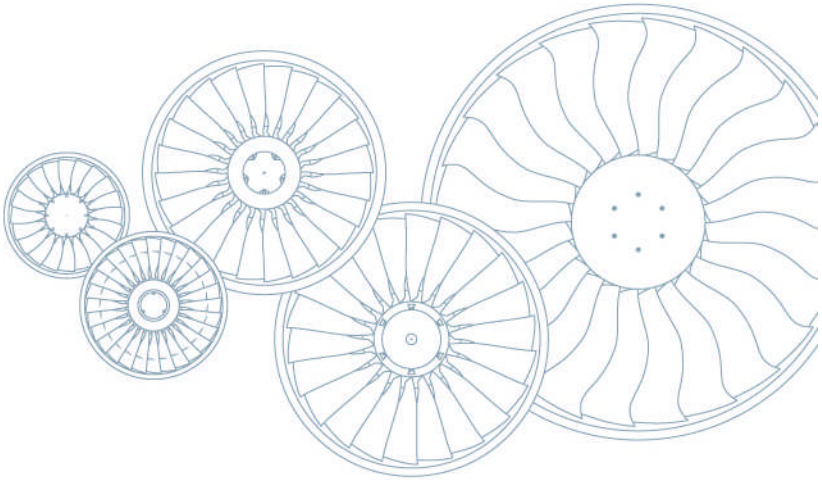
Investor and Analyst Day 2008
MTU Aero Engines

Munich 26 September 2008



Agenda

Time	Event	Speaker
11:00 – 12:00	Update on Strategy, Commercial and Military Business	Egon W. Behle
12:00 – 12:40	Update on Commercial MRO Business	Dr. Stefan Weingartner
12:40 – 13:30	Lunch with MTU Management	
13:30 – 14:20	Overview of New Cost Efficiency Initiatives	Reiner Winkler
14:20 – 15:00	Update on Technology	Dr. Jörg Henne
15:00 – 17:00	Guided tour through the aircraft exhibition followed by a casual get together	

Update on Strategy, Commercial and Military Business

Egon W. Behle, CEO

Agenda

1. Overview Key Strengths

2. Market Situation

3. Strategy and Program Highlights

MTU – Top Performance for the Worldwide Aviation Industry

- Leading technological position

Pratt & Whitney
A United Technologies Company
GE Aircraft Engines
Rolls-Royce

- Strong partnership with all engine OEMs

- Largest independent MRO provider

- Excellent financial performance and robustness

Agenda

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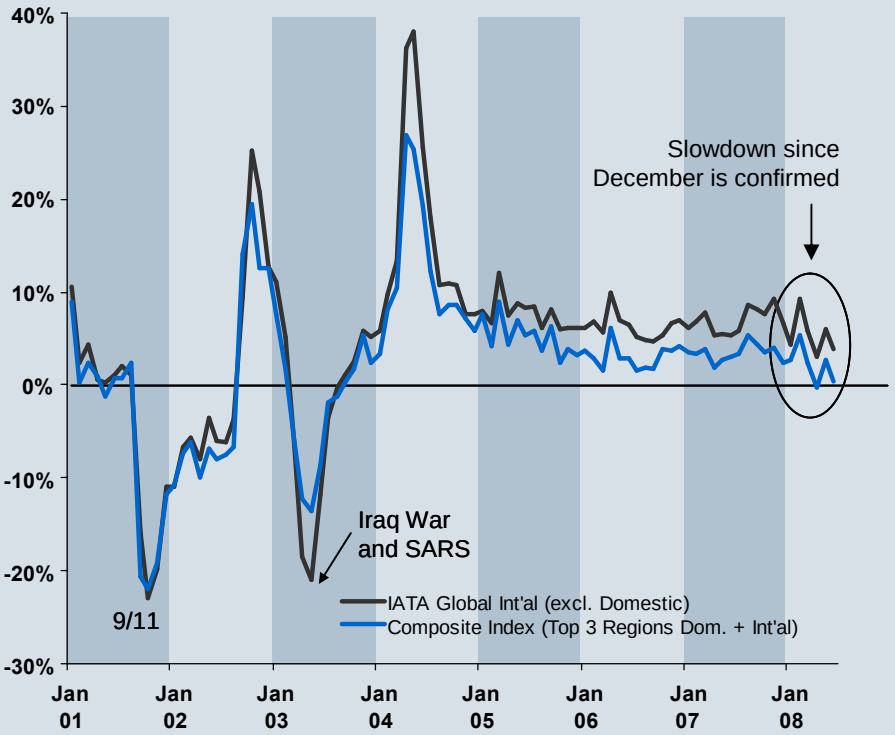
Latest Traffic Data Shows Lower but Continued Growth in Demand – While There Has Been Some Relief in Oil Price

Passenger Air Traffic Growth



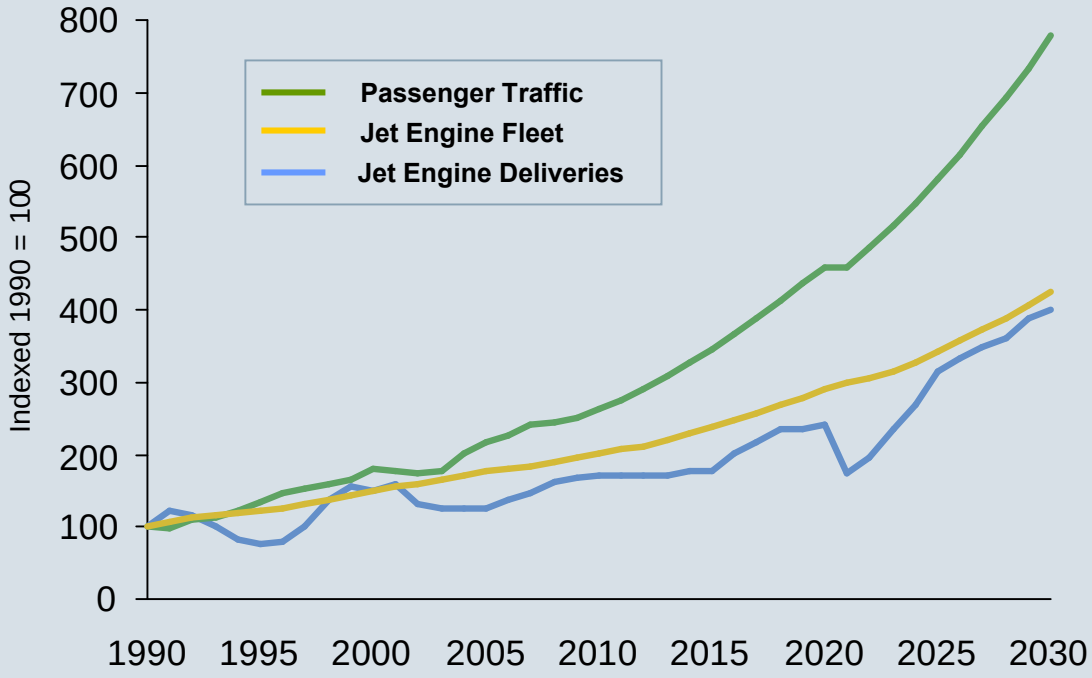
Source: IATA, ATA, AEA and AAPA – July 2008

Highlights

- July y/y international passenger traffic growth fell to 1.9% - the lowest in five years
- Cargo traffic in July fell by 1.9% y/y
- As a result, IATA revised passenger traffic outlook for 2008 to 3.2% (was 3.9%) and freight traffic growth projection to 1.8% (was 3.9%)
- The initial outlook for 2009 shows only 2.8% growth in passenger traffic (was 4.5%)
- Oil price dropped close to $100/bbl after peak of $145/bbl in July
- Engines primarily affected by retirements: JT8D, CFM56-3, JT9D and RB211

Long Term Outlook for Market Demand Remains Positive

Market drivers and outlook



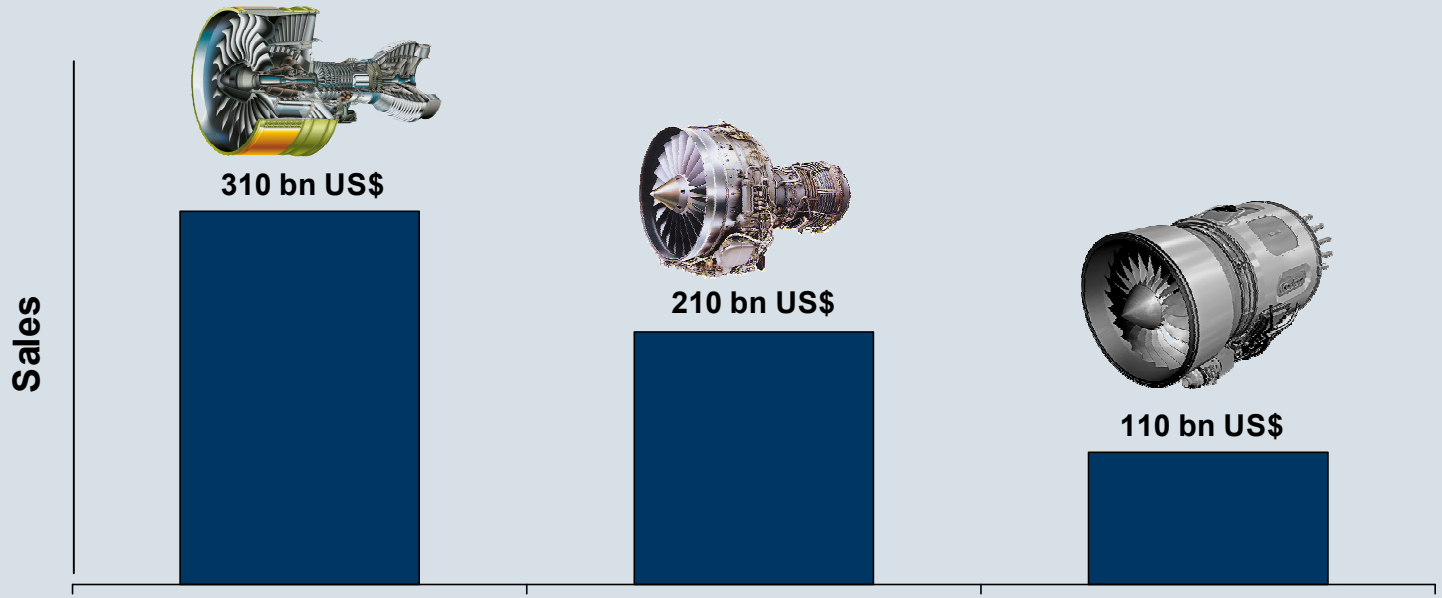
	CAGR	
	90-08	08-30
Passenger Air Traffic	5.1%	5.4%
Jet Engine Fleet	3.6%	3.7%
Jet Engine Deliveries	2.7%	4.2%

Source: Airline Monitor July 2008

- Growth in passenger traffic and engine fleet are main drivers for MTU´s civil aftermarket business
- MTU´s series sales follow the overall engine delivery trend

Over the Next 20 Years the Commercial Aero Engine Market is Expected to Generate More Than $600bn Sales

Expected Deliveries and Sales 2008-2030: CAGR ~4%

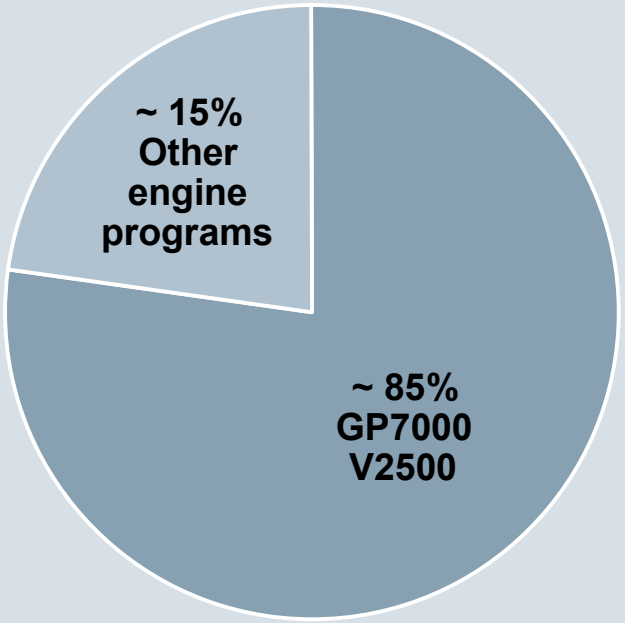


	Widebody 230+ seats	Narrowbody 90-230 seats	Regional & Business Jet 20-90 seats
% Engine Sales	49%	34%	17%
% Engine Deliveries	16%	27%	57%

Source: Airline Monitor July 2008

MTU´s Commercial OEM Order Book is Driven by Growth Platforms and Dynamic Regions

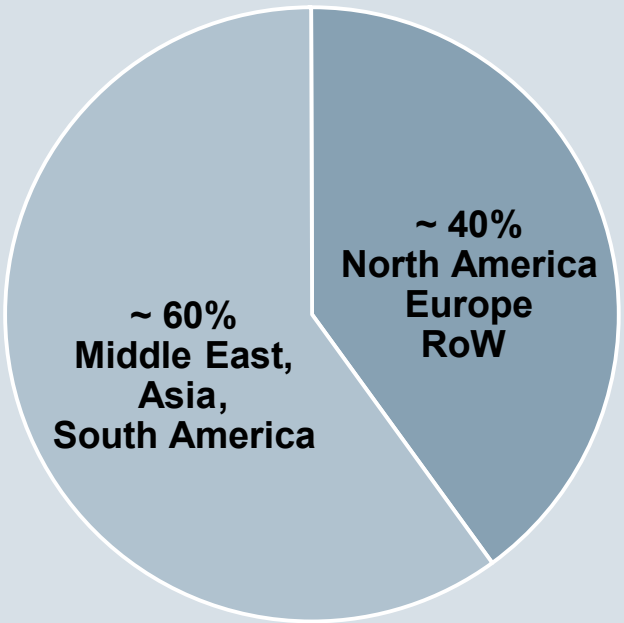
~ 85% of order backlog from growth platforms



Total 1,6 bn €

note: without PWC programs

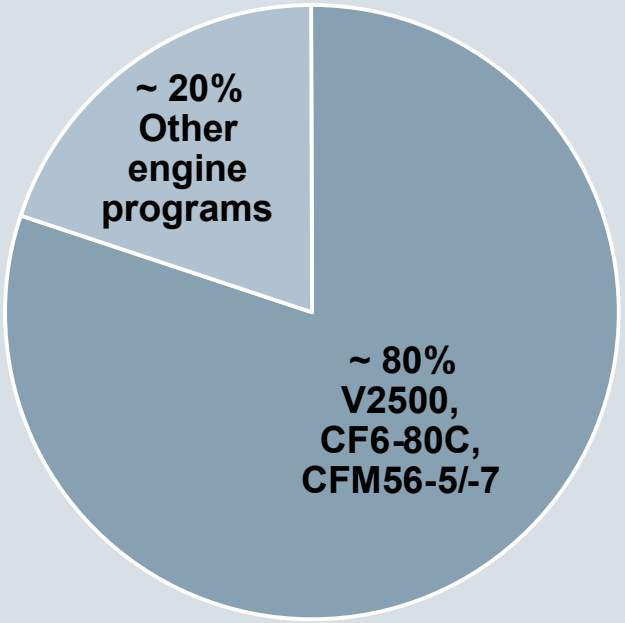
~ 60% of order backlog from growth regions



