
Austro Engine
THE FUTURE OF
FOR THE PASSION OF FLYING
Diamond
AIRCRAFT

GLOBAL OPERATIONS

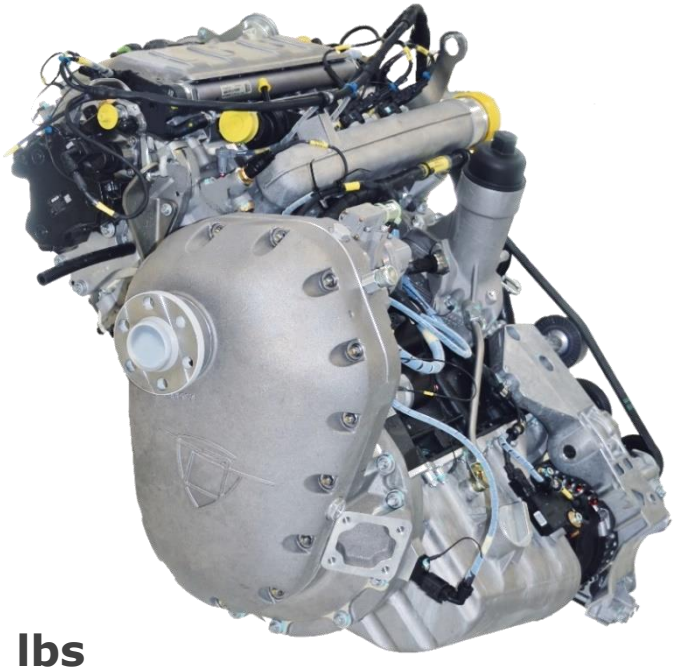
DIAMOND AIRCRAFT
XINCHANG, CHN
> 150 employees

DIAMOND AIRCRAFT
LONDON, ONTARIO, CAN
> 300 employees

DIAMOND AIRCRAFT
WIENER NEUSTADT, AUT
> 700 employees

AUSTRO ENGINE
WIENER NEUSTADT, AUT
> 100 employees

PISTON ENGINE RUNNING ON JET FUEL



INLINE 4 CYLINDER

LIQUID COOLED

COMMON RAIL

TURBOCHARGED

DISPLACEMENT: **1,991 cm³**

WEIGHT: **186 kg / 409 lbs**

POWER: **170 HP / 123.5kW (AE300)**

POWER: **180 HP / 132 kW (AE330)**

HOW WILL WE FLY IN THE FUTURE

2020

CLASSIC

RENEWABLE

2025

2030

ELECTRIC/
HYBRID

DISRUPTIVE

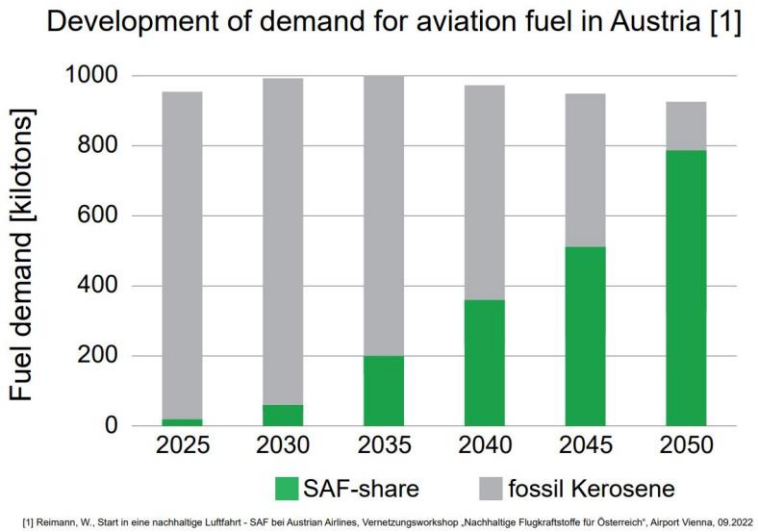
2040

WHAT IS "SAF" TODAY?

