

# MTU Aero Engines - Investor and Analyst Day 2006



Munich - September, 28th 2006



# **Agenda for the Day**

Time	Event	Speaker
11.00 – 11.30	Update on Strategy and the Commercial & Military Business	Udo Stark
11.30 – 12.00	Q&A	
12.00 – 12.20	Overview of New Cost Efficiency Initiatives	Reiner Winkler
12.20 – 12.50	Q&A	
12:50 – 13:40	Lunch Break	
13:40 – 14:10	Future Technology and R&D	Dr. Rainer Martens
14:10 – 14:20	Q&A	
14:20 – 14:45	MRO – MTU Growth Business	Bernd Kessler
14:45 - 15:00	Q&A	
17:00	Get Together at Oktoberfest	



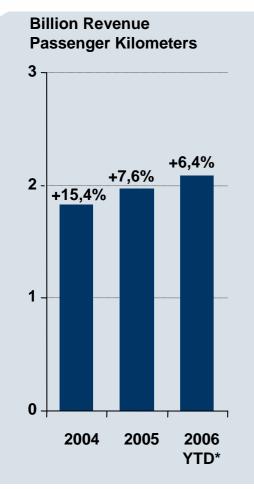
## **Update on Strategy and the Commercial & Military Business**



Udo Stark, CEO September, 28<sup>th</sup> 2006



# Airlines Continue to Experience Positive Demand 1-7/2006 Freight Traffic Recovers from 2005 Weakness



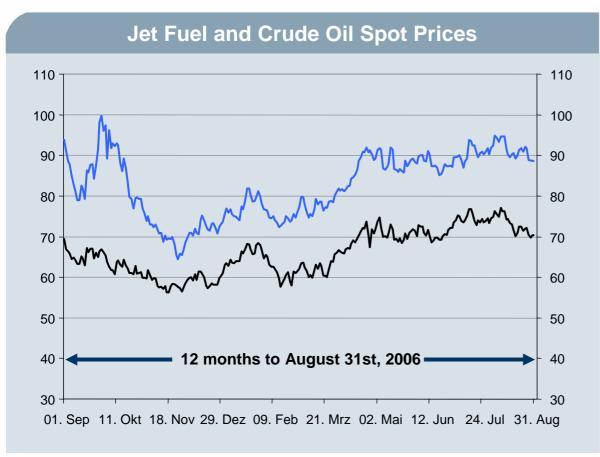


- International traffic shows robust growth in first 7 months of 2006
- Strong passenger traffic combined with record load factors are improving airline profitability
- Robust trade and positive underlying conditions in Asia and Europe expected to further increase air freight volumes
- Risk remains that high oil prices and rising interest rates may slow down economic growth and affect traffic

<sup>\* 2006</sup> year-to-date shows 2006 growth for the first 7 months



# Record Oil Prices Enhance Need for Fuel Efficient Engine Technology



#### **Highlights**

- Fuel prices reached again record levels in July / August due to situation in Middle-East
- Decline since end of August looks sustainable
- Crude oil spot prices at \$73/bbl in August (-2 % vs. July)

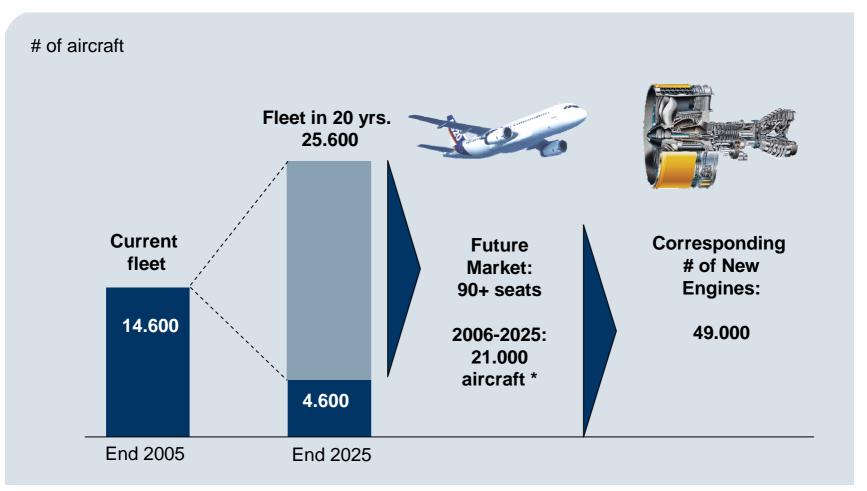
Source: US Department of Energy, Energy Information Administration (Aug, 3rd, 2006)

Jet Fuel, Spot Cash Markets (Simple Average)

<sup>-</sup> Crude Oil, West Texas Intermediate



#### Within Next 20 Years 21.000 New Aircraft to Enter the Market



<sup>\*</sup> Airliner market (90 + seaters)



## **Key Business Issues Since H1 2006**

- Ongoing strong business performance in July and August
  - Favourable business mix (spare parts)
- A380: First flight with GP7200 in August 2006
  - Engine with aircraft certification (IASA25) planned for Mid 2007
  - Airbus delays have limited impact on MTU (revenue shift)
- PW2000: New engine sales secured up to 2009, spare parts beyond 2030
- MRO secures US\$ 300 m CF34 Air Wisconsin contract for Berlin
- Military Business:
  - Entry into US Military market with F414
  - TP400 engine for A400M on track
  - Upside potential from Saudi Eurofighter order (72 A/C)
- Latest Industry Deals (Acquisition of Avio and SR Technics)
  - Favourable valuation for aero engine and MRO companies

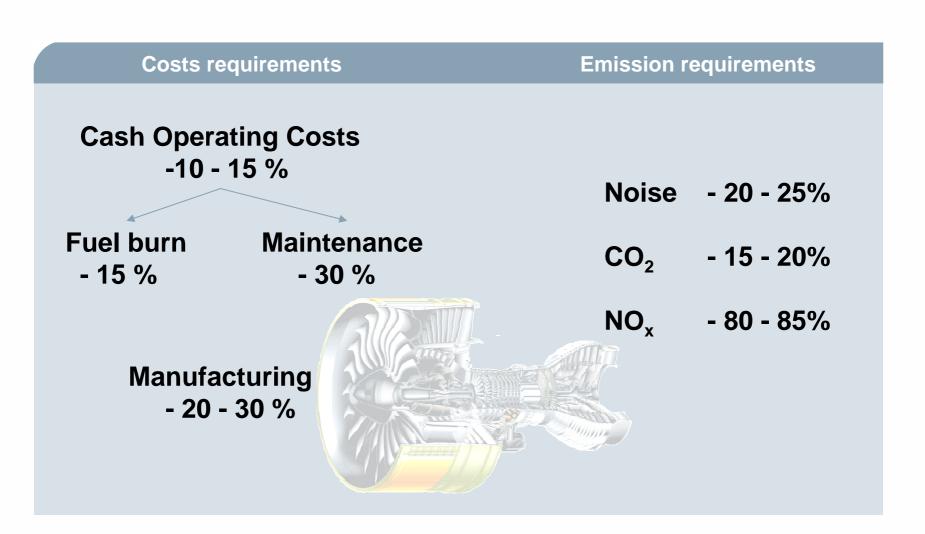


## **Five MTU strategic pillars**

- 1 Maintain leadership in technology
- 2 Gain access to fastest growing new engine programs
- Strengthen core business by accessing related niche businesses
- 4 Evaluate acquisition opportunities
- 5 Further improve cost competitiveness