Total 1,6 bn €

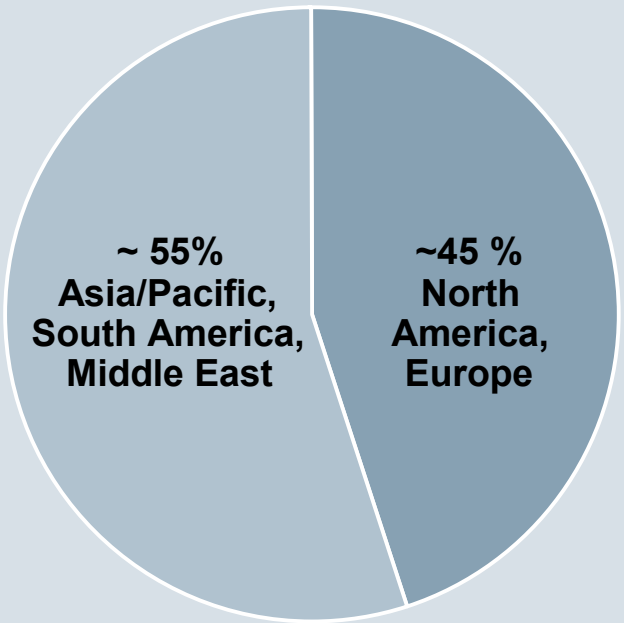
Vast Majority of Commercial MRO Contract Volume Derives from Fast Growing Engines and Regions

~ 80% of order backlog from growth platforms



Total 7,2 bn US$

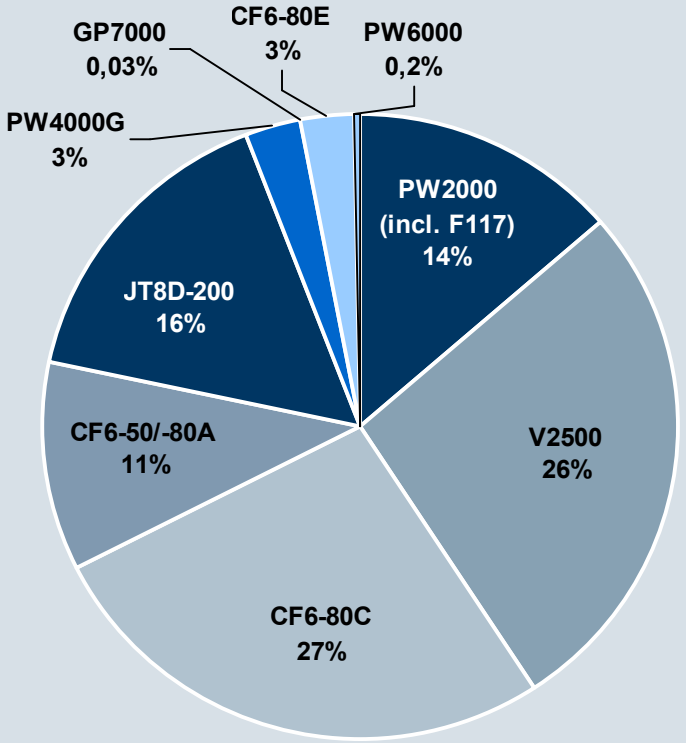
~ 55% of order backlog from growth regions



Total 7,2 bn US$

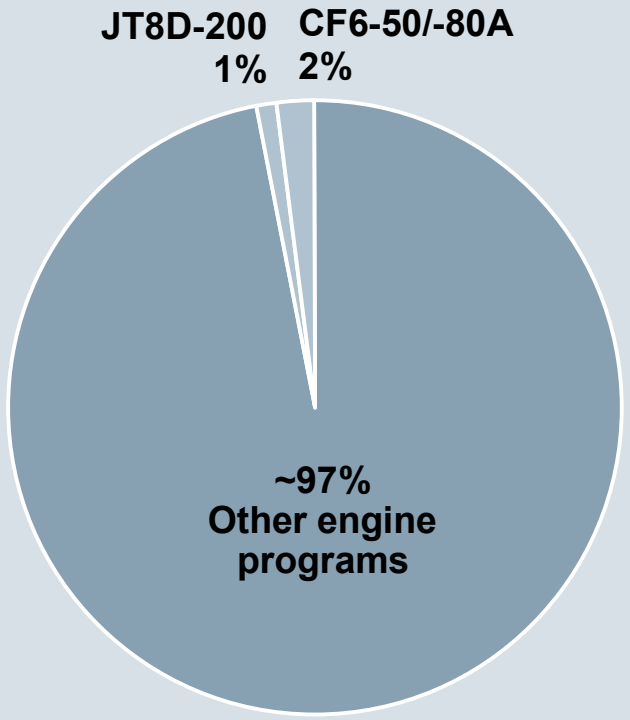
MTU Has Limited Exposure to Engines That Are Primarily Affected by the Current Retirements (JT8D, CF6-50, 80A)

MTU installed engine fleet by engine type



Source: AirClaims Case 30.06.2008

MTU Commercial OEM revenues 2007 by engine type



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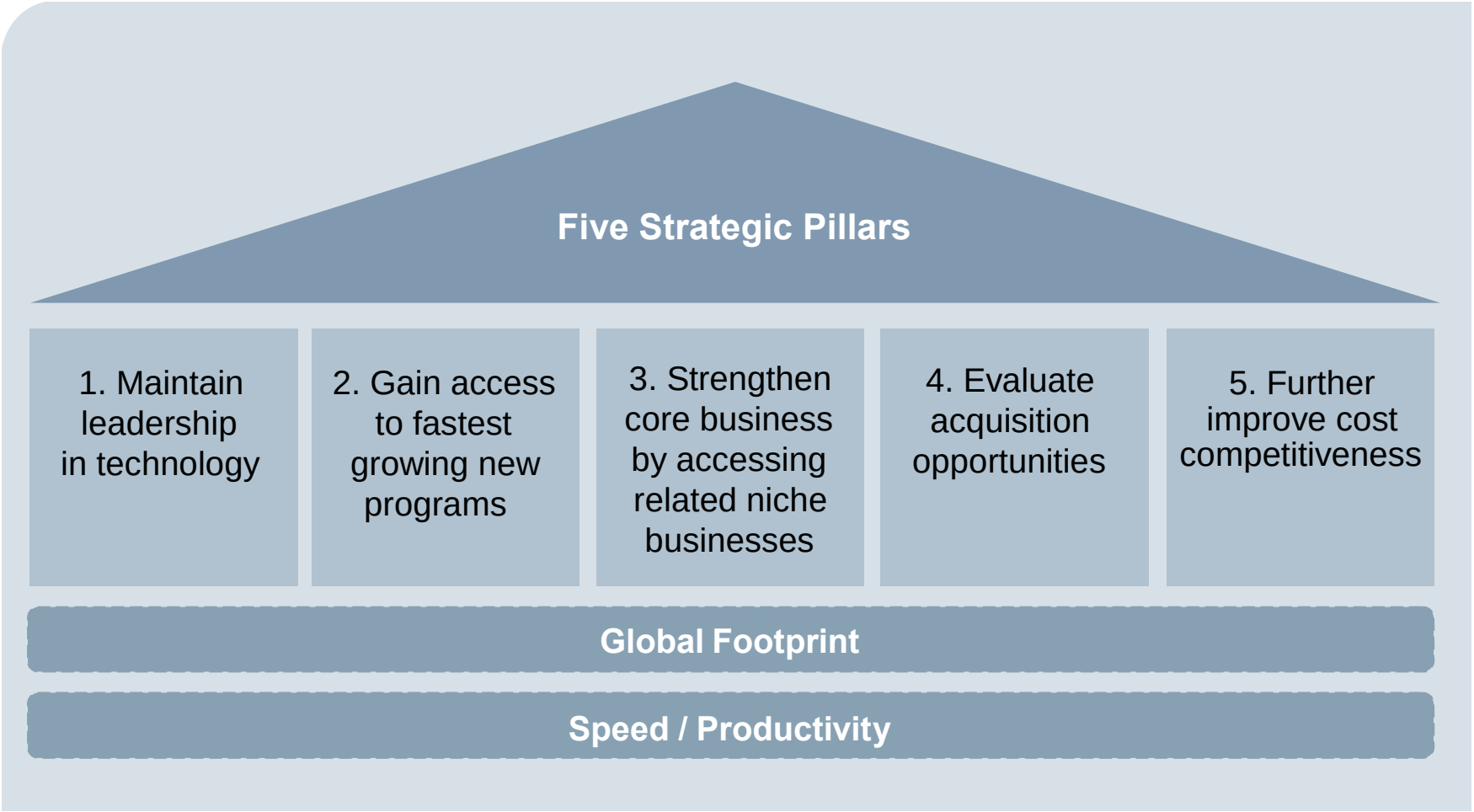
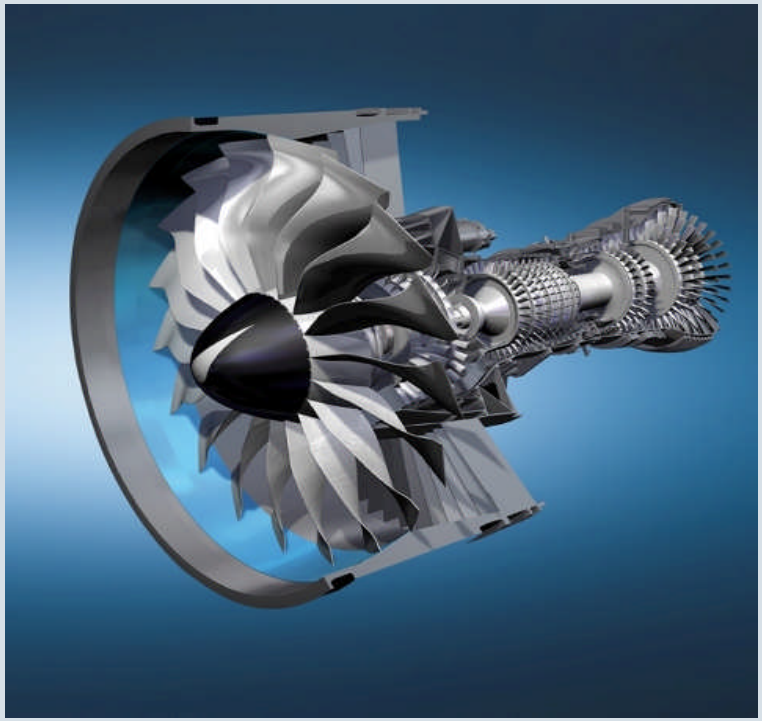
MTU Strategy Supports Profitable Growth



Geared Turbofan Technology is Gaining Momentum

Strategic Pillar

1. Maintain leadership in technology



Status

- First phase of flight testing successfully completed in August 2008; ongoing flight tests in full operations
- Technology readiness by end of 2008 to support product EIS at the end of 2012
- Applications
  PW1000G “Pure Power” for MRJ and Bombardier CSeries
- Airbus testing
  Flight test with an Airbus A340-600

In 2008 MTU Has Secured Shares in New Engine Programs with Potential Revenues of ~20 bn €

Strategic Pillar

2. Gain access to fastest growing new engine programs

Status

- 15% share in P&W PurePower Family PW810, PW1000G

  Applications:

  – Cessna LCC (~5 bn€ revenue potential)

  – MRJ (~5 bn€ revenue potential)

  – Bombardier C Series under final negotiation (~6 bn€ revenue potential)

- 13% share in GE LM6000 gas turbine

  – ~ 1.2 bn€ revenue potential

- 18% share in GE38 helicopter engine

  – Application: CH53-K US heavylift helicopter

  – ~ 2 bn revenue potential

  – Basis for potential European Application

Ongoing Programs Provide Sustainable Basis for Profitable Growth

Status main ongoing programs (comm. + mil. OEM)

- V2500 performing well
  - V2500Select received EASA 25 Certification
  - Sales market share in 2008 above 50% (roughly 500 engines)
- GP7000
  - Superb engine (Fuel, noise), affected by A/C push outs
- Business Jets
  - Close to 600 engine deliveries (PW300, PW500) expected in 08

- EJ 200 Tranche 2 to be delivered up to 2012
  - Further significant export potential
- TP 400 flying testbed and first flight on A400M postponed
  - MTU has taken ~ 44 m € provision for potential penalties

Further Potential Activity Fields Under Evaluation

Strategic Pillar

3. Strengthen core business by accessing related niche businesses

Status

OEM:

- “Aero Solutions” complements RRSP - 2008 expected revenues ~40 m €
- Project “More Electric Engine” examines commercial applications for DECU/DECMU

MRO:

- MTU currently focused on Disassembly/ Assembly/Test and related repairs
- Room for increased service offerings by:
  - Engine lease
  - 3rd party parts repair
  - Accessory repair

Continuous Process of M&A Evaluation Follows Strict Strategic and Financial Criteria

Strategic Pillar

4. Evaluate acquisition opportunities

Status

Motivation:

- Enhance position as Tier 1 supplier and reliable partner
- Leading role in European consolidation
- Access to growth markets / products

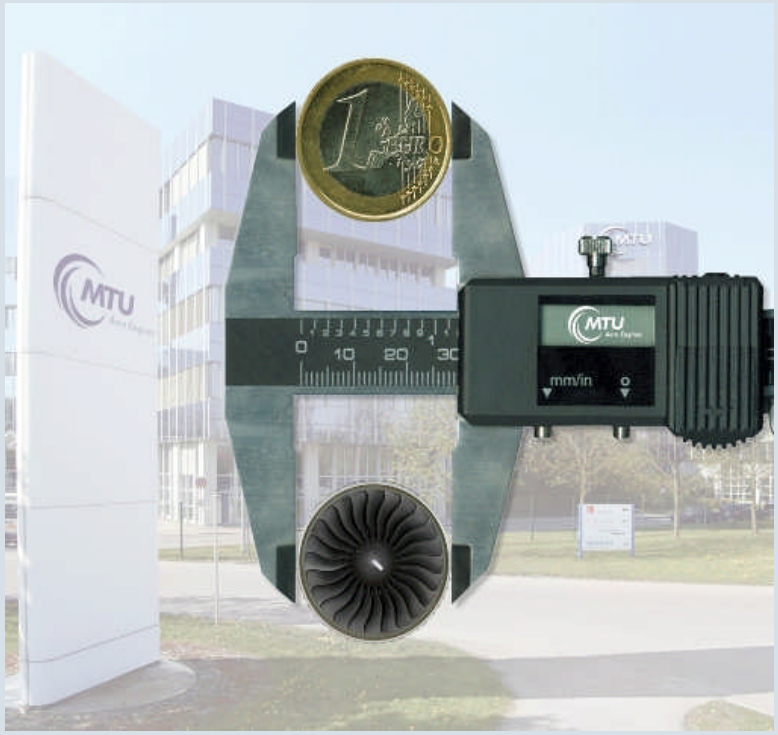
Criteria:

- Strict financial and strategic M&A criteria

Cost Reduction Programs Ensure Competitiveness in Challenging Macro Environment

Strategic Pillar

5. Further improve cost competitiveness



Status

New cost cutting program:

- Challenge 2010
  - Expected savings ~ 50 m € from 2010/11 on

Existing cost cutting initiatives:

- Impact 06
  - 50 m € savings (1/3 in 2007; 2/3 in 2008)
- Centers of Excellence/MTU Polska
  - ~ 20 m € cost savings from 2011 on

Update on Commercial MRO

Dr. Stefan Weingartner
President and CEO Commercial Maintenance

Agenda

1. Commercial MRO
2. Summary H108 Financials
3. Market Outlook & Strategy
4. Operations

MTU Maintenance at a Glance

- Largest independent MRO provider in the world
- Attractive product portfolio
- Profitable and fast growing JV in China
- Great synergies within MTU-group
- Excellent and highly skilled workforce at all locations

Commercial MRO – Overview

Status Quo

- Hanover: operational performance back on track
- New organisation at MTU Maintenance Hanover: strongly customer focused and financially driven
- New test cell in operation at MTU Maintenance Hanover
- 17% organic sales growth in US$
- High double digit sales growth at MTU Maintenance Zhuhai

Major Initiatives

- Cross-functional Masterplan in Hanover in execution
- Continuous improvement rolled out through entire organisation
- Operational introduction of newly developed MTU^{Plus} Repair Solutions

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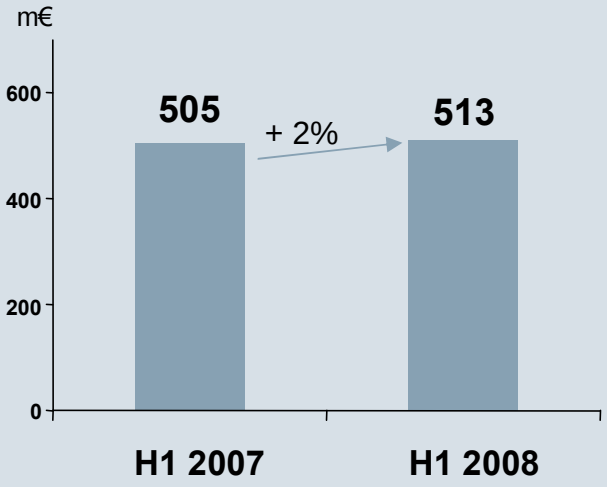
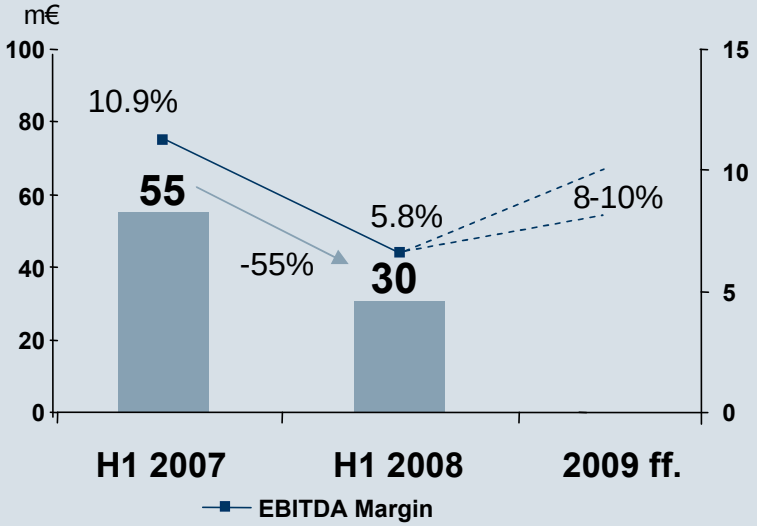
Summary H108 Financials – MRO Business

Revenues MRO Business



EBITDA MRO Business



FX adjusted sales H1 2008: +17%

	31.12.2007	30.06.2008
Contract Volume MRO (in bn US$)	7,4	7,2

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Commercial MRO – Market Trends

General Market

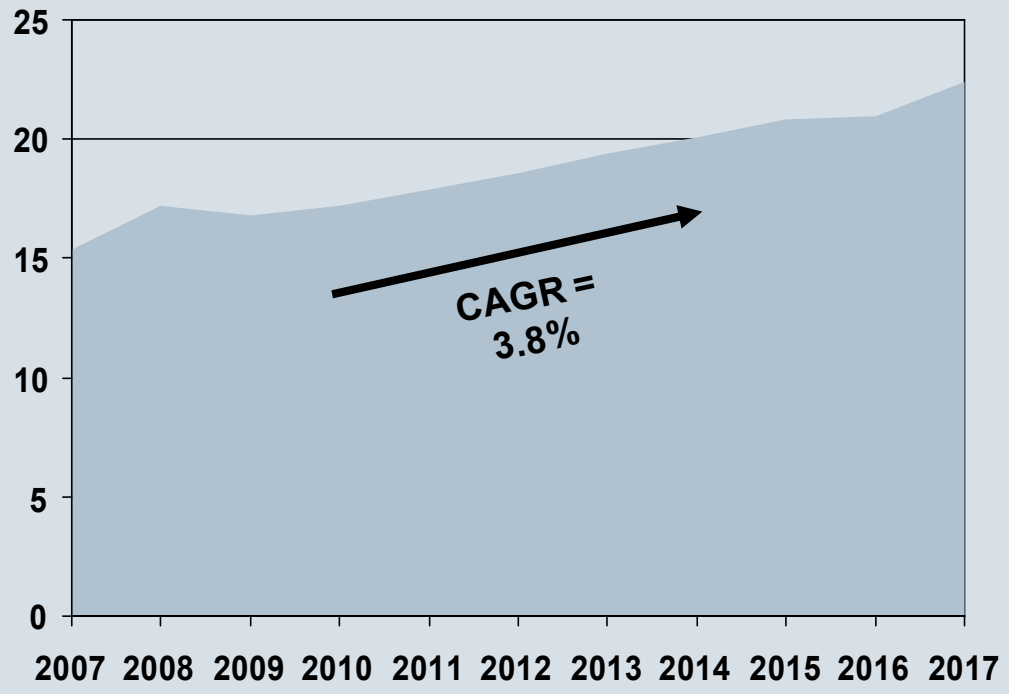
- High oil and jet fuel prices
- Slow-down in air traffic growth due to oil price and weakening economy
- Above average MRO-growth in the Middle East, Asia and Latin-America

Market Trends

- Retirement of fuel-inefficient aircraft
- Ongoing consolidation in the airline industry
- Rising demand for MRO infrastructure in emerging markets (local content)
- Strong demand for core MTU-MRO-products (V2500, CFM56-5B/-7, CF34-8/-10) and MRO services
- Restrictive OEM policy with regard to granting MRO licenses

Commercial Engine MRO Forecast

Forecast 2008-17 (in bn USD)



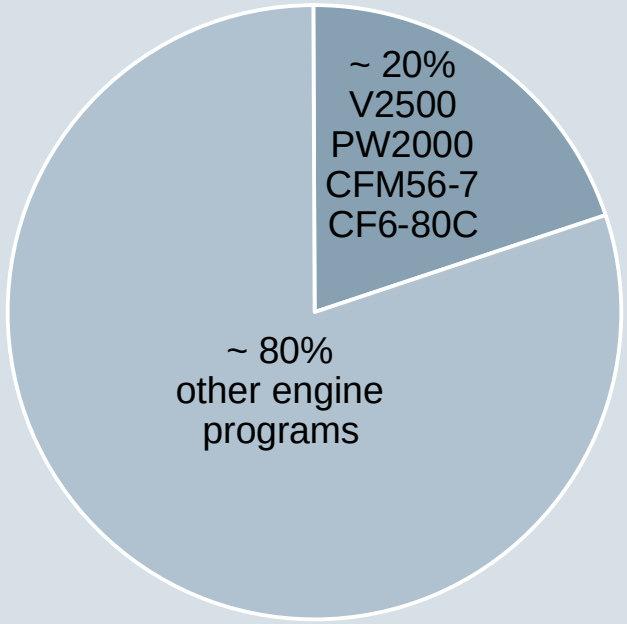
Source: AeroStrategy published 2008; all commercial jet aircraft above 35 seats

MTU's Response

- MTU continuously adds new engine programs to keep portfolio young
- Cooperation in repair and material solutions
- Focus on High-tech development and service solutions (eg. MTU's Total Engine Care)
- Low cost facilities
- Market access to new programs through airline JVs
- Think global, act local

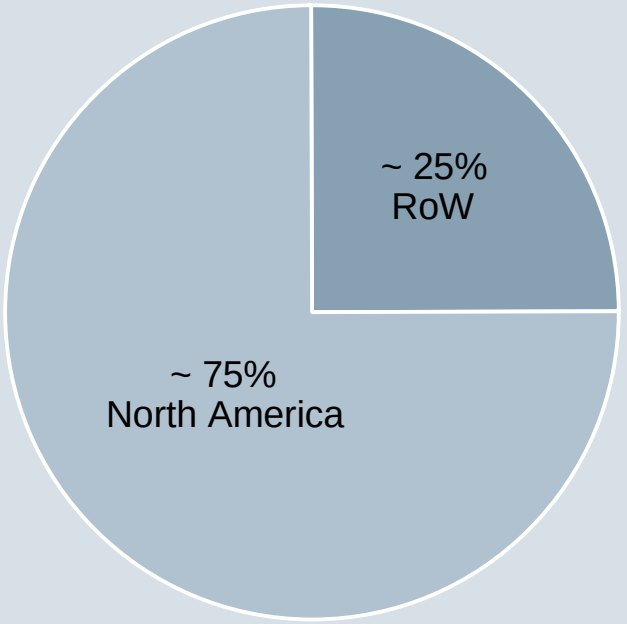
Capacity Reduction Announcements by Airlines (April – Sep 2008)

Affected Engine Types (Total 1500 units)



80% of the affected engines have no or limited impact on MTU

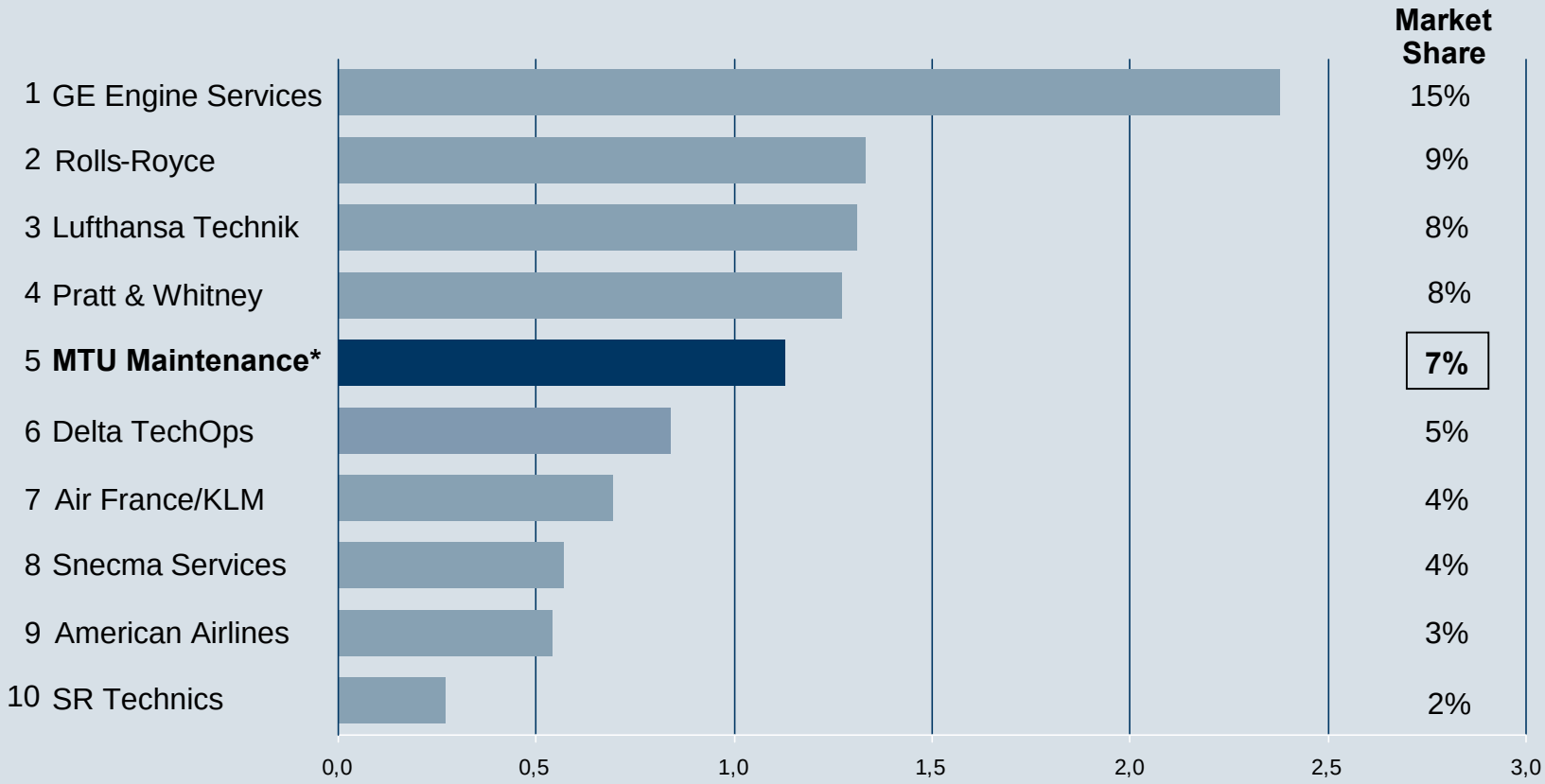
Affected Market Areas



75% of the announced fleet reductions are from North American operators

Top 10 Engine MRO Providers 2007

2007 Estimated Engine MRO Revenue (US$ Bill.)



Source: AeroStrategy 2007 Forecast Initiative, MTU actuals

Note: Only JVs >50% are consolidated

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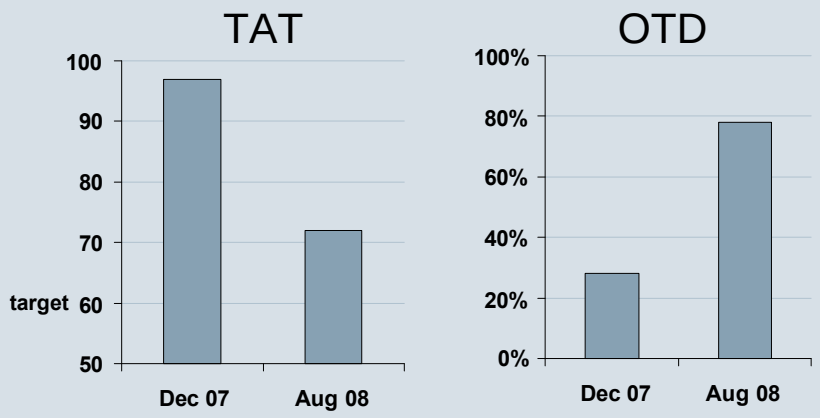
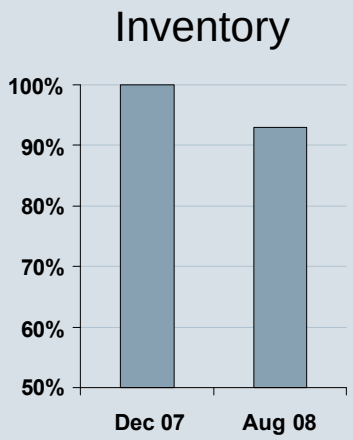
MTU Maintenance Hanover: Achievements Over the Last 9 Months