SYNTHETIC BLENDING COMPONENT		CONVENTIONAL BLENDING COMPONENT		SAF BLEND (ACC. ASTM D7566)
SBC	+	**FOSSIL JET A/ JET-A1**	=	**JET A/ JET-A1 (ASTM D1655)**

THIS IS/ WILL BE AVAILABLE AT THE AIRPORT

CAN BE MARKED AS SAF BLEND (D7566) **OR** AS JET A-1 (D1655)



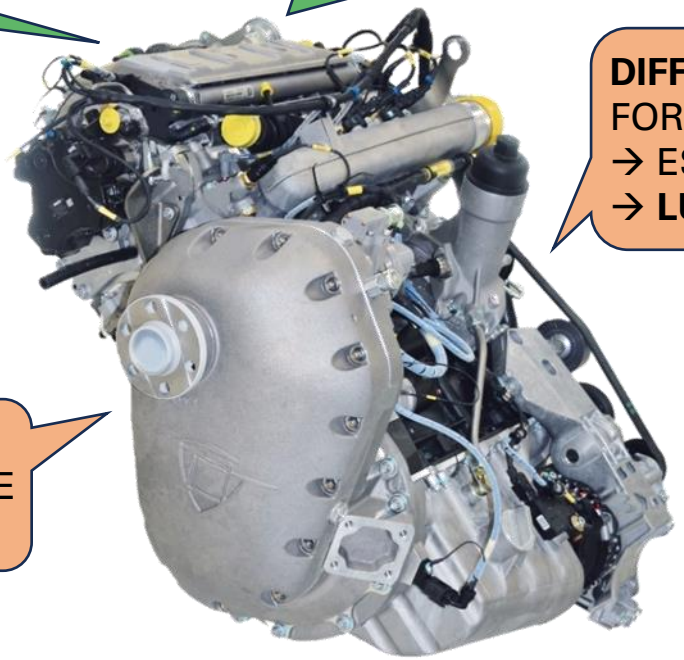
[1] Reimann, W., Start in eine nachhaltige Luftfahrt - SAF bei Austrian Airlines, Vernetzungsworkshop „Nachhaltige Flugkraftstoffe für Österreich", Airport Vienna, 09.2022

→ TARGET 2030: 10%

WHAT IS "SAF" TODAY?

