

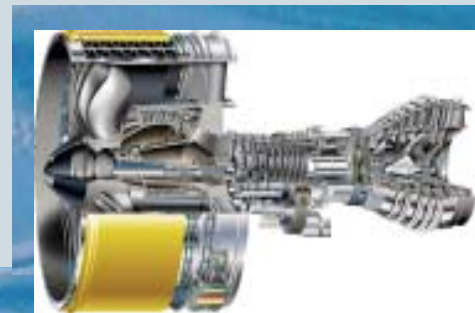
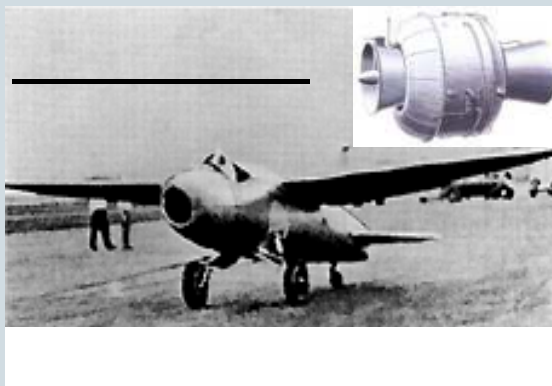
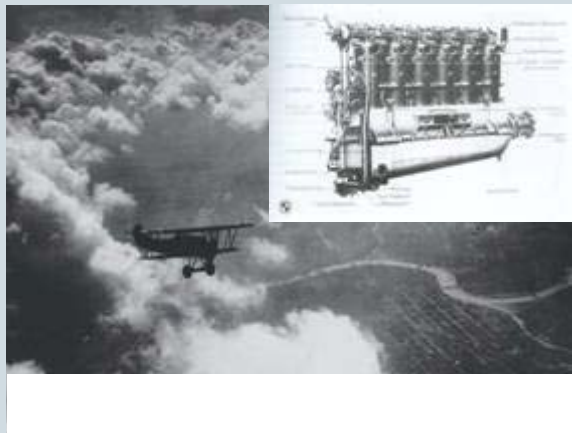
Technology Perspectives for Aircraft Propulsion

**SAE Power Systems Conference
and
SAE World Aviation Congress
Reno, Nevada
November, 2nd, 2004**

Prof. Dr. Klaus Broichhausen, MTU Aero Engines

... This is MTU Aero Engines

- ... Future challenges commercial & military engines
- ... Technological answers