- TAT decreased by 26%
  Target TAT < 60 days
- OTD improved from 28% to 78%
  Target OTD >90%
- Inventory decreased by 7%
- 21 Kaizen Workshops successfully conducted
- Headcount reduction by 65 employees

Masterplan Hanover – Major Initiatives to Improve Performance

Objective

- Integrated production system
- Decrease Inventory
- Reduce TAT
- Increase flexibility

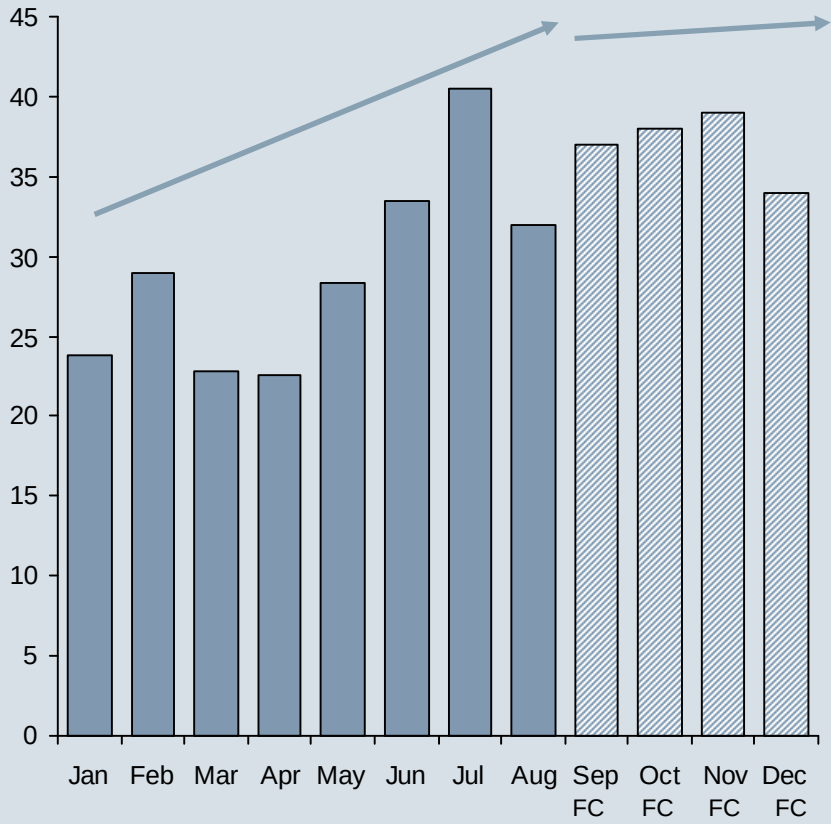
Implementation

- Smooth introduction vs. radical changes
- Implementation with a dedicated project team (25 headcount and external support)

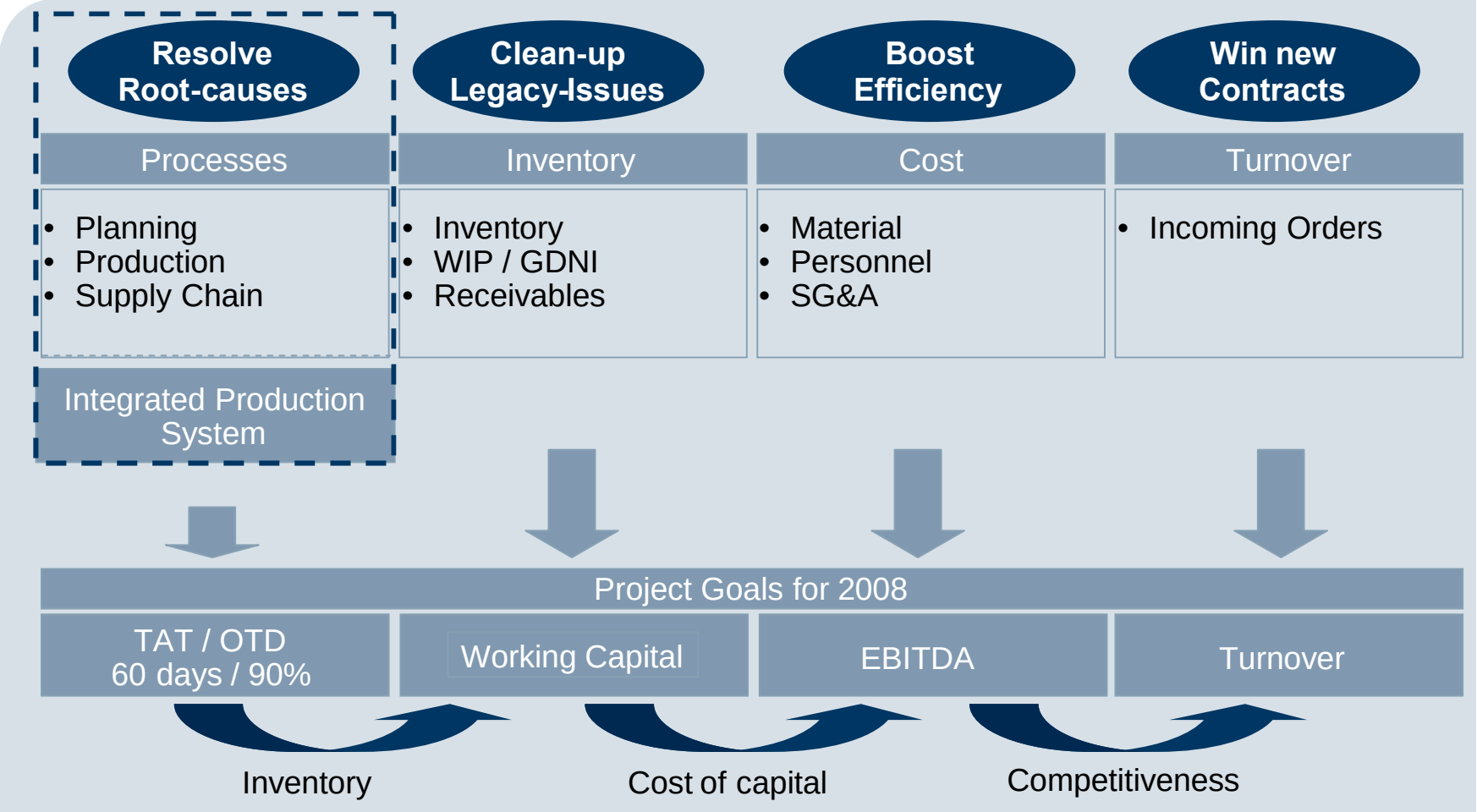
Status Quo

- New production system implemented
- Output stabilized on a good level
- Complexity has been reduced
- Kaizen established in entire organization

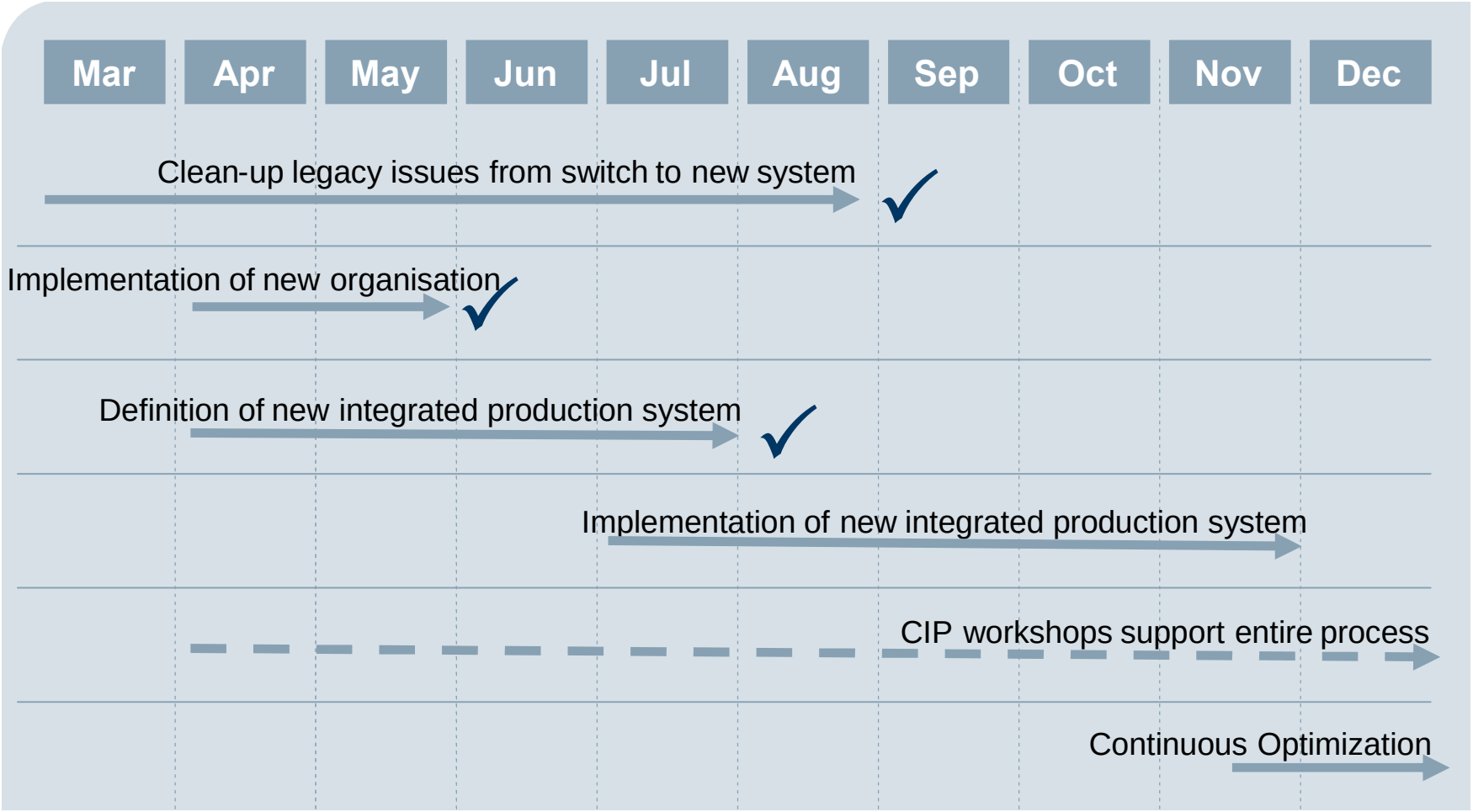
Ramp up phase – SLUs large engines



Masterplan Hanover: Structure of Project



Masterplan Hannover: Project Plan On Time and On Track



Kaizen Workshops are Regularly Conducted in Order to Improve Productivity at MTU Maintenance Hannover

Examples:

Repair Line 5 (V2500 HPT Blades)

- Kaizen Workshop to improve efficiency and TAT
- Production System changed from „Push“ to „Pull“
- Flow production implemented (according to defind work cycles)
- Output increased by over 60%
- Efficiency (parts per employee) increased by 25%
- TAT reduced by 20%

→ **Pilot Workshop – remaining repair lines will be optimized accordingly**

Job Order Planning and Disposition Process

- Kaizen Workshop in order to reduce process disturbances
- Reduction of waste through stabilizing supply processes (information + material)
- Engine Planning brought forward
- Strict progress and cost tracking
- Consolidated findings regarding process disturbances
- Higher planning stability leads to earlier fulfillment of demand

→ **Process successfully tested on pilot shop visits – will be rolled out company wide**

Commercial MRO – New Test Facility in Hannover

State of the art test facility

- **Max. Thrust:** 150 k lbs
- **Base area:** 1.800 m²
- **Length of the facility:** ~ 100 m
- **Width of the testbed:** ~ 15 m
- **Height of the exhaust:** ~ 35 m
- **Investment:** 24 m €
- **First engine run:** Sept. 08

Key facts

- Risk mitigation: >500 test runs/anno
- Permission to run both test cells at the same time
  ➔ capacity increase
- Ready to test all new large engines CF6-80E1, GP7000, GE90
- State-of-the-art control room requires only two engineers (instead of 3)
- Cost reduction through less weekend work
- Quick engine set-ups and removals through automated engine recognition

Commercial MRO – Growth Development Zhuhai Facility

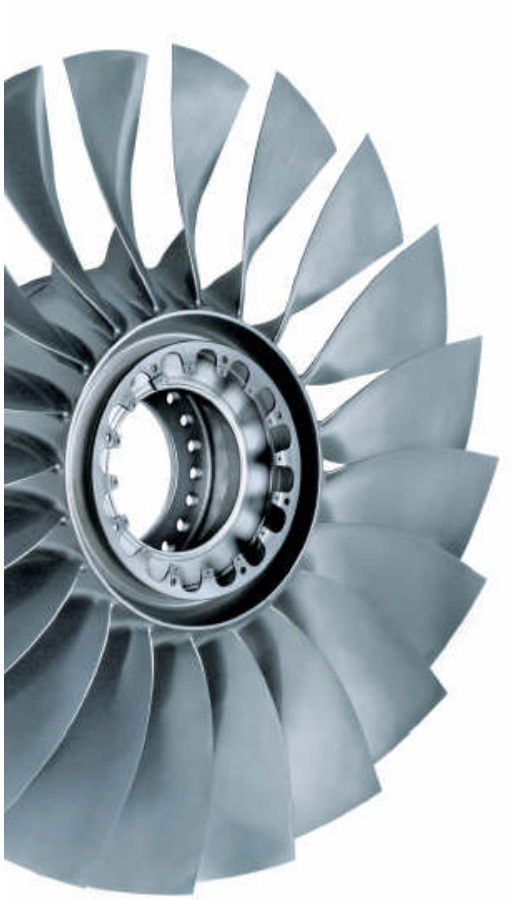
Introduction

- **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
- **Products:** V2500-A5; CFM56-3/-5B/-7

Key Facts

- No. 1 MRO facility in China with significant market shares (V2500 ~90%; CFM56-3 ~30%).
- Future growth is supported by increasing demand for CFM56-7 MRO services in Asia.
- MRO capabilities cover approx. 80% of narrow-body engines operated within China and South East Asia.
- > 500 engines successfully overhauled since start of operations in 2003.
- Base load secured due to partnership with largest and fast growing airline China Southern Airlines.
- Large expanding customer base with focus on China and Southeast Asia.

Commerical MRO – Technology Developments Leading to Improved Services



Intelligent maintenance- and repair concepts are key to value optimized maintenance.

