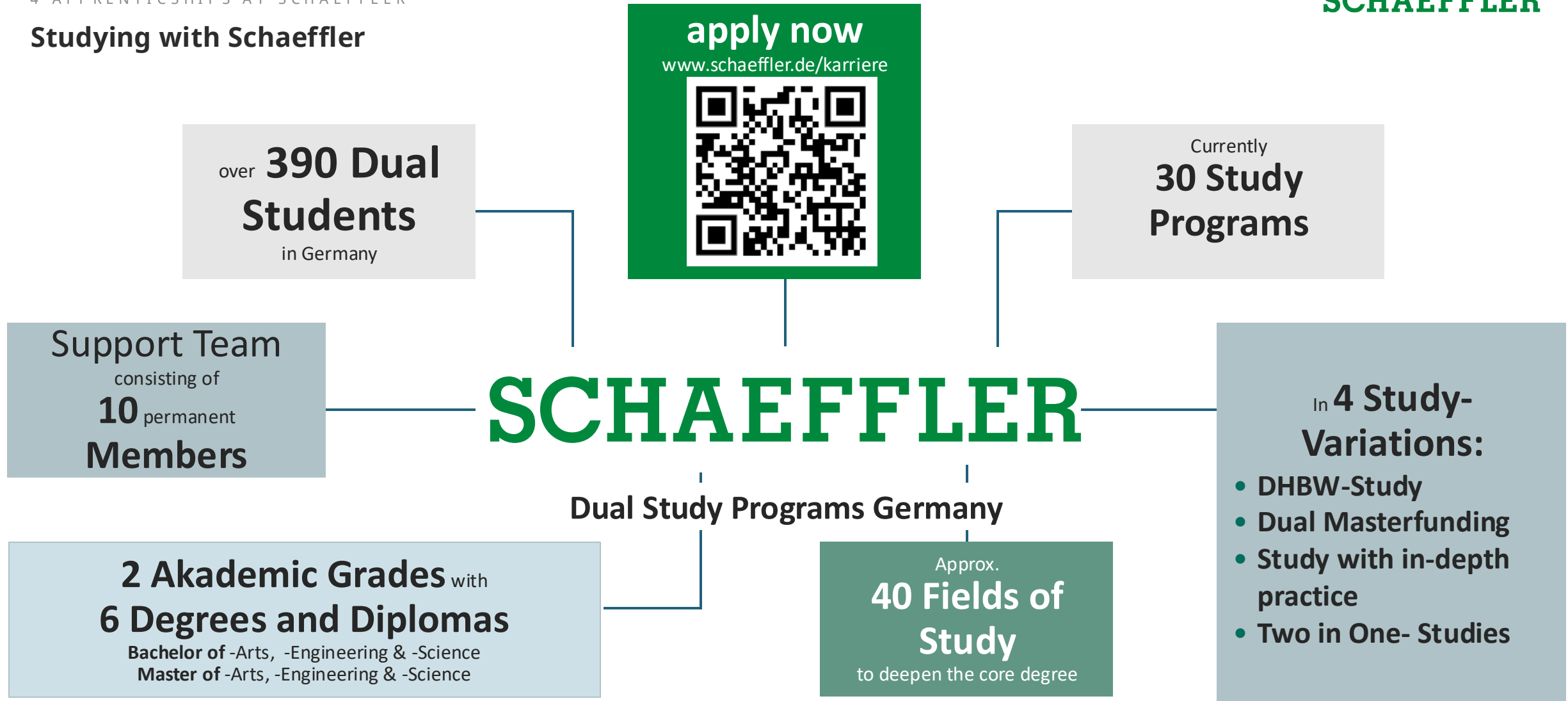
- Global **AACII Award** for his
- Bachelor thesis
- In the category “**New Generation**”
- At the second **aerospace** and **aviation** congress in Nuermberg
- Big thanks to **Schaeffler Aerospace Germany GmbH & Co. KG**
- Dr. Peter Glöckner
- Prof. Dr. Alexander Versch from the



- and the whole team of



Studying with Schaeffler



Stand September 2023

SCHAEFFLER