PW6000



Airbus A318

JT8D



Boeing MD80-Reihe

V2500



**Airbus A319, A320,
A321, Boeing MD-90**

PW2000



Boeing 757

CF6-80



**Airbus A300,
A310, A330
Boeing 747, B767, MD-11**

GP7000



Airbus 380

PW4000G



Boeing 777

PW500



**Cessna Bravo
Cessna Excel**

PW300



**Learjet 60
Do328JET
Gulfstream G200
Hawker 1000
Dassault Falcon 7X
Cessna Sovereign**

C250-C20



**Bo105
Jet Ranger**

EJ200



**EF2000 Eurofighter
Typhoon**

RB199



Panavia Tornado

J79



F4-Phantom II

Tyne



**Transall
Breguet Atlantic**

F117-PW-100



C-17 Globemaster III

T64



Sikorsky CH-53-G

MTR390



Eurocopter Tiger

Larzac



Alpha Jet

TP400-D6



Airbus A400M

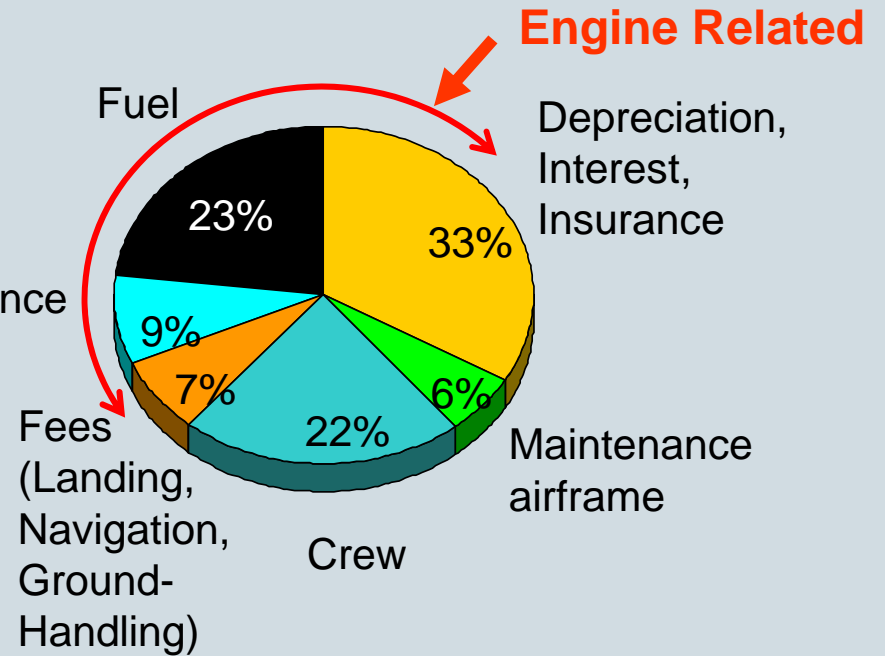
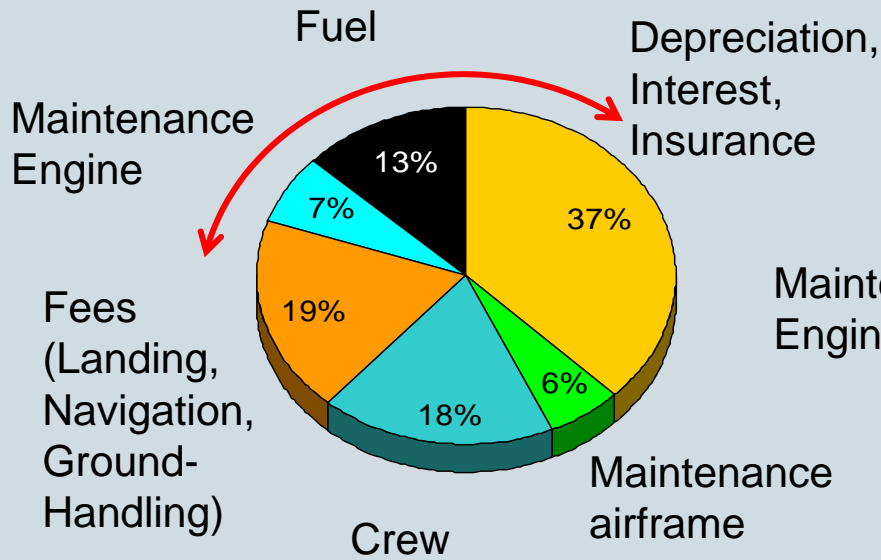
... This is MTU Aero Engines

... **Future challenges commercial & military engines**

... Technological answers

Short Range
(A320 bei 500 nm)

Long Range
(A340-300 bei 6000 nm)



Decibel count raised in US-EU hushkit battle

RAMON LOPEZ/WASHINGTON DC

A TRANSATLANTIC war of wits over European Commission plans to place serious restrictions on hushkitted com-

aircraft registered in non-EU states to go on flying in the EU after 2002 unless the aircraft have been operated in the EU between 1995 and 1999, and have remained on the same register.

portation says the regulation "...seems to be motivated by a desire to appear tough on noise to placate local constituencies, or by a mistaken belief that US operators will dump hushkitted aircraft in

Europe proceeds with hushkit ban

JULIAN MORON/PARIS

THE EUROPEAN Union (EU) is on a collision course with the USA over noise regulations after the European Parliament voted on 30 March for a proposed ban to proceed on lines

which was put on hold for a year pending discussions with the USA on new Stage 4 regulations, would be "totally unacceptable", says the Parliament.

In its resolution, the Parliament said it would consider a "limited review" of its ruling on hushkitted

to withdraw this "pending a global agreement". It says it wants the USA to take a "constructive approach" to negotiating a new noise standard.

The European proposals have drawn the threat from US Congress of a loss of British Air-

Engines with more power and less noise

Anyone who watches baseball regularly knows about Shea Stadium: The home of the New York Mets lies under

Meeting federal requirements

In 1990, Congress promulgated the Airport Noise and Capacity Act, ordering

The approaching Green Tax

Consideration for the environment is one of the newest and most influential trends in today's culture and society. The increasing influence of so-called 'green parties' and non-governmental organisations with environmental protection goals is a worldwide phenomenon; their having gained membership in the parliaments of many countries. The German government is but one example. This increased awareness of the im-

Airlines Fear Kyoto Protocol Would Curtail Growth

PERRÉ SPARACO/CANNES, FRANCE

The United Nations' global environmental protocol, tentatively scheduled to take effect in 2002, could have a major impact on the airline industry's health and long-term growth prospects.

According to the goals set forth in 1997 at the World Climate Change conference in Kyoto, greenhouse gas emissions should

decrease by 5.2% during 1990-2010. In addition, commercial transports' operational life-cycle extends over 25-30 years, and no dramatic reduction of emissions could be achieved in a short time period, experts stressed during an environmental conference here sponsored by the Paris-based Air Promotion Group (APG). To comply with the Kyoto

22% during 1990-2010. Last year, France

EIS 2015+

Min. Fuel Burn -15-20%
Low Noise -30-40 dB
Low Emissions -80% NO_x



- 1. Advanced engine concepts**
 - *improved conventional Turbofans*
 - *max. propulsive efficiency engines*
 - *max. thermal efficiency engines*
- 2. High efficiency/low noise components**
- 3. Smart & power optimized systems**

Environmental friendly materials and manufacturing processes

Competitive cost