- **MTU^{Plus} workscopes** and **MTU^{Plus} repair solutions**

  are effective, economic measures to address customer and environmental topics as:
  reduction of shop-visit-cost, fuel burn and emissions

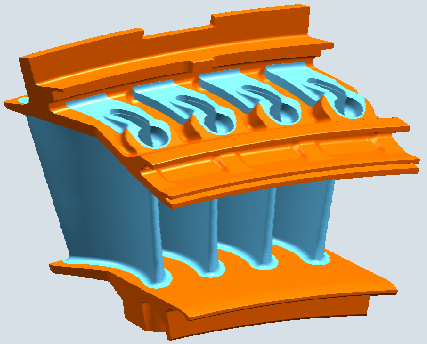
- **MTU^{Plus} Engine Condition Monitoring**

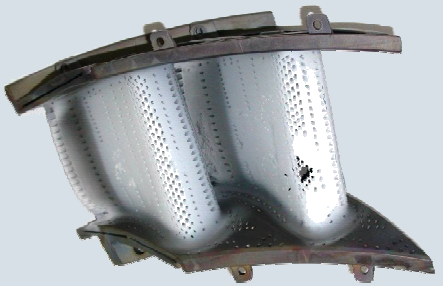
  helps to optimize the usage of the engine fleet and will reduce total maintenance cost for the operator

Commercial MRO - Highlights Repair Development H1 2008

Repair Development (High Tech)

- CBN Tip Coating
  - Application: V2500 HPT Blades
  - USP: material cost reduction, shorter process time, higher oxydation resistance (EGT Margin improvement)
  - EASA approval received on Sept. 10, 2008
- Airfoil Replacement Projects
  - Application: CFM56-7 HPT and LPT Vanes
  - USP: material cost reduction
- Vane Full Repair Projects
  - Application: V2500 and CFM56-7
  - USP: improved component life, application MTU^{Plus} brazing and TBC coating





Conclusions

- Marginal impact on MTU by announced engine retirements
- Implementation of new production/MRO system
- Operational improvements implemented → positive impact on bottom line
- Q3 trend confirms year end targets
- Sustainable basis for future profitable growth established

Overview of New Cost Efficiency Initiatives

Reiner Winkler, CFO

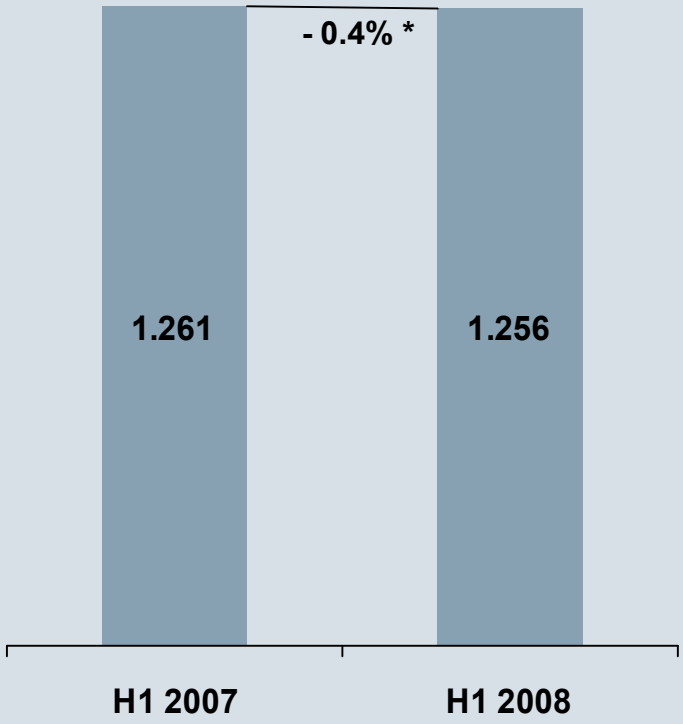
Agenda

1. HY 2008 and Guidance
2. Perspectives for 2009
3. Cost Initiatives and Projects: Existing Projects and New Initiatives

H1/2008: Revenue Growth 12% on US$ basis

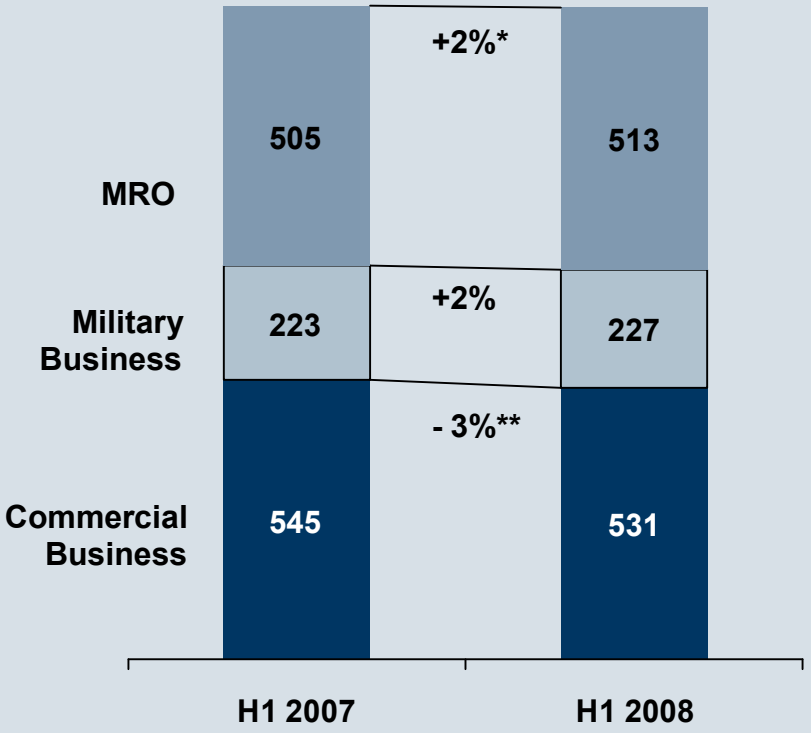
MTU Group Revenues (m€)

*increase on US$ basis:12%



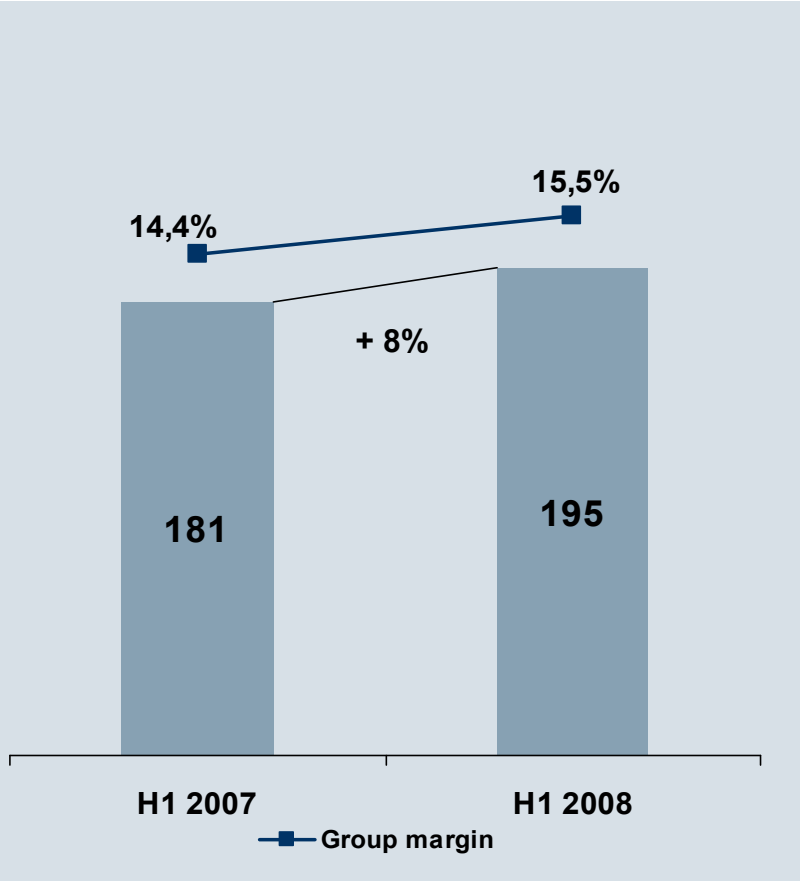
Segment Revenues (m€)

*increase on US$ basis: 17%
** increase on US$ basis: 12%

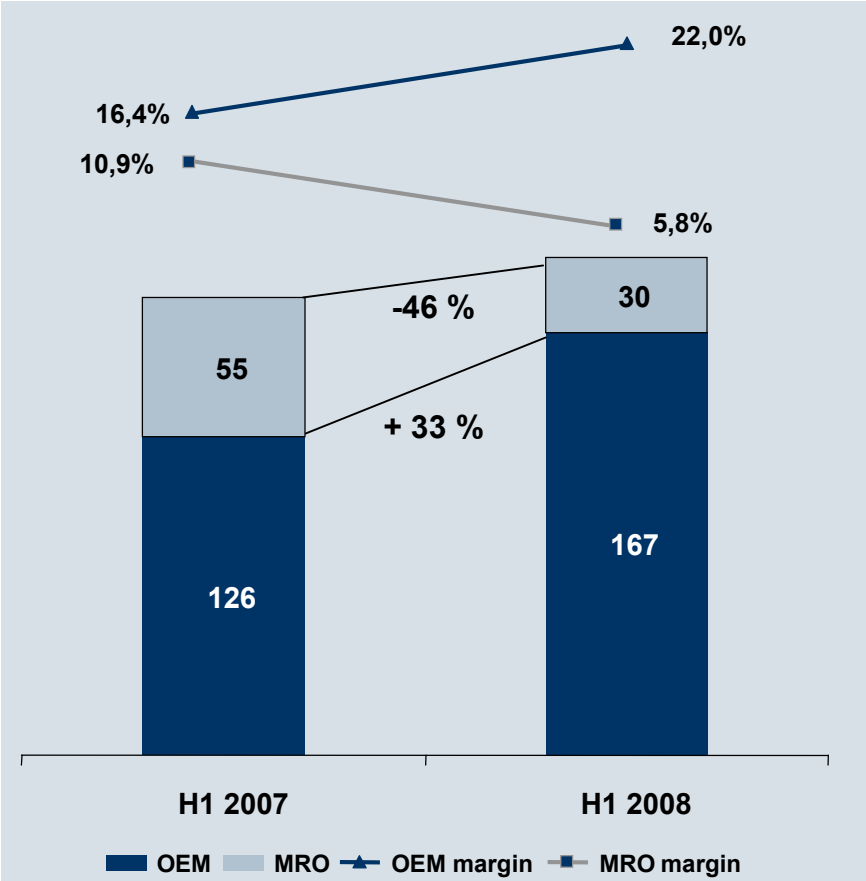


H1/2008: EBITDA Improved by 8% on Group Level

MTU Group EBITDA adj. (m€)

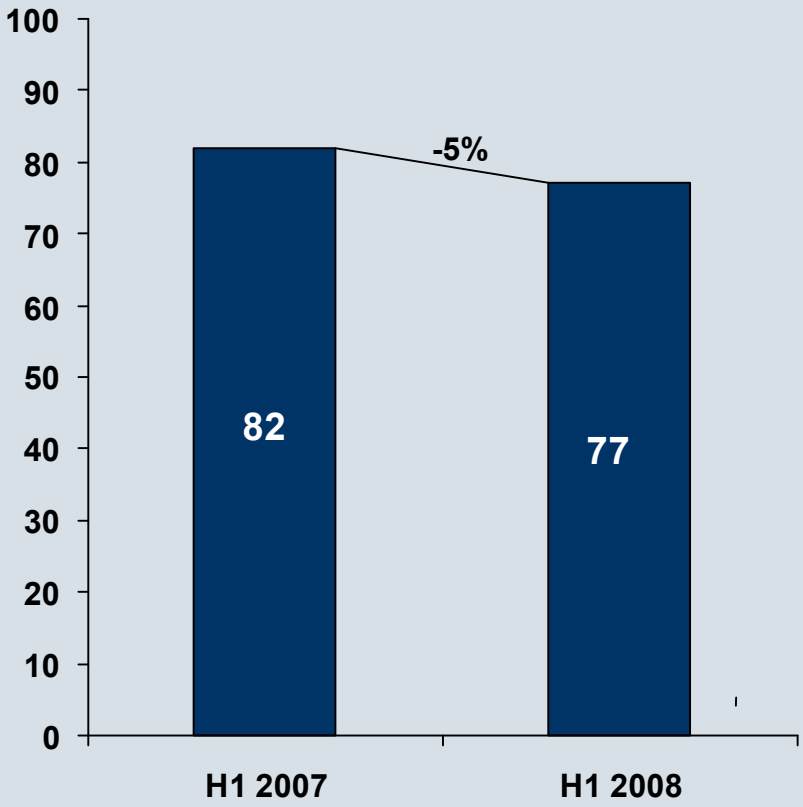


Segment EBITDA adj. (m€)