CERTIFIED AS **TURBINE FUELS** D1655
→ NO ADDITIONAL CERTIFICATION NEEDED

8 **DIFFERENT PRODUCTIONS PATHS** (ASTM D7566/23)
→ NO FURTHER INFORMATION AT FUELING STATION



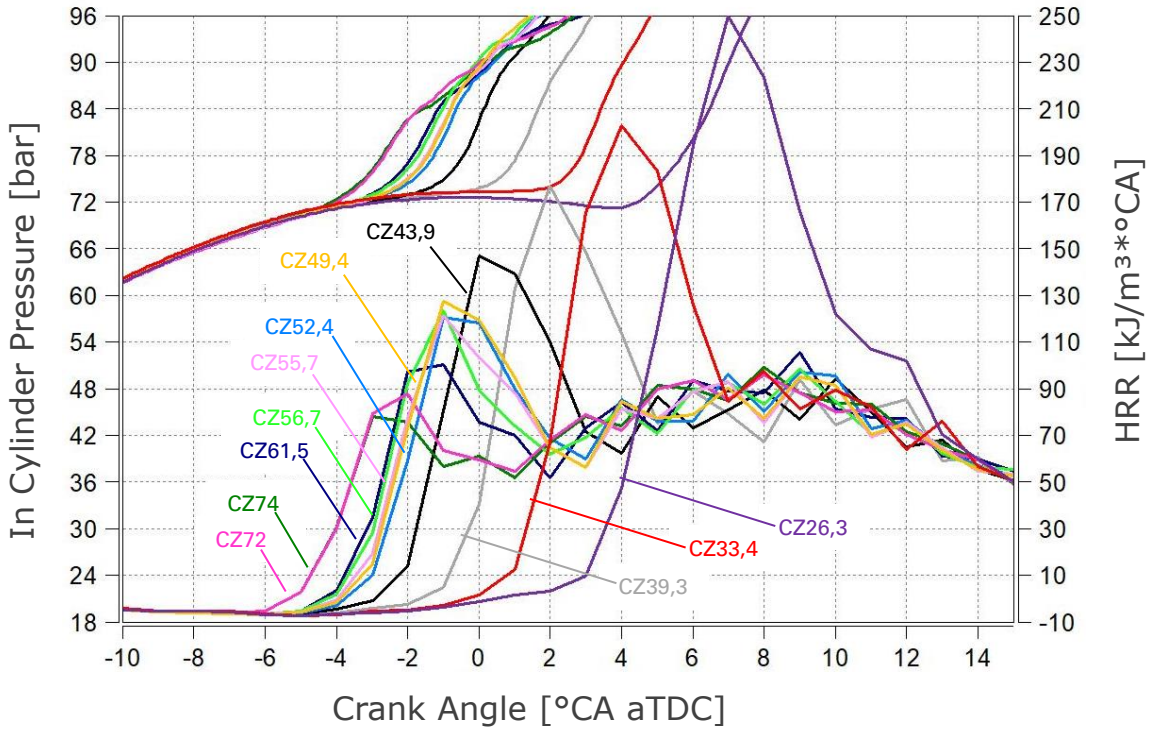
DIFFERENT REQUIREMENTS
FOR PISTON ENGINE OPERATION
→ ESPECIALLY **CETANE NUMBER** (CN)
→ **LUBRICITY** (BOCLE)

DIFFERENT BLENDING RATES
→**"BOOK & CLAIM"** 0% TO 50% POSSIBLE
"YOU DON'T KNOW WHAT YOU GET"

POOR AVAILABILITY FOR TESTING

WHERE DO WE SEE CHALLENGES WITH SAF ACCORDING ASTM D7566/23.

PISTON ENGINE TESTS WITH FUELS/ BLENDS WITH DIFFERENT CETANE NUMBER (CN)



→ TYPICAL Δ_{CN}=~10 FOR FOSSIL-BASED JET A-1,

TYPICAL Δ_{CN}=?? FOR „SAF"

→ **CONSTANT SOI MAY LEAD TO POOR EFFICIENCY**

(ONE FADEC DATA SET FOR ALL FUELS)

WHAT WILL "SAF" BE IN FUTURE?

SYNTHETIC BLENDING COMPONENT		OTHER SYNTHETIC BLENDING COMPONENT		
SBC	+	SBCs	≠	**JET A/ JET-A1** (ASTM D1655)

SOURCE: AIRBUS

"DROP IN" POTENTIAL **FOR TURBINES**

ACCORDING TO RLCF* ALLIANCE (GURHAN ANDAC, ASTM D02.J06 CHAIR)

MIGHT BE **CHALLENGE FOR PISTON ENGINES**

→ GET INVOLVED IN **OEM TESTING PHASE**

ASTM TASK FORCE IN D02.J #AC884

*RENEWABLE AND LOW-CARBON FUELS VALUE CHAIN INDUSTRIAL ALLIANCE

WHAT WE DO:
SAF AIR LAB PROJECT

STARTED: 01.11.2023

DURATION: 36 MONTHS (31.10.2026)

PROGRAM: FFG TAKE-OFF 2022

PARTNERS: TU-VIENNA (LEAD PARTNER)