## 1. Maintain Leadership in Technology



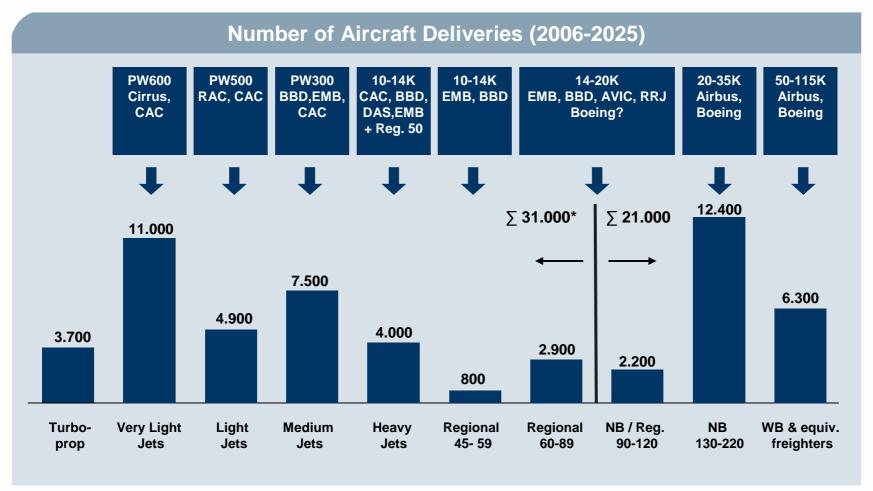


## 2. Gain Access to Fastest Growing New Engine Programs

Upcoming Program Opportunities	EIS	Thrust Range	Market Potential # of engines (2006-25)	Market Potential Engines US\$ bn (2006-25)
Commercial OEM				
Engine for A320/B737 Successor	2013/15	20-30klb	~ 15.400	100
A350 XWB-Engine	2012	75-95klb	3.600	60
Replacement for RJ- engines	2015	10-18klb	~2.200	15
Military OEM				
F414 (EIS 1996)	2007 for MTU	22klb	~ 2.100	8
Future demand for unmanned aircraft vehicle	n/a			
HTH/HLR	2013+	5000-6000KW	~ 1.100	2,5



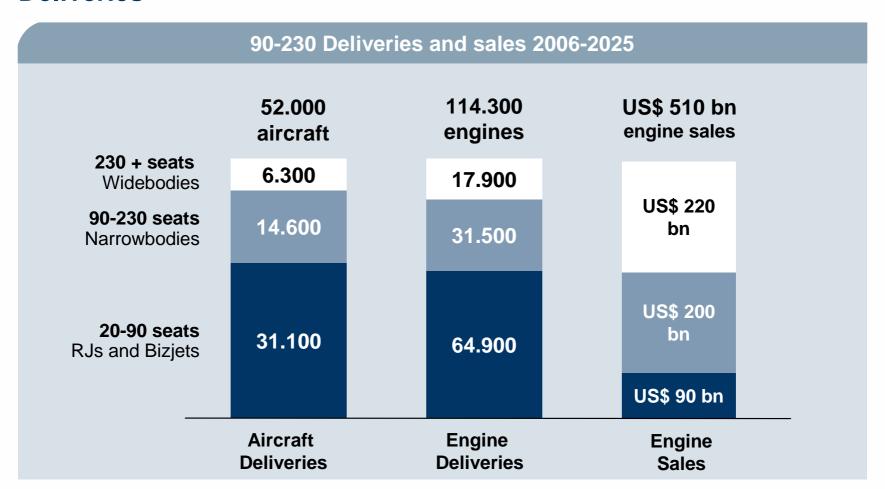
# Overall Market Demand 2006-2025: 52.000 Aircraft - incl. Narrowbodies, Widebodies, Business & Regional Jets



<sup>\*</sup> Turboprop Engines not included

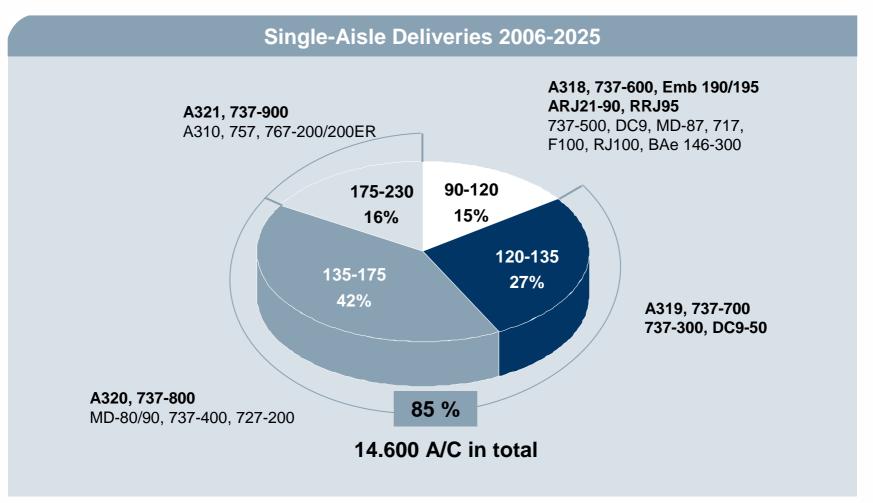


# Market Demand for 90-230 Seat Aircraft Represents 40% of Total Deliveries





# The Most Relevant Single-Aisle Segment is Between 120 and 230 Seats – With 85% of Total Single-Aisle Market





## 3. Strengthen Core Business by Accessing Related Niche Businesses

especially MRO Segment

Disassembly/
Assembly
Test

Parts Repair Engine Lease Accessory Repair

- MTU currently focused on D/A/T and associated repairs
- Room for increased service offerings by
  - Engine Lease
  - 3rd party parts repair
  - Accessory repair