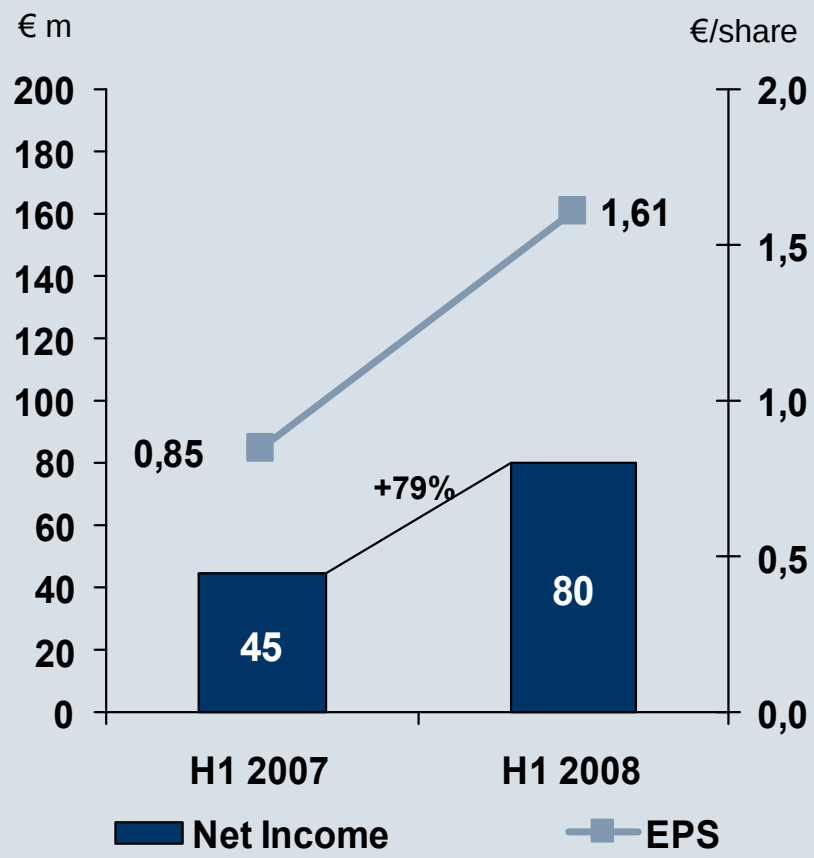


H1 2008: Net Income Grew by 80%

Free Cash Flow

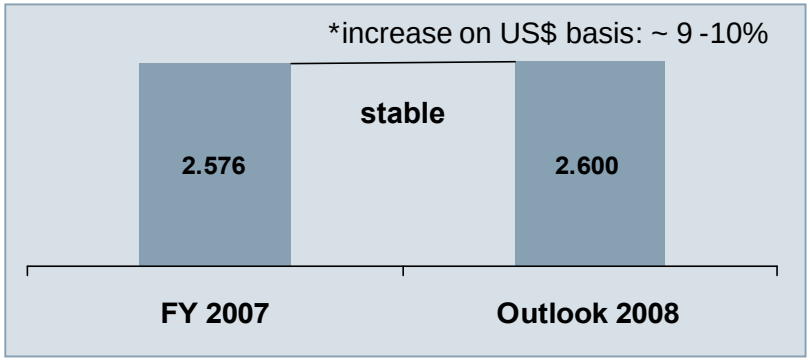


Net Income / EPS

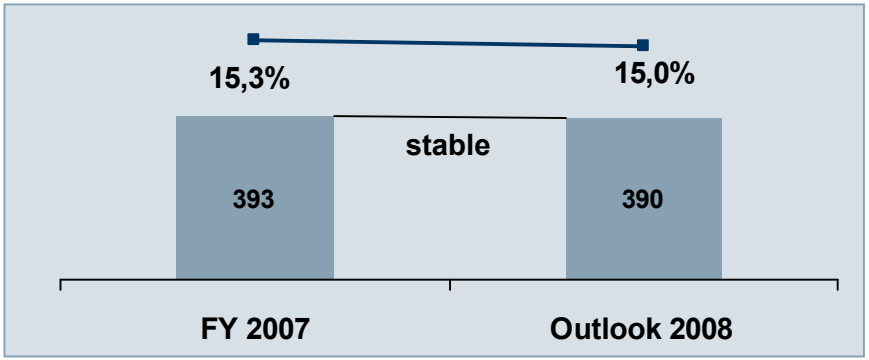


FY 2008 Forecast Remains Unchanged

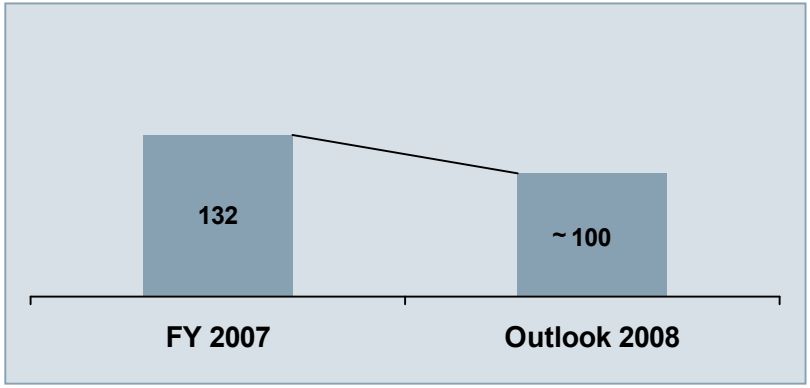
Revenues (m€)



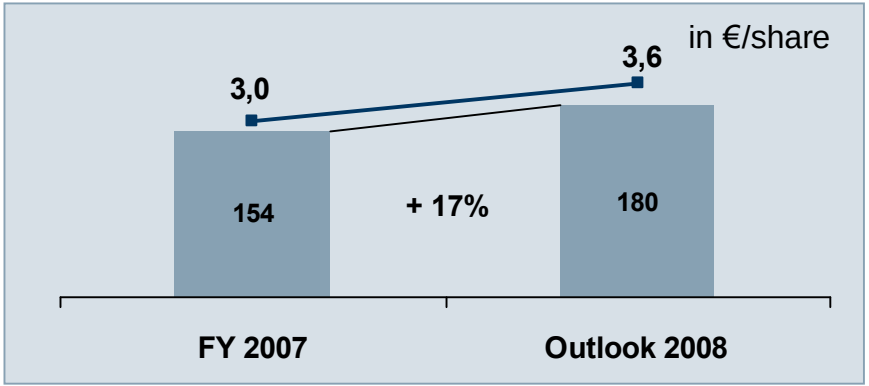
EBITDA adj. (m€)



Free Cash Flow (m€)



Net Income / EPS reported (m€)



New Key Financial Figure: EBIT adj.

Main reasons for switching to EBIT adj. from 2009 onwards

1. Depreciation & amortization are part of operative costs, but not included in EBITDA. In order to extend the attention on the total operative cost base, MTU internally switched to EBIT adj. in 2008: EBIT adj. = EBIT reported + PPA
2. MTU is in line with 90% of the blue chips / mid caps which comment on EBIT

The mid-term target for EBIT adj. margin is 12-13% (corresponding to 14-15% EBITDA adj. margin)

Reconciliation EBIT adj. / EBITDA adj. – MTU Group

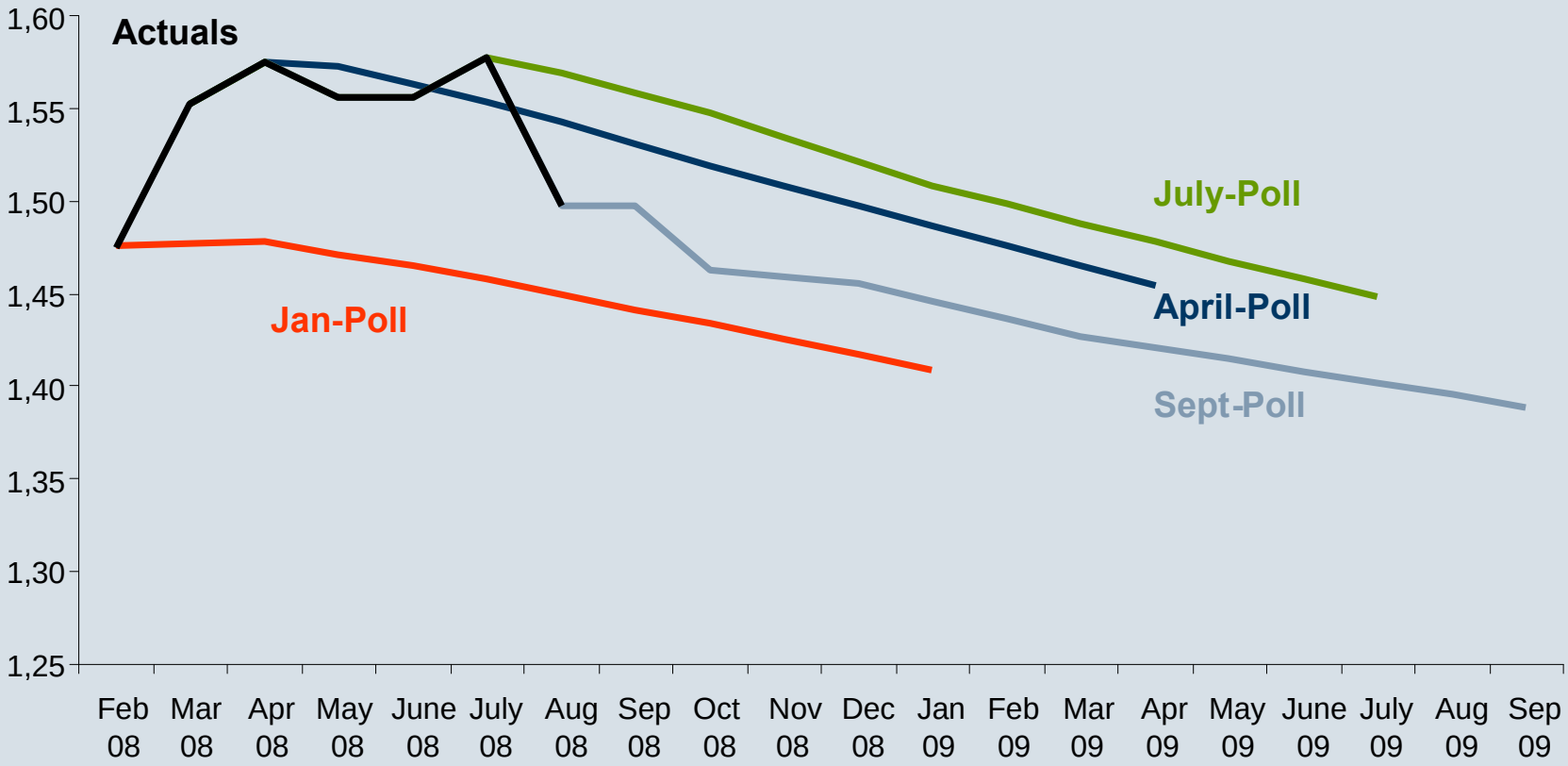
	2007	2008 G
Sales	2,575.9	2,600.0
EBIT reported	243.3	280.0
+ PPA depr./ amort.	54.6	50.0
+/- other adjustments	14.7	
extraordinary write-off CF34 licence	*14.7*	
EBIT adjusted	**312.6**	**330.0**
EBIT adjusted margin	**12.1%**	**12.7%**
D&A w/o PPA	80.3	75.0
R&D capitalization		-15.0
EBITDA adjusted	**392.9**	**390.0**
EBITDA adjusted margin	**15.3%**	**15.0%**

Agenda

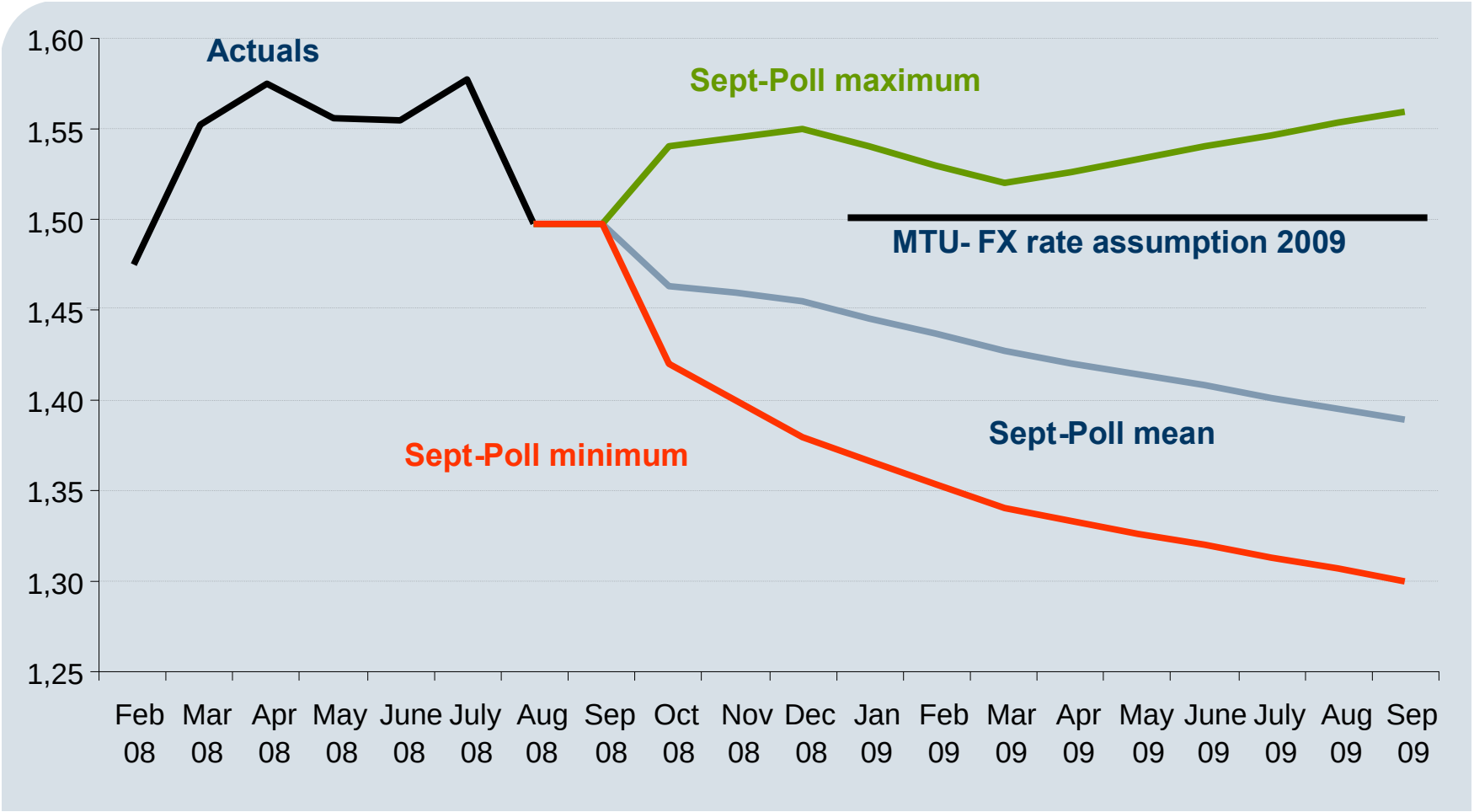
1. HY 2008 and Guidance
2. Perspectives for 2009
3. Cost Initiatives and Projects: Existing Projects and New Initiatives

Forecasts of Banks for FX Rate USD/Euro

Reuters Poll (more than 50 banks)

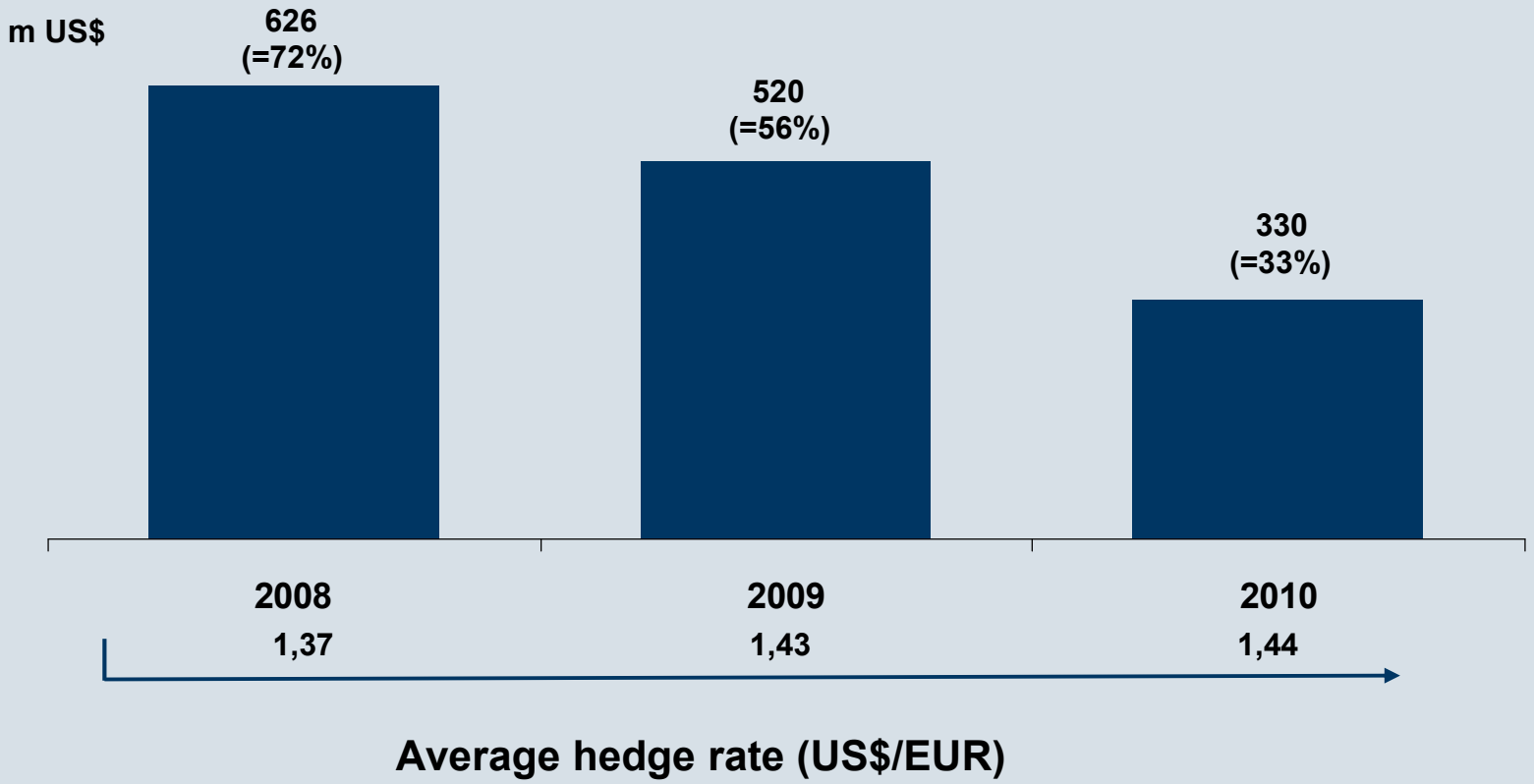


MTU Assumes an Average USD-exchange in the Range of 1.50 for 2009



MTU Has Extended the Hedge Portfolio on a Favourable Basis

Hedge book as of September 25 2008 (% of net exposure)