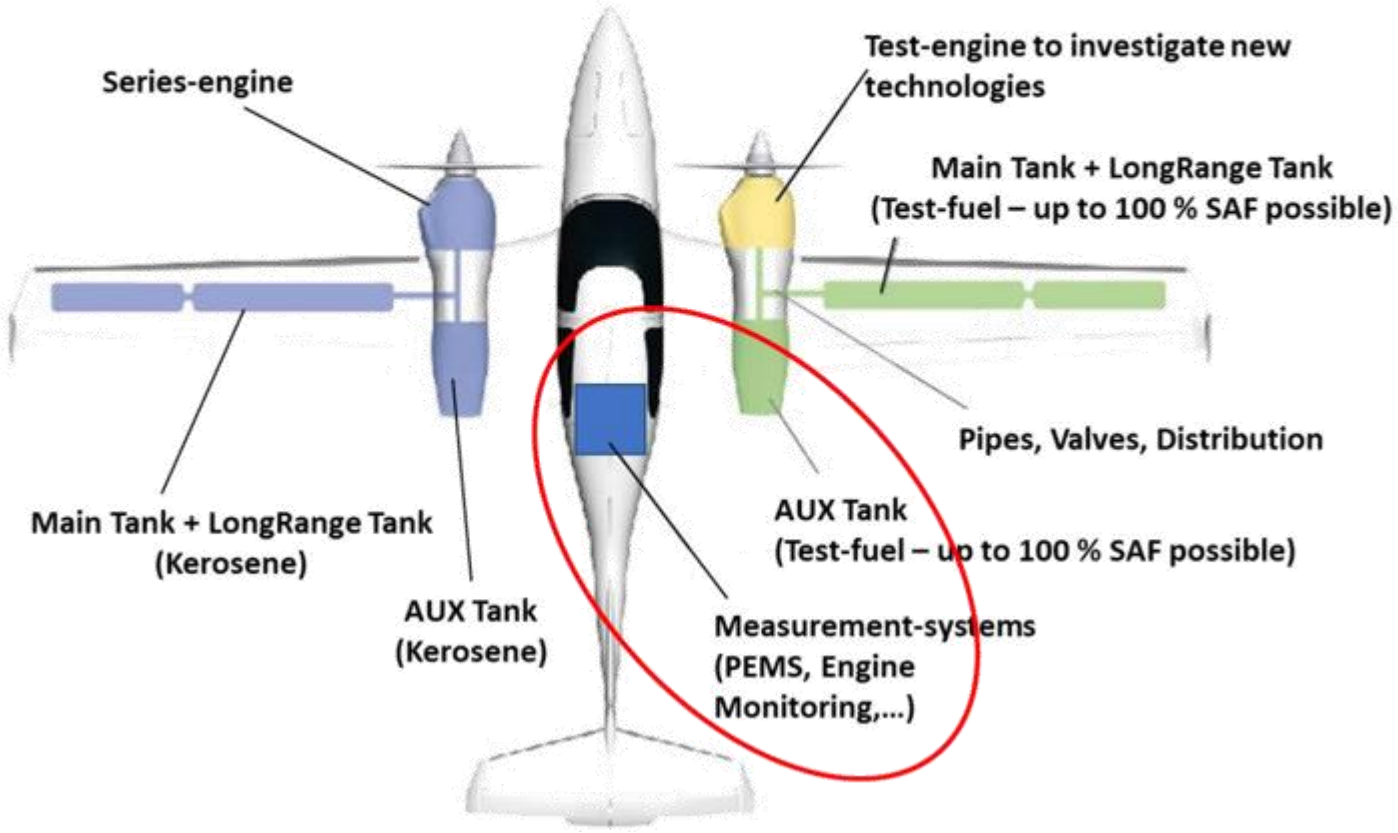
AUSTRO ENGINE (PARTNER)

DAI (PARTNER)

C.M.D. (PARTNER)