### 4. Evaluate Acquisition Opportunities

#### **MTU Portfolio**



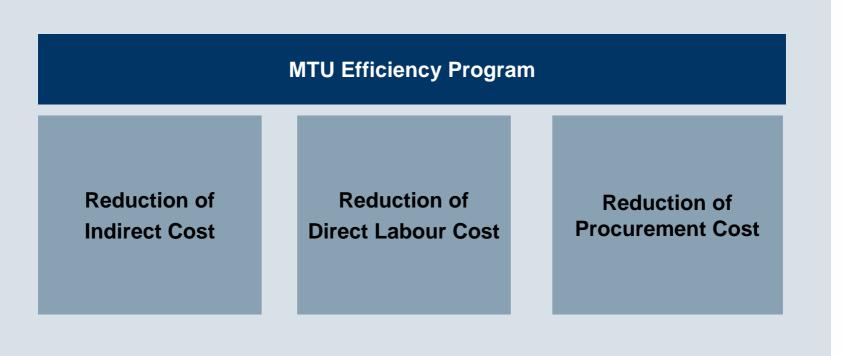
- Currently well leveraged portfolio of synergetic business units
- M&A candidates to fulfil strong search criteria

#### M&A search criteria

- Strategic fit with MTU core business
- Financial fit
  - > 14% EBITDA margins long term
  - No dilution of MTU margins or EPS



## 5. Further Improve Cost Competitiveness





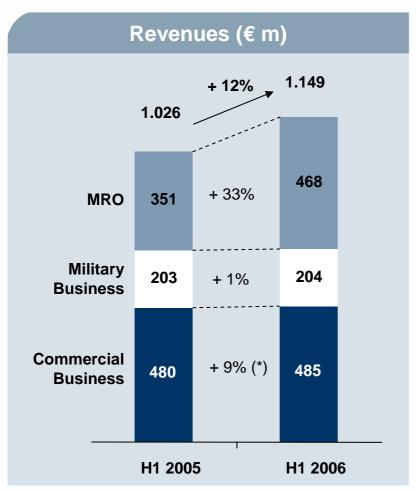
# **Overview New Cost Efficiency Initiatives**

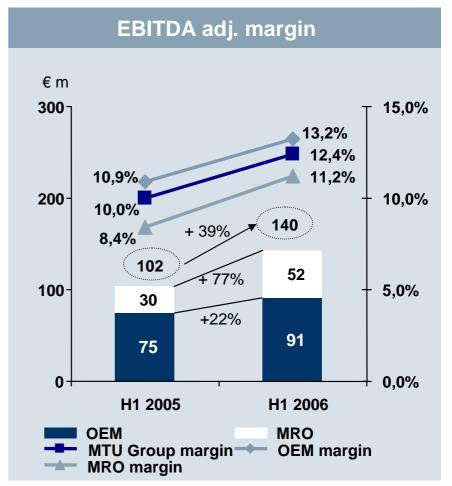


Reiner Winkler, CFO September, 28<sup>th</sup> 2006



### **Overview H1 2006 Financial Performance (1/2)**

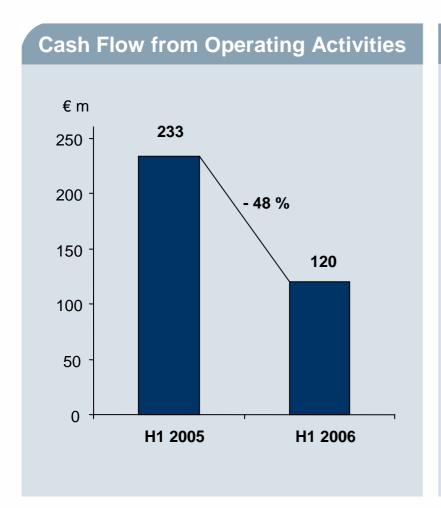


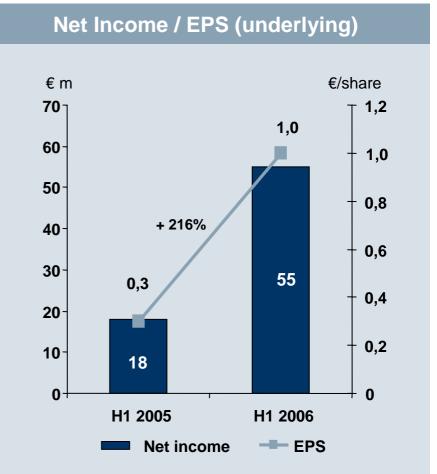


(\*) underlying growth w/o ATENA, US\$-Effects



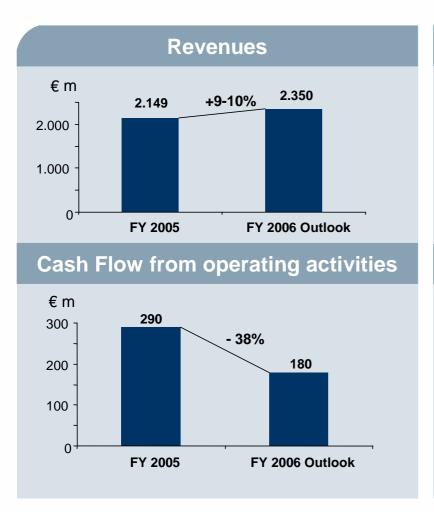
## **Overview H1 2006 Financial Performance (2/2)**