Current Expectations: External Assumptions for Passenger Traffic

Source: Airline Monitor July 2008

	2009	2010
USA	-1,3%	3,0%
Europe	2,1%	4,2%
Asia	5,3%	7,5%
Worldwide	2,3%	5,1%

Sales expectations dependent on the financial situation of the airlines

Current Expectations: MTU Assumptions for 2009

- Commercial series: ramp up of GP7000, i.e. slightly higher sales in series in total compared to 2008
- Spare Parts: -5% / +5% compared to 2008
- MRO: sales with a slight increase compared to 2008 and margin improvement
- Military business stable compared to 2008, i.e. no significant changes in the deliveries of series/spares EJ200 and RB199, TP400 same level of R&D compared to 2008
- R&D: Due to starting projects MRJ, C-Series, PW810 increasing R&D

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1. HY 2008 and Guidance
2. Perspectives for 2009
3. Cost Initiatives and Projects: Existing Projects and New Initiatives

Overview of Current MTU Cost Efficiency Initiatives

Impact 06

- **Reduction of Indirect Costs**
  Complexity reduction and offshoring
- **Reduction of Direct Labour Costs**
  Optimisation of shift models
- **Reduction of Procurement Costs**
  (Resourcing/price negotiations)

50 m€ cost advantage from 2008 on (1/3 realized in 07)

Short-term Initiative

CoE-Concept

- Creation of centers of excellence
- Improving general framework for
  - Manufacturing
  - Development
  - MRO

MTU Polska:

- ~ 50 m€ investment
- ~ 10 m€ One-time costs
- ~ 400 employees in 2012
- Development and production of rotor & stator blades for LPT, assembly work on LPT and parts repair

20 m€ cost advantage from 2011 on

Long-term Initiative

Progress of MTU Polska

- Ramp up of the production, start of production in Q2 2009

Introducing a New Cost Cutting Program “Challenge 2010”

Impact 06

- **Reduction of Indirect Costs**
  Complexity reduction and offshoring
- **Reduction of Direct Labour Costs**
  Optimisation of shift models
- **Reduction of Procurement Costs**
  (Resourcing/price negotiations)

50 m€ cost advantage from 2008 on (1/3 realized in 07)

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20 m€ cost advantage from 2011 on

Challenge 2010

- Reduction of Product Costs
- Optimization of production processes and R&D

50 m€ cost reduction from 2010/2011 on

Short-term Initiative

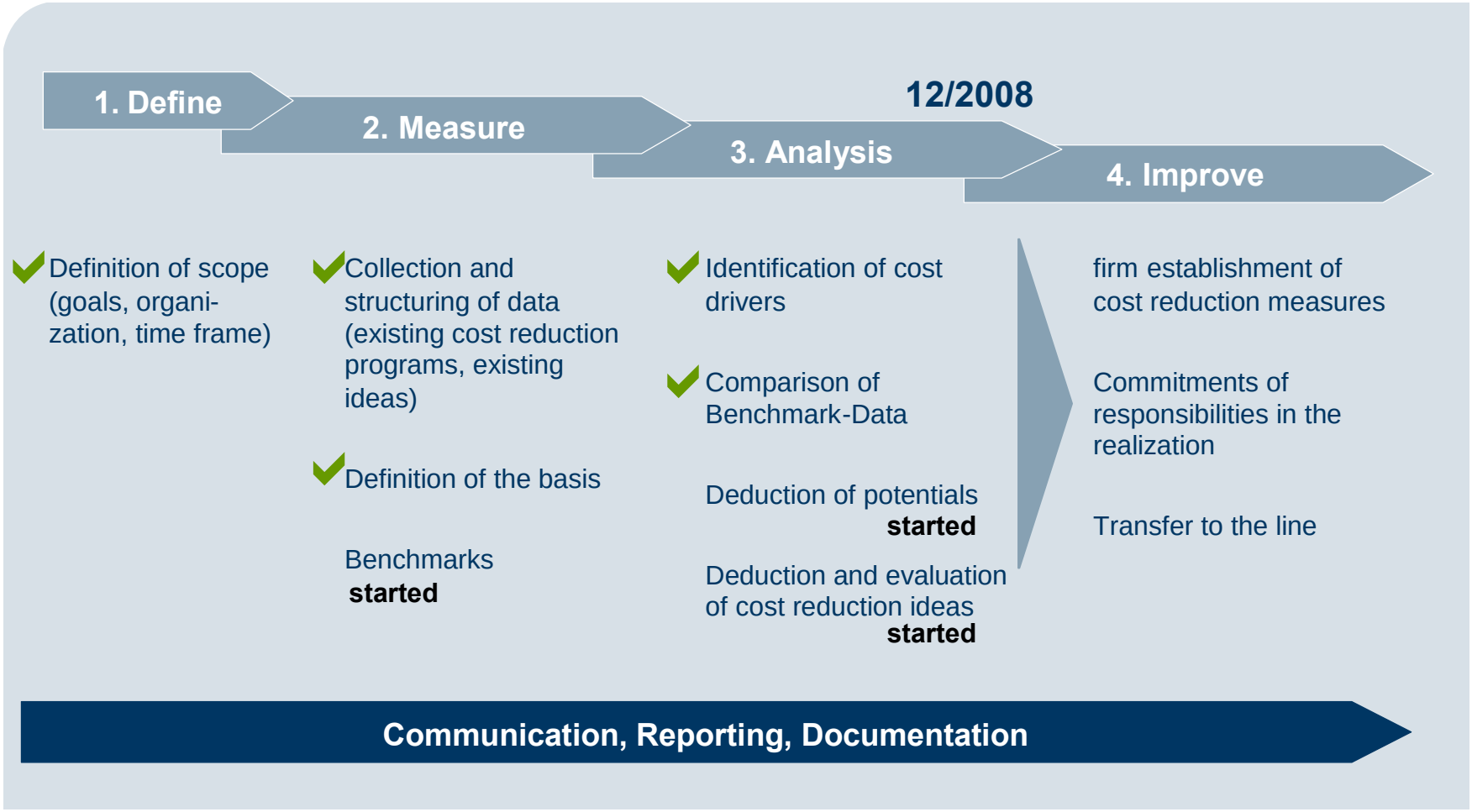
Long-term Initiatives

Challenge 2010

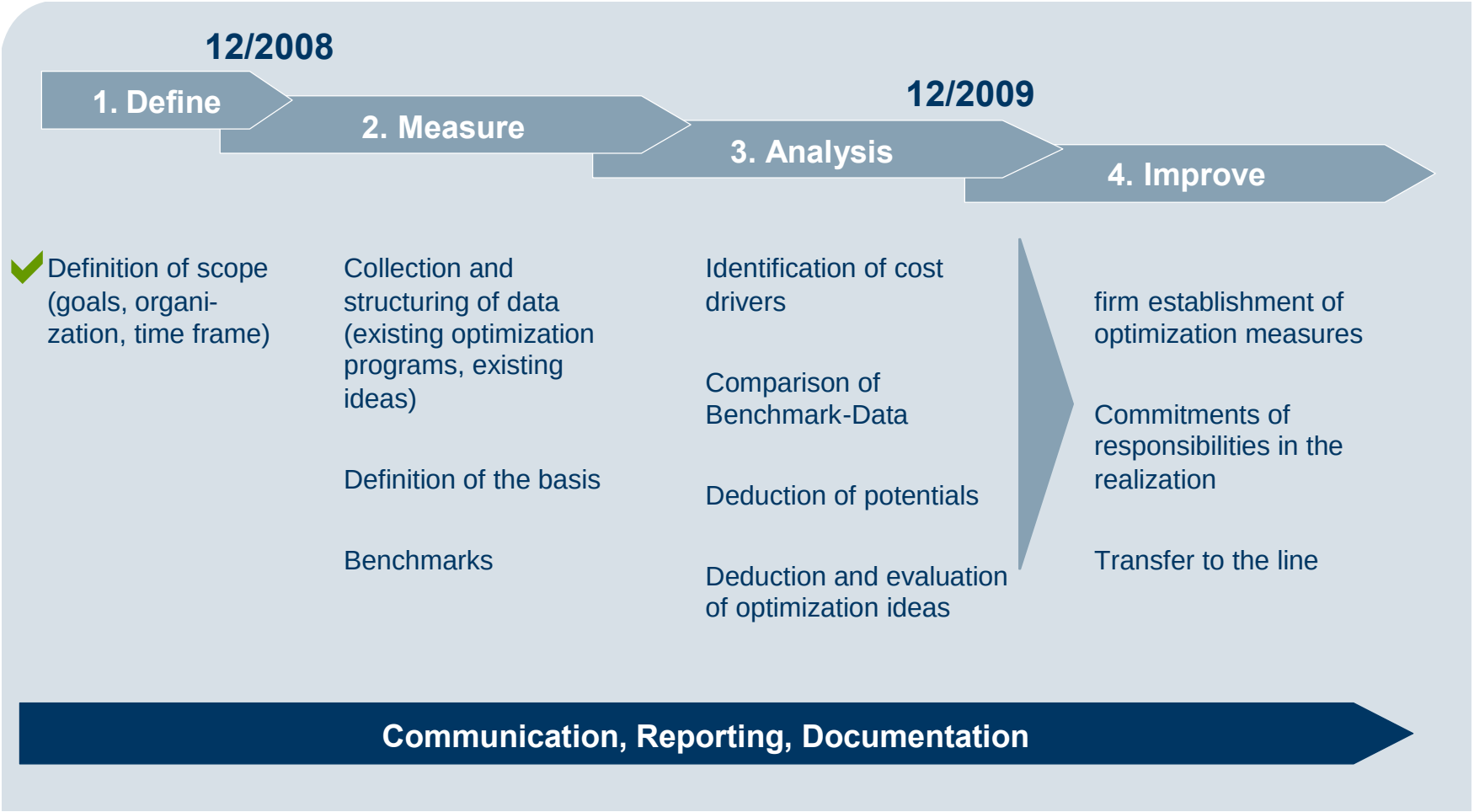
Major initiatives:

- Optimization of supply chain
- Realization of best cost country supplies
- Reevaluation designs for cost improvements
- Optimization of existing production processes

Actual Status Product Cost Reduction



Actual Status Optimization Production Processes and R&D



Summary and Conclusion

- H1 shows profitable growth of MTU
- Despite downturn expectations, our guidance 2008 can be confirmed
- 2009: In contrast to some sharp downturn scenarios, MTU is slightly optimistic for the next year. We see risks and chances for 2009. But due to the volatility of the current market situation we cannot provide a specific guidance yet.
- MTU started the cost reduction program “Challenge 2010” with a total volume of 50m€ to ensure competitiveness in a challenging macro environment

Reconciliation EBIT adj. / EBITDA adj. – MTU Group

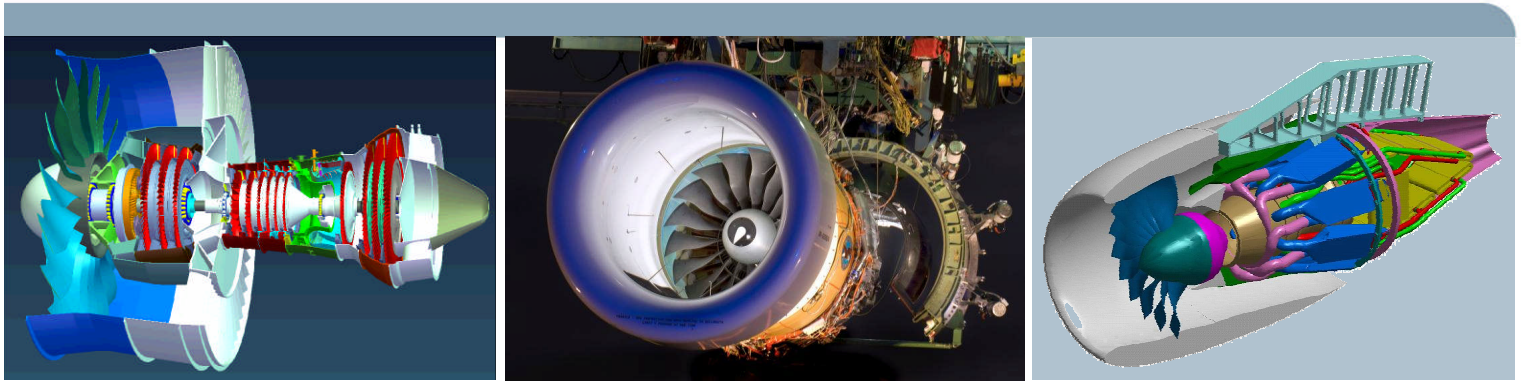
	2005	2006	2007	H1 2008	2008 G
Sales	2,182.7	2,416.2	2,575.9	1,256.1	2,600.0
EBIT reported	131.2	183.8	243.3	132.4	280.0
+ PPA depr./ amort.	84.7	65.0	54.6	24.4	50.0
+/- other adjustments	-54.2	-11.1	14.7		
Restructuring costs	*2.8*	*20.0*			
R&D provision consumption	*-38.1*	*-16.1*			
Property Sale		*-10.5*			
Provision program value	*-21.3*	*-10.8*			
Impairment MTU-Canada/MTU AENA/TP400	*2.4*	*6.3*			
extraordinary write-off CF34 license			*14.7*		
EBIT adjusted	**161.7**	**237.7**	**312.6**	**156.8**	**330.0**
EBIT adjusted margin	**7.4%**	**9.8%**	**12.1%**	**12.5%**	**12.7%**
D&A w/o PPA	77.0	80.5	80.3	37.7	75.0
R&D capitalization					-15.0
EBITDA adjusted	**238.7**	**318.2**	**392.9**	**194.5**	**390.0**
EBITDA adjusted margin	**10.9%**	**13.2%**	**15.3%**	**15.5%**	**15.0%**