Original Side
Fallback solution for safe operation

Experimental Side
Investigation of unapproved technologies and fuels possible



FULLY INTEGRATED MEASUREMENT SYSTEM

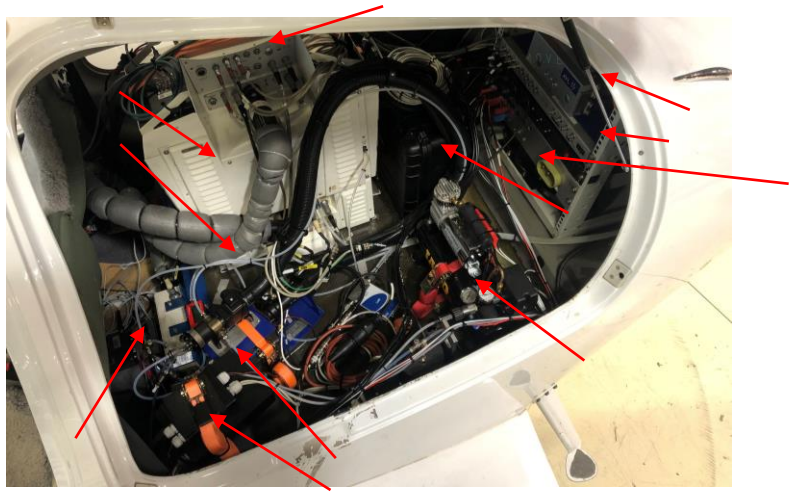
NO CATCH-UP FLIGHT

WHAT WE DO:
COMPACT INSTRUMENTATION TO REALIZE AIR LAB CONDITIONS

EMISSIONS (FULLY CALIBRATED DEVICE)

AVL INDICATION SYSTEM

PRESSURE, TEMPERATURE SENSORS



WHERE DO WE SEE CHALLENGES WITH SAF

BANDWIDTH AND DETERMINATION METHOD OF CN

BANDWIDTH OF LOWER HEATING VALUE (LHV)

LOW LUBRICITY

ACTUAL ALL AVAILABLE SAFS **RUN WITHOUT EXCEEDING LIMITS**

OPTIMIZATION **POTENTIAL INCREASING WITH VARIABILITY OF FUELS**

→ EFFICIENCY / DURABILITY

SCATTERING OF SERIES PRODUCTION MAY HAS TO BE ADAPT DUE TO POSITIVE **INTERFERENCE WITH FUEL PROPERTIES** IN FUTURE

SUMMARY

PISTON ENGINES FOR GENERAL AVIATION **MUST FLY WITH THE SAME FUEL** AS COMMERCIAL AVIATION

JET FUEL IS **SUBJECT TO CHANGE (SBC SHARE)** AUSTRO ENGINE STARTED OFFICIAL "COORDINATION" WITH PISTON ENGINE MANUFACTURERS IN **ASTM TASK FORCE GROUP**

THE FUEL CAN, BUT DOES NOT NECESSARILY HAVE TO, WORK **WITHOUT RESTRICTIONS** (E.G. CN AND/ OR BOCLE VALUE) IN FUTURE

AUSTRO ENGINE HAS BUILT UP A **STRONG NETWORK** AND CAN **ANALYZE FUELS** IN TERMS OF THEIR SUITABILITY NOT ONLY ON THE TEST BENCH BUT ALSO **IN AN AIRCRAFT UNDER REAL CONDITIONS**

TARGET 2025: EXPAND THE NETWORK AND **SOURCE NEW TYPES OF FUELS FOR ANALYSIS** (20-200L)

EVERY DROP HELPS!

ACKNOWLEDGEMENTS

AUSTRIAN FUNDING AGENCY FOR BUSINESS-RELATED RESEARCH, DEVELOPMENT AND INNOVATION - **FFG**

PROJECT TEAM **VIENNA UNIVERSITY OF TECHNOLOGY** (FLORIAN KLEISSNER, CHRISTIAN REITMAYR, PETER HOFMANN)

CUSTOMERS **LUFTHANSA** (MATTHIAS SPOHR, BIRGIT BUBELACH, MATHIAS OFFEN)

CUSTOMERS **QINETIC** (DONALD LUNDIE)

WFS (WILHELM SANDERS)

ASTM D02.J06 GROUP (GURHAN ANDAC)

PARTNER FROM **FUEL INDUSTRY** (***)

CONSULTANT (DIETMAR **POSSELT**)

COMPETITOR **CONTINENTAL AERO** (DAVID DOERNER, RENE RUHNOW, SEBASTIAN BAETZ)

PROJECT TEAM AE AND DIAMOND AIRCRAFT (PHILLIP VOGD, WOLFGANG WAGNER, ALEX HAUTHALER, JUERGEN DICK, SOEREN PEDERSEN)