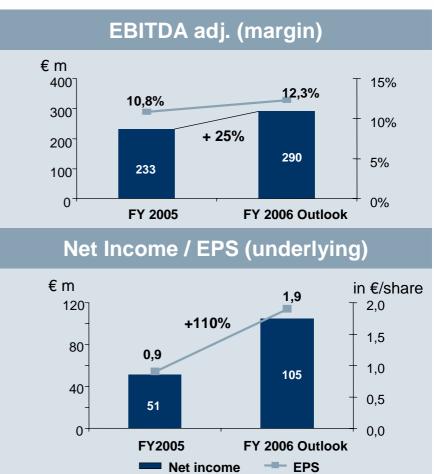






### FY 2006 Outlook – as Announced on July 26

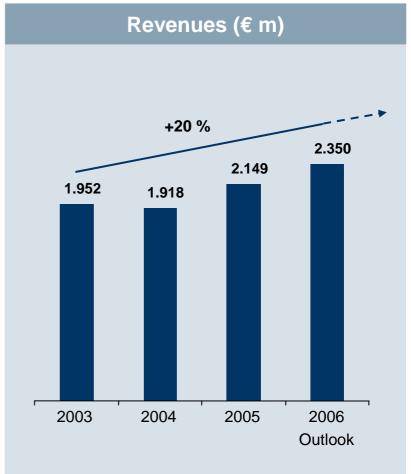






## MTU Objective: Sustain and Further Improve Top-Line Performance







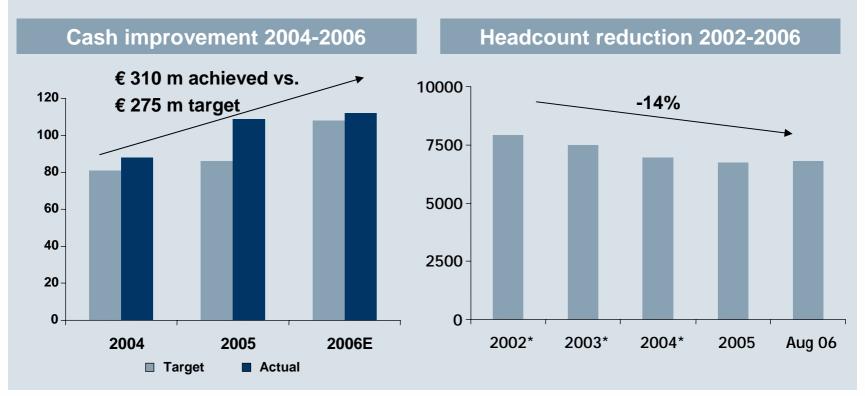
## **Industry Environment Remains Challenging**

- Airlines require advanced technology combined with low emissions and low operational costs
- Increased competition among the airlines and entry of low-cost-carriers
- 3 Current development of US\$/€ and raw material pricing
- Increased engagement of low-cost-countries in aerospace industry
- 5 Shrinking defence budgets



## Efficiency Program IMPACT100 has Led to € 310 m Savings

**Efficiency** objective was to increase labour productivity, reduce process times and improve supply chain. The **restructuring** program focused on the reduction of indirect and material costs as well as headcount



<sup>\*</sup>w/o ATENA-Headcount / \* Impact 100 2004 -2006



# MTU is now introducing Three Efficiency Initiatives to Further Improve Cost Position

#### **Current Efficiency Initiatives**

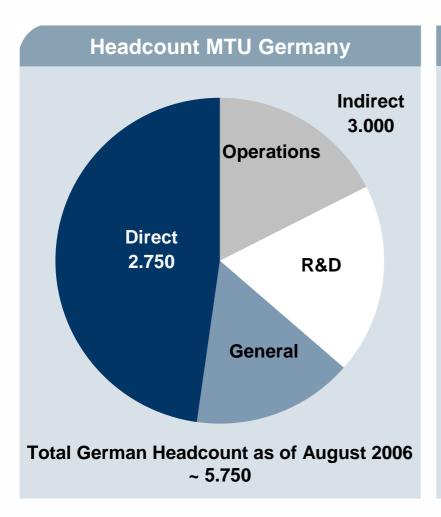
Reduction of Indirect Cost Reduction of Direct Labour Cost Reduction of **Procurement Cost** 



Efficiency programs established as regular process at MTU



#### 1. Reduction of Indirect Cost



#### **Project: Reduction of Indirect cost**

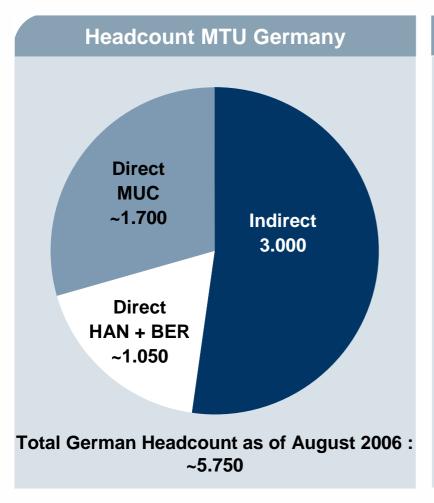
#### Approach:

Reduce indirect cost via two main levers:

- Complexity reduction and process improvement on-site
- Outsourcing / Off-shoring



#### 2. Reduction of Direct Labour Costs



#### **Project: Reduction of Direct Costs**

Focus on Munich Facility

#### Approach:

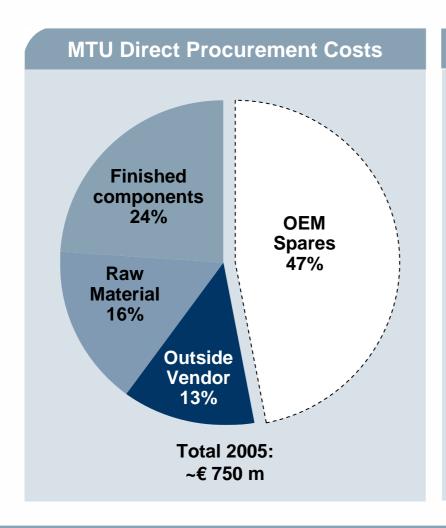
- Optimisation of labour hours
- Reduction of overtime compensations

Optimisation of shift models

- Introduction of new tariff system
- Additional efficiency targets



#### 3. Reduction of Procurement Costs



#### **Project: Reduction of Procurement Cost**

#### Initial Situation:

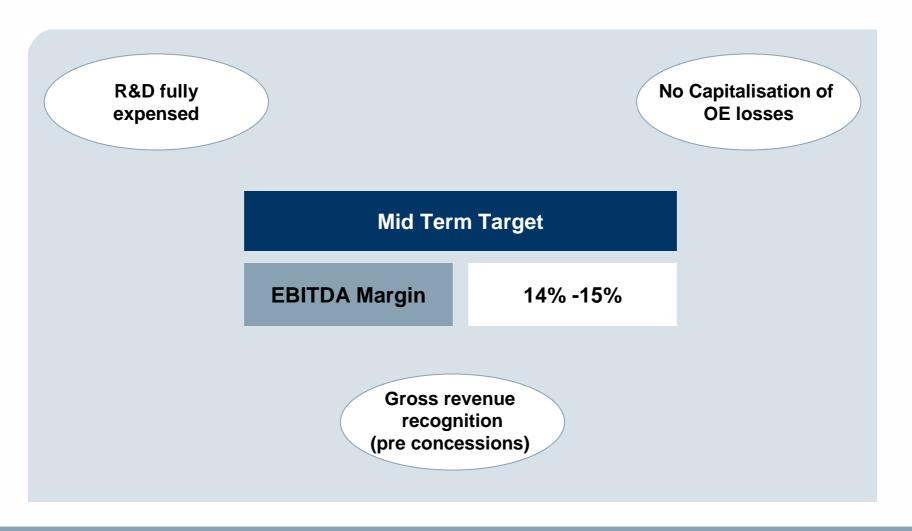
- 47% of total procurement costs are fixed (OEM spare parts for MRO)
- 53% can be influenced by MTU

#### Approach:

- Resourcing / price negotiations with current suppliers
- Supplier development: closer cooperation with current or new suppliers
- New low-cost suppliers



## **Ambitious Targets Combined with Conservative Accounting**





## Future Technology and R&D Investor and Analyst Day



Dr. Rainer Martens, COO September, 28<sup>th</sup> 2006



#### **MTU Portfolio: Overview and Outlook**

"MTU Fleet"	Certification /	/ Entry into	Service
-------------	-----------------	--------------	---------

until 1980	J18D	J79; Tyne
	CF6-50/80	RB199: T64

**1981 - 1990** CF6-80C

PW2000; V2500

**1991 - 2000** CF6-80E; PW300

PW4000G; PW500

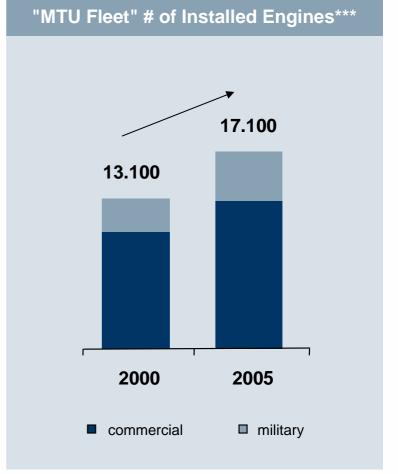
**2001 - 2010** PW6000 EJ200

GP7000 MTR390/E

PW307 TP400

Next NGSA\* HTH-Engine\*\*

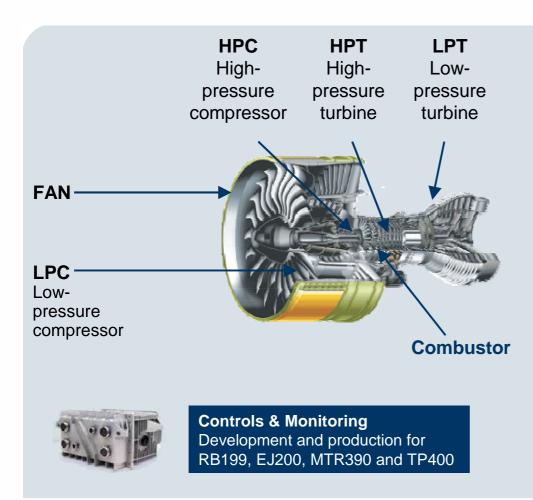
Generation ... .



<sup>\*</sup> Next Generation Single Aisle; \*\*Heavy Transport Helicopter; \*\*\* MTU estimates



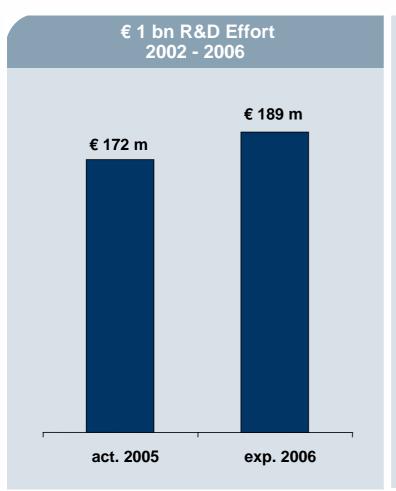
## **MTU's Key Competencies**

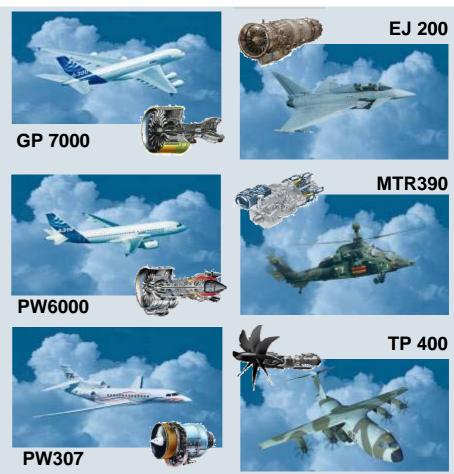


Low-pressure turbine	Low & High pressure compressor
PW2000	PW2000
V2500	JT8D
PW4000	PW6000
JT8D	EJ200
PW6000	RB199
GP7000	Tyne
PW300/500	T64/62
TP400	TP400



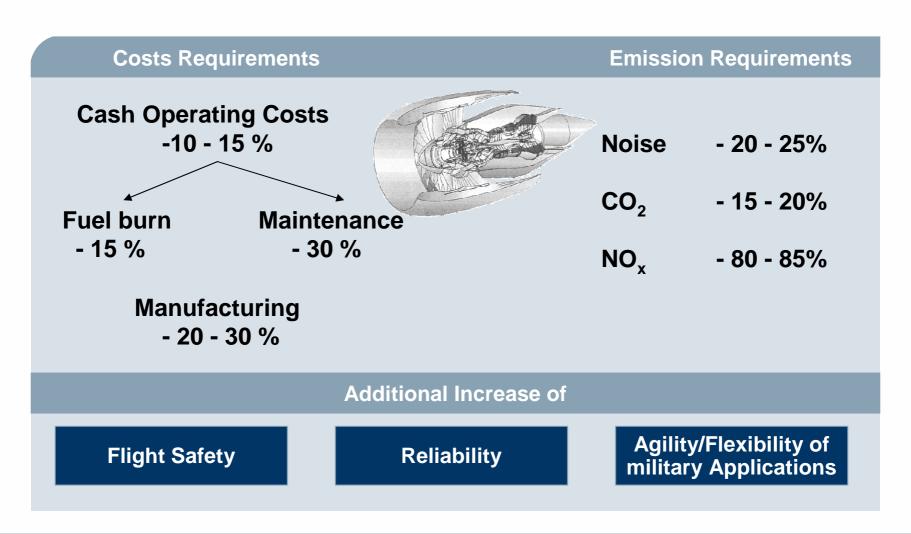
# MTU Portfolio: Extended by Intensive Research & Development