STAY TUNED:

46TH INTERNATIONAL VIENNA MOTOR SYMPOSIUM

MAY 14 – MAY 16, 2025, VIENNA, AUT

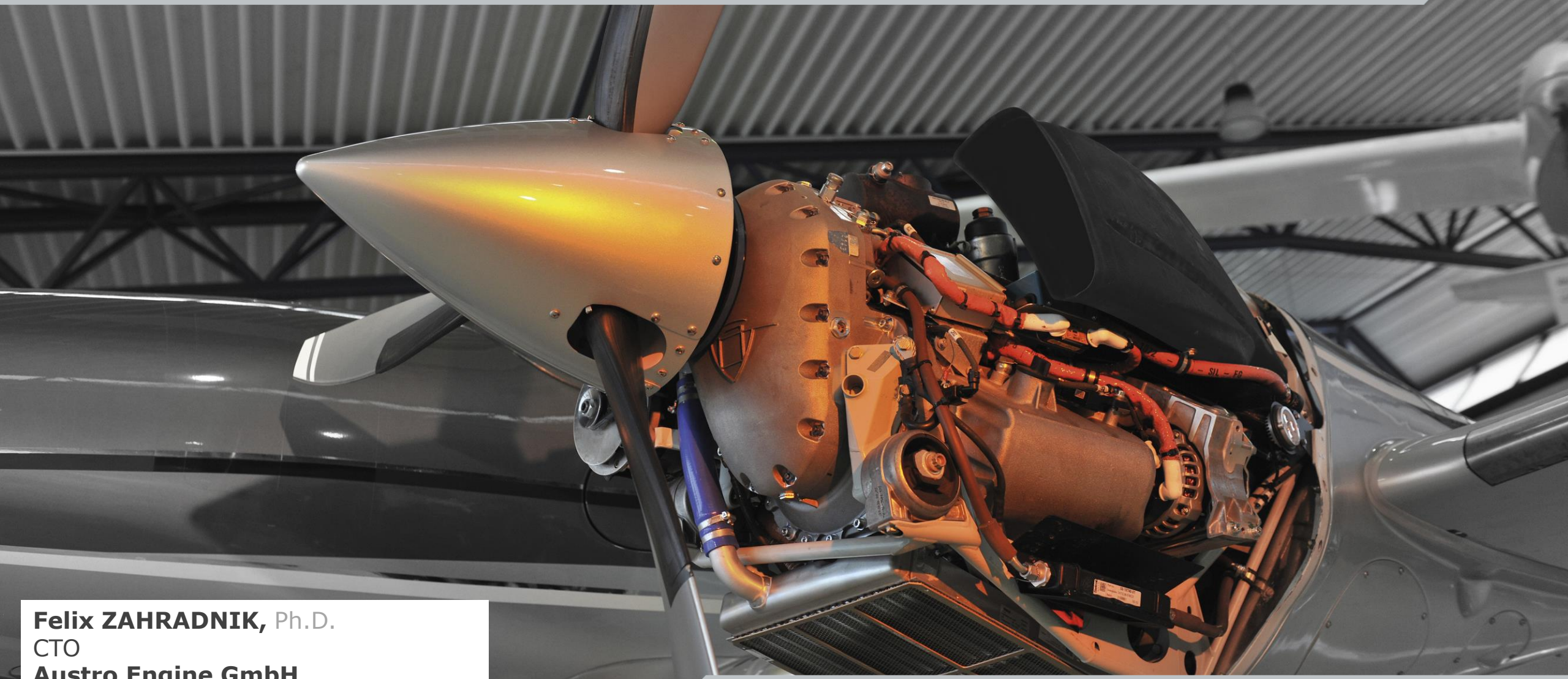
AIREG – SAF CONFERENCE

JUN 23– JUN 24, 2025, BERLIN, DE

ASTM INTERNATIONAL DO2 COMMITTEE, TASK FORCE D02J

DEC 7 - DEC 11, 2025, HOUSTON, US

THANK YOU!



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