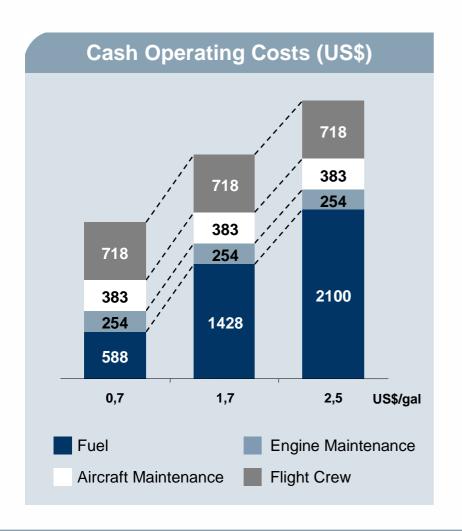


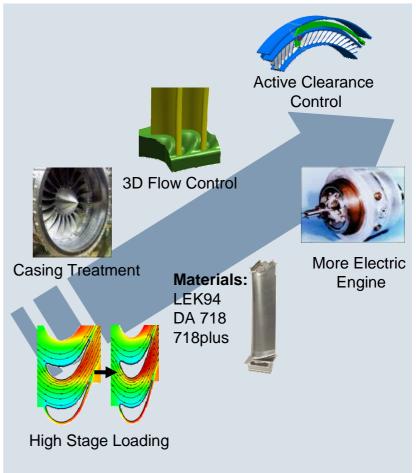
### **Next Generation Requirements**





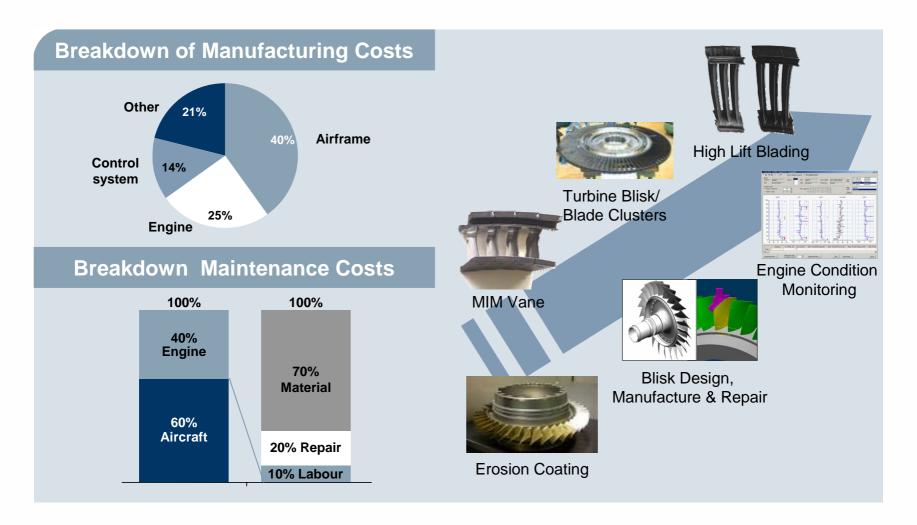
## **MTU Technology - Fuel Burn Reduction**





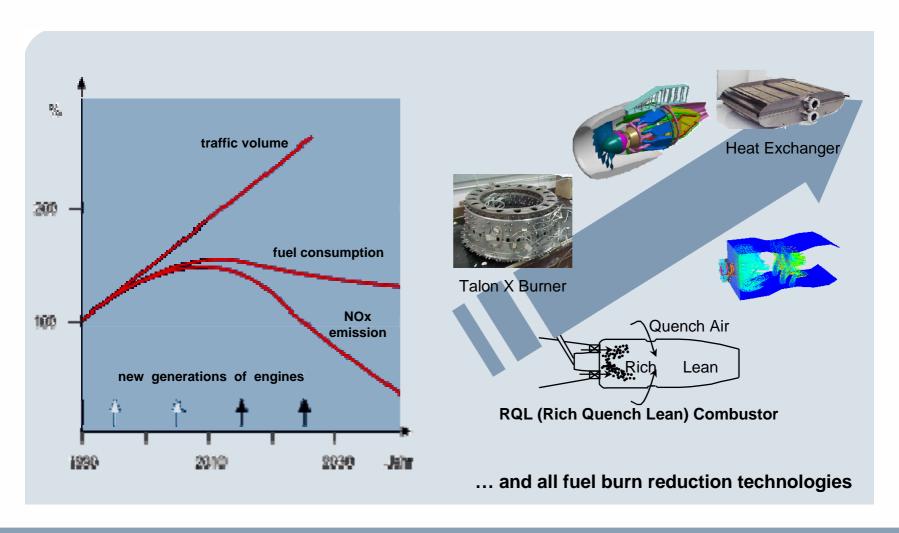


## **MTU Technology – Engine Cost Reduction (Manufact./Maintenance)**



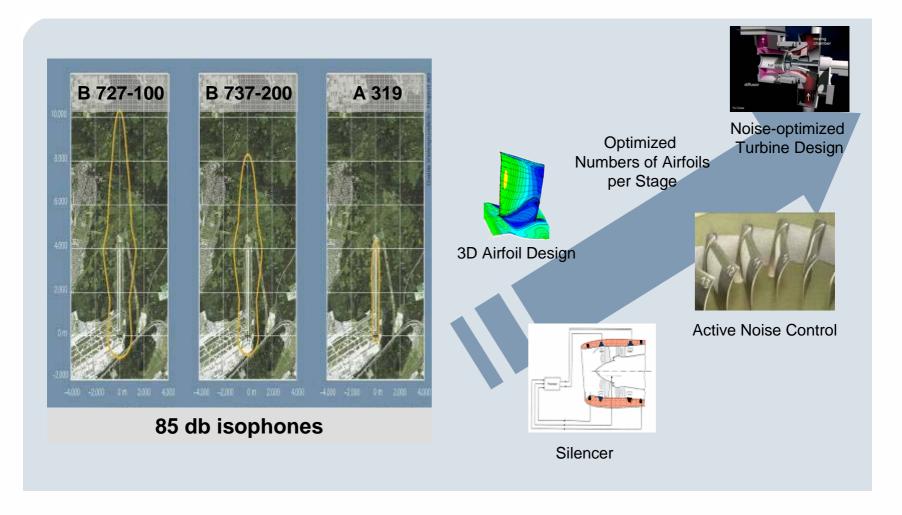


## MTU Technology – Emissions Reduction (Focus on NOx)





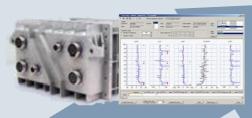
# **MTU Technology – Noise Reduction**





# MTU Focus on Next Generation Single Aisle (NGSA) Engine

### MTU World Class Component Technology Ready for NGSA



#### **Controls & Monitoring**

- Commercialise military SW & HW
- Applied In-Service Monitoring Experience from EJ200 & MRO



#### **LP Turbine**

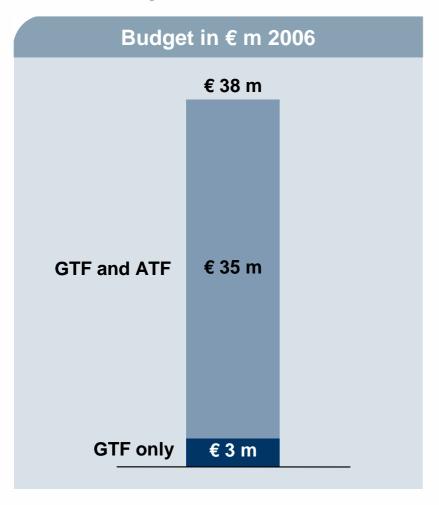
- Baseline World Class GP7000 and CLEAN
- Rig & Materials Program for Aero-, Cost & Weight Improvement
- support of all ATF and GTF Concepts



- Baseline PW6000 and ATFI Compressors
- Comprehensive Technology Roadmap
- Joint MTU/P&W Design of advanced HPC

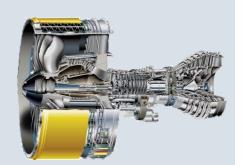


# Continued Development of Various Engine Concepts to Satisfy Future Requirements



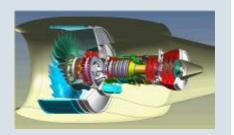
#### **Advanced Turbofan**

Continued development of conventional turbofan to satisfy forthcoming requirements



### **Geared Turbofan**

Geared turbofan, the high-technology innovative answer also to requirements beyond those immediately forthcoming





# **Know-how Ensured through our Team and Cooperation**

Approx. 780 employees in development and testing at MTU **Partnership with Science** Partnership in Industry **European projects** SILENCE(R) Berlin TU/DLR/BAM **TU Hannover** Brauns. TU Cottbus BTU Göttingen TU Jülich KFA Dresden Köln DLR Kassel Uni GH **Aachen TU** MTU Darmstadt TH Universities / DLR **Cooperation with Pratt &Whitney** Heidelberg TU Centers of excellence Karlsruhe TH Stuttgart TUBw/TU Uni/MPA/DLR DLR München



# **MRO – MTU Growth Business**



Bernd Kessler, President and CEO Commercial Maintenance September, 28<sup>th</sup> 2006



### Highlights 2006

#### **Financials**

- Sales growth of 33% yoy (H106 vs H105)
- EBITDA Margin increase of 77% yoy (H106 vs H105)

#### Growth

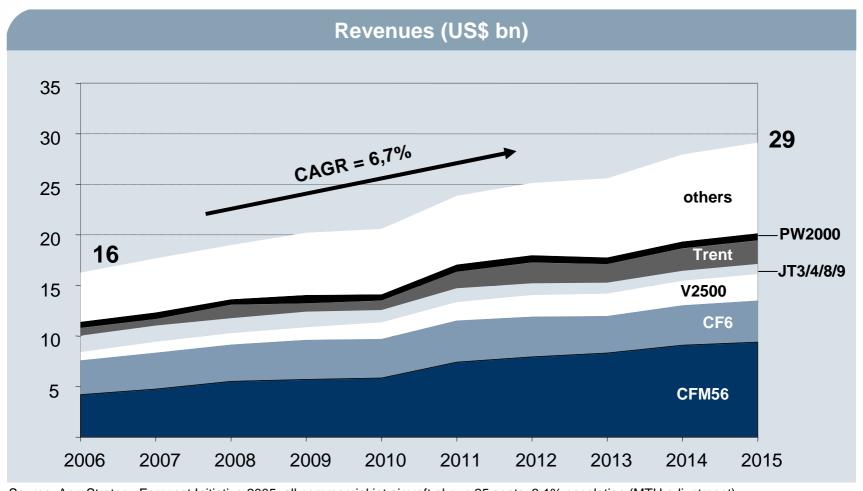
- Contract Wins of US\$ 1,2 bn ytd 2006 (Total Contract Value US\$ 5,1 bn incl. Zhuhai)
- 20 new customers ytd 2006
- Expansion of MTU Hanover (200 new employees, new test cell)
- Groundbreaking: Expansion MTU Malaysia

### **New Products**

- Introduction of CF34-8 and PW500 at MTU Berlin
- Introduction of CFM56-7 at MTU Zhuhai
- New High Tech Repairs (HPT Vanes and Blades: Full and Airfoil Replacement Repairs)



### **World-Wide Commercial MRO Market 2006-2015**

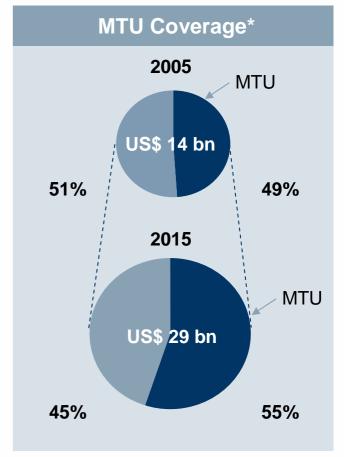


Source: AeroStrategy Forecast Initiative 2005; all commercial jet aircraft above 25 seats; 3,1% escalation (MTU adjustment)



# **MTU Maintenance Market Coverage**





<sup>\*</sup> All current programs and CF34-10, GP7000, PW6000

Source: AeroStrategy Forecast Initiative 2005, escalation 3.1% (MTU adjustment)



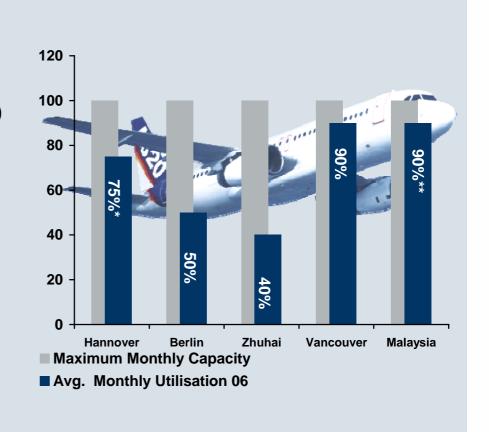
## **MRO Growth Opportunities**

#### **MTU MAINTENANCE Large Engines Small Engines** IGT Repair **Services** Enlarge E-Pool New Product • GP7000 • CF34-10 High Tech Repair • PW6000 • PW600 **Families** 3rd Party Accessories • GE90 • PW307 Asset Management US Military Engineering Services Trend Analysis • LM6000 • CFM56-7 • CF34-8 Condition Monitoring Parts Repair • CFM56-5 • PW500 CIP Offerings V2500 PWC engines • LM2500 Existing repairs E-Pool • CF6 • CF34-3 • LM5000 • PW2000 • CFM56-3 **Base Business** Growth Business **New Business**



# **Capacity**

- Expansion area at SH (10.000 sqm)
- Expansion area at SB (40.000 sqm)
- Expansion area at SZ (>40.000 sqm)
- New Test cell at SH
- New Cleaning and Inspection at SH
- Expansion MTU Malaysia
- Continuous Improvement Program
- Portfolio Optimization
- Outsourcing to Low Cost Countries

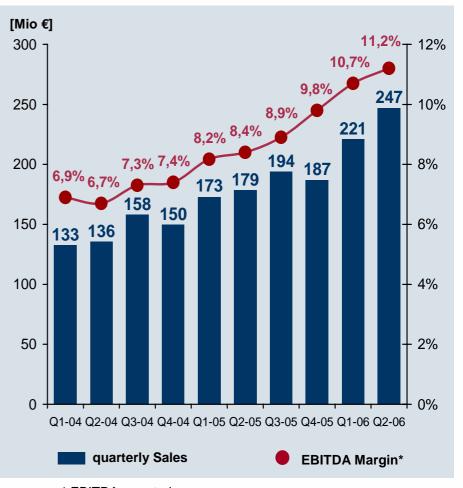


<sup>\*</sup> With new testcell: 63%, \*\* after expansion: 45%



# **Major Initiatives to Enhance Financial Performance**

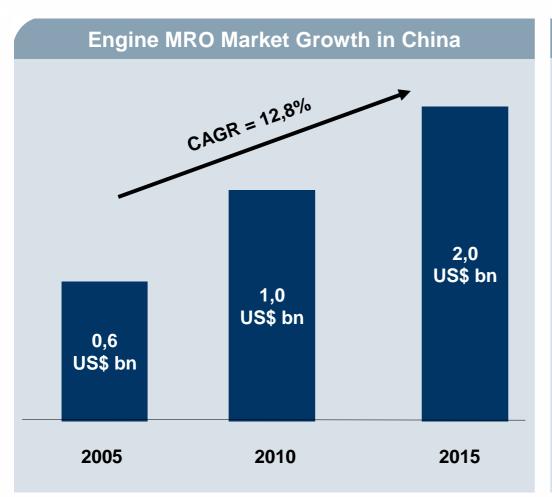
- Impact 06
- Vendor / Material Cost Reduction
- Low Cost Opportunities / Offshoring
- Integrated Supply Chain Management
- Continuous Improvement Program
- TAT Reduction Program
- SAP Implementation
- WOC Optimization



<sup>\*</sup> EBITDA reported



### **Market Growth in China**



#### **Comments**

- Market Volume more than triples between 2005 and 2015
- Fastest growing region worldwide
- Moderate local competition

Source: AeroStrategy Forecast Initiative 2005; all commercial jet aircraft above 25 seats; 3,1% escalation (MTU adjustment)



# Our Presence in China: Benefits and Challenges

#### **Benefits**

- Secure leading market share in fastest growing MRO market
- Secure Base workload through JV partner
- Access to further licenses
- Synergies
- Location Advantages:
  - Low labour cost, skilled labour
  - Great infrastructure and proximity to customers
  - Zhuhai Free Trade Zone
  - Excellent relations to government

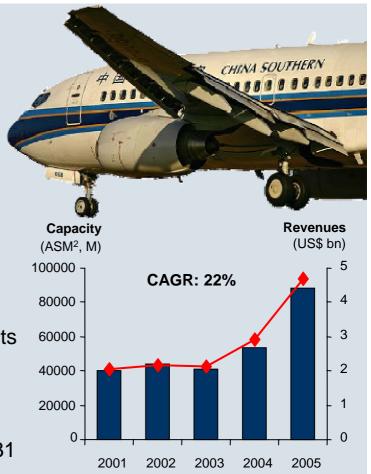
### **Challenges**

- Cross-Culture Management
- Lower Productivity
- Business environment
- Technology Transfer
- 50:50 Joint Venture



### **Joint Venture Partner China Southern Airlines**

- Largest domestic airline group
  - 250 active aircraft
  - 75 (+50) orders
  - SkyTeam partner from 2007 on
- China Southern Air Holding includes China Northern and China Xinjang
  - Xiamen Airlines (60%)
  - China Postal Airlines (49%)
  - Sichuan Airlines (39%)
- Partially privatized and listed in security markets in Mainland China, Hong Kong and New York
- 30-40% of Joint Venture workload for next five years<sup>1</sup>; 30 years exclusive agreement until 2031



<sup>1) 40-50%</sup> incl. affiliates/participations, 2) Available Seat Miles



### **MTU Maintenance Zhuhai at a Glance**

• Foundation: 2001

• Shareholder: MTU Aero Engines 50%;

China Southern Airlines 50%

• **Size:** Land area 156.000 sqm;

Shop area 17.000 sqm

• Investment: totalling US\$ 170 m

• Capabilities: V2500-A5 (Market Share 80%);

CFM56-3/-5B/-7 (Market Share 30%);

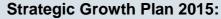
standard repairs

• Capacity: 300 shop visits/year

#### Key Figures MTU Zhuhai (100%):

	2003	2004	2005
Revenues	9	51	104
EBITDA	-15	1	7
<b>EBITDA Margin</b>	n/a	1,4%	6,5%
SLU*	16	51	72







<sup>\*)</sup> Shop Load Unit



# MRO Segment Financials (incl. MTU Zhuhai 100%)

		Including MTU Zhuhai
€m	H1 2006	H1 2006
Revenues	468,0	520,4
Gross profit	64,5	73,0
Gross profit margin	13,8%	14,0%



# **Commercial MRO - Summary**

### **Growth will continue to outpace market**

- Exceptionally strong growth over the last 2,5 years
- Significant new contract wins in 2006, strong Sales Pipeline
- Major future growth opportunities
- Capacity levels secure growth path and leave room for operational gearing

### **Continuous focus on Cost Productivity**

- Impact 06
- Integrated Supply Chain Management
- Continuous Improvement Program
- SAP Implementation

#### **Growth location MTU Zhuhai**

- Access to fastest growing MRO market worldwide
- Extremely well positioned to capture future growth potential
- Moderate local competition
- No. 1 engine MRO shop in China



#### **Cautionary Note Regarding Forward-Looking Statements**

Certain of the statements contained herein may be statements of future expectations and other forward-looking statements that are based on management's current views and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in such statements. Actual results, performance or events may differ materially from those in such statements due to, without limitation, competition from other companies in MTU Aero Engines' industry and MTU Aero Engines' ability to retain or increase its market share, the cyclicality of the airline industry, risks related to MTU Aero Engines' participation in consortia and risk and revenue sharing agreements for new aero engine programs, risks associated with the capital markets, currency exchange rate fluctuations, regulations affecting MTU Aero Engines' business and MTU Aero Engines' ability to respond to changes in the regulatory environment, and other factors. Many of these factors may be more likely to occur, or more pronounced, as a result of terrorist activities and their consequences.

MTU Aero Engines assumes no obligation to update any forward-looking statement.