Reconciliation EBIT adj. / EBITDA adj. – OEM

	2005	2006	2007	H1 2008
Sales	1434.8	1,483.1	1,599.5	758.1
EBIT reported	94.3	119.0	204.1	118.7
+ PPA depr./ amort.	72.6	56.8	46.9	21.9
+/- other adjustments	-56.6	-11.7		
Restructuring costs	*2.8*	*20.0*		
R&D provision consumption	*-38.1*	*-16.1*		
Property Sale		*-10.5*		
Provision program value	*-21.3*	*-10.8*		
Impairment MTU AENA / TP400		*5.7*		
EBIT adjusted	**110.3**	**164.1**	**251.0**	**140.6**
EBIT adjusted margin	**7.7%**	**11.1%**	**15.7%**	**18.5%**
D&A w/o PPA	52.1	53.6	54.7	26.2
R&D capitalization				
EBITDA adjusted	**162.4**	**217.7**	**305.7**	**166.8**
EBITDA adjusted margin	**11.3%**	**14.7%**	**19.1%**	**22.0%**

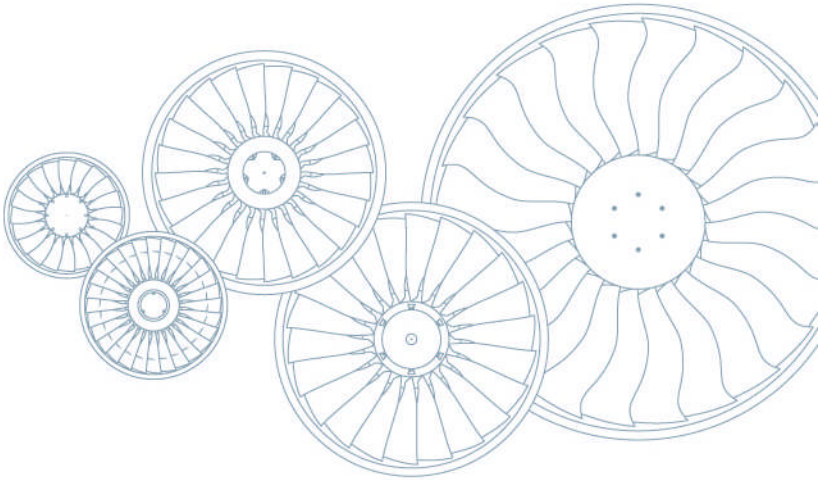
Reconciliation EBIT adj. / EBITDA adj. – MRO

	2005	2006	2007	H1 2008
Sales	766.9	954.7	1,004.7	513.0
EBIT reported	38.4	67.7	39.9	15.5
+ PPA depr./ amort.	12.1	8.2	7.7	2.5
+/- other adjustments	2.4	0.6		
Impairment MTU Canada	*2.4*	*0.6*		
Extraordinary write-off CF34 license			*14.7*	
EBIT adjusted	**52.9**	**76.5**	**62.3**	**18.0**
EBIT adjusted margin	**6.9%**	**8.0%**	**6.2%**	**3.5%**
D&A w/o PPA	24.9	26.9	25.6	11.5
R&D capitalization				
EBITDA adjusted	**77.8**	**103.4**	**87.9**	**29.5**
EBITDA adjusted margin	**10.1%**	**10.8%**	**8.7%**	**5.8%**



Update on Technology

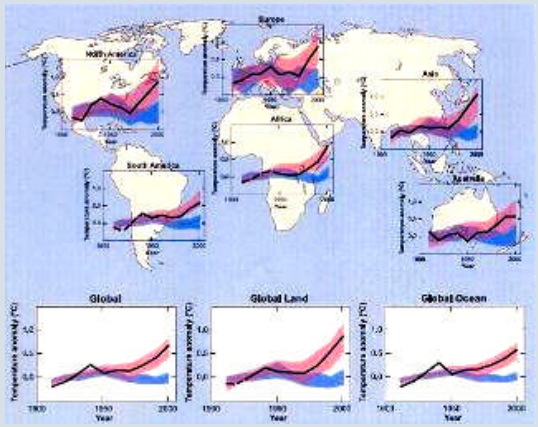
Dr. Jörg Henne, SVP Engineering and Technology



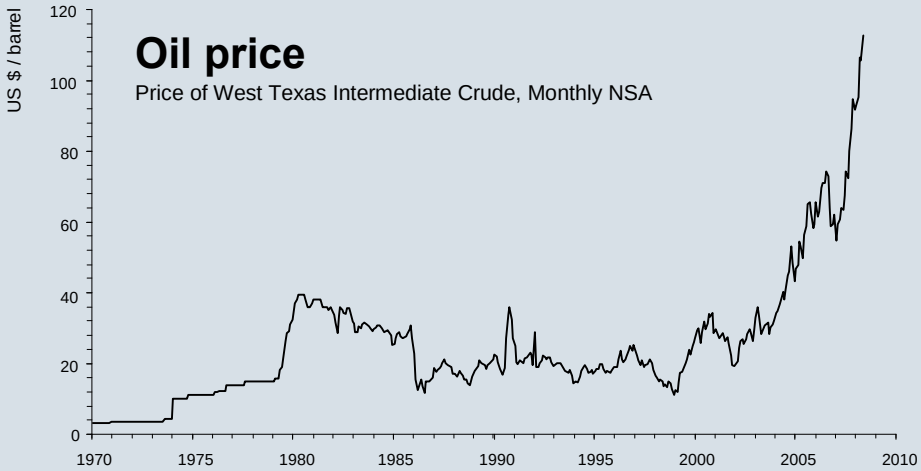
Agenda

1. Environmental and Economic Challenges
2. The Geared Turbofan Concept
3. Geared Turbofan Technology Development & Demonstrator Program
4. MTU’s Long-term Technology Program Claire

Environmental and Economic Challenges



Climate Change
Graph shows observations (black line) and model results with (red line) and without (blue line) anthropogenic emissions
Source: IPCC 2007



Emissions Requirements

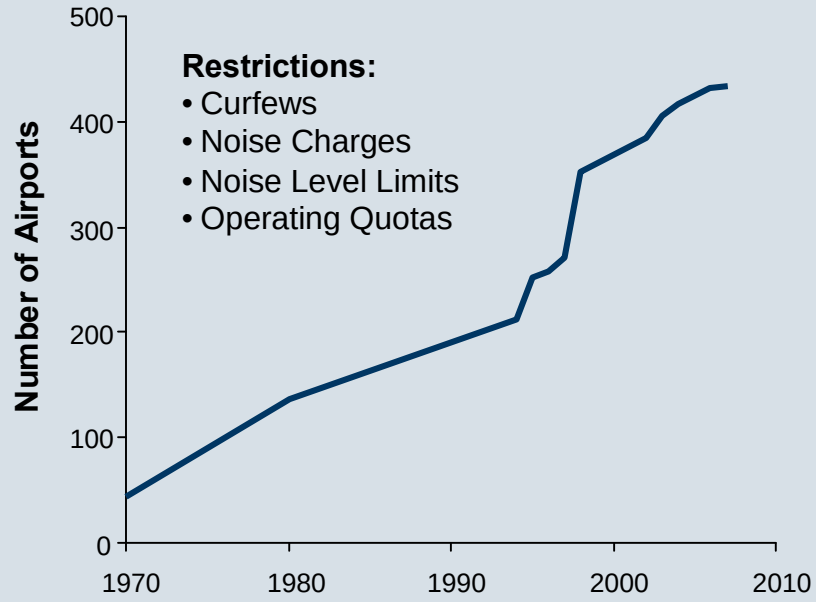
- Tight regulations locally and by ICAO
- CO_2 reduction driven by community and political demands (worldwide climate changes)

Fuel Consumption

- Fuel price increase (limited resources)
- Strong cyclic fluctuation, high uncertainty (political and economical events)
- Increasing share of fuel cost in airline COCs

Environmental and Economic Challenges

Growth in Airport Noise Restrictions



Source: Boeing www.boeing.com/commercial/noise/restrictions.pdf

Noise Requirements

- Tight regulations locally and by ICAO
- Noise is becoming an important economic factor (fees, quota, flight ban)

Expected long-term growth in world air traffic causes significant environmental and economic challenges.

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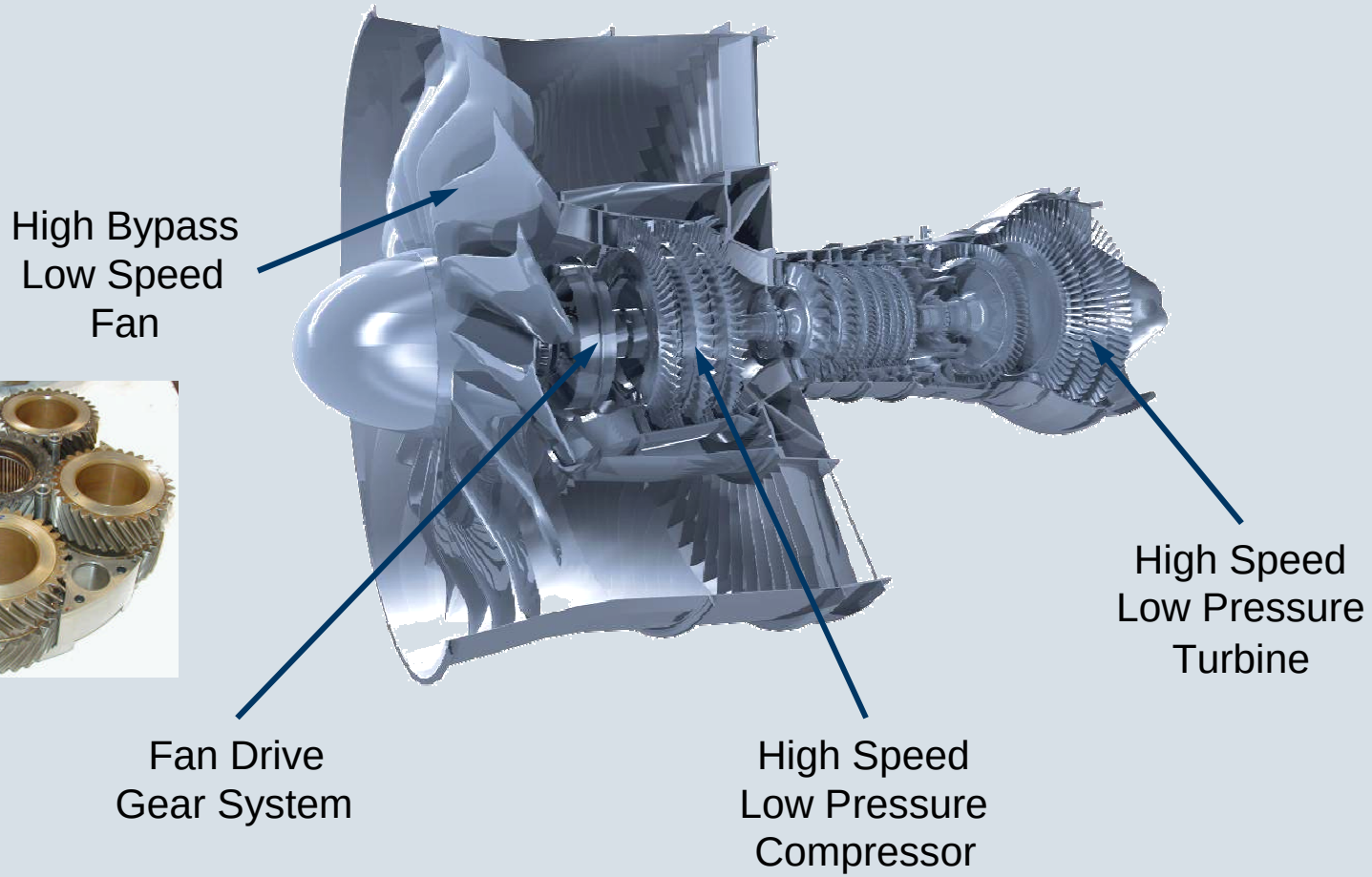
Geared Turbofan Design Objectives

Criteria	Existing Engine	Objective
Fuel Burn	Base	> -12%
Noise	-2 to -4 dB rel. ICAO stg. 4	> - 20dB rel ICAO stg. 4
Emissions	-40% rel ICAO96	-60% rel ICAO 96
Maintenance Cost	Base	> - 30%
Reliability	Base	Zero Target (no IFSDs)

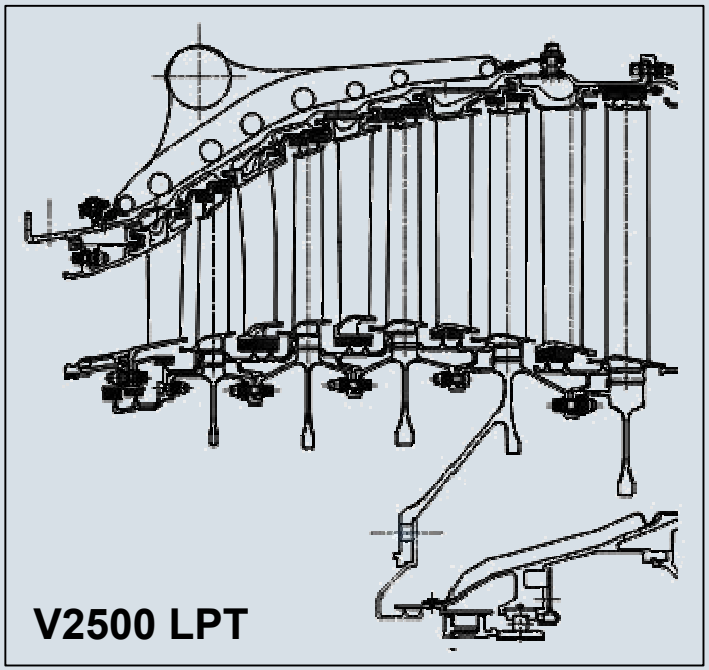
- Fuel Burn is most critical objective due to impact on airlines' operating costs and on the ability to meet the tightening emission standards
- Community Noise is becoming an economic factor for airlines
- Reliability and Maintenance Cost will continue to be amongst the most important focus areas and can not be compromised

Source: P&W

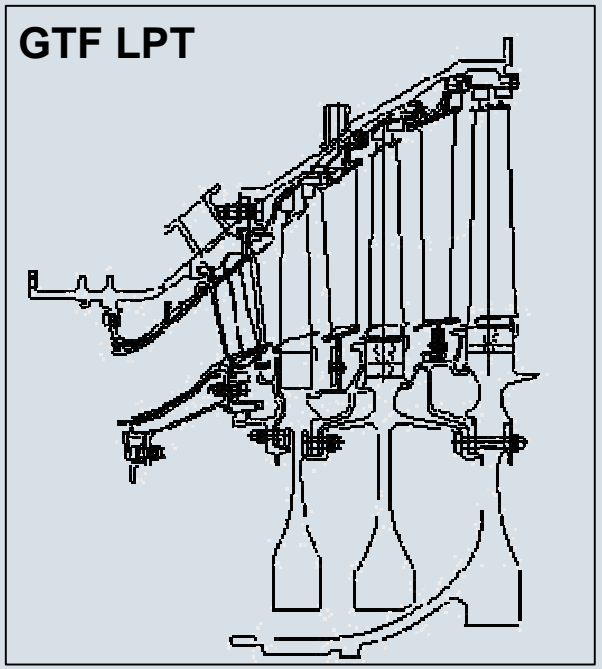
Geared Turbofan Engine Concept



The Geared Turbofan Heavily Benefits from the High Speed LPT



+ 60% speed
- 3 stages vs 5
- - 40% airfoil count
- - 60 - 70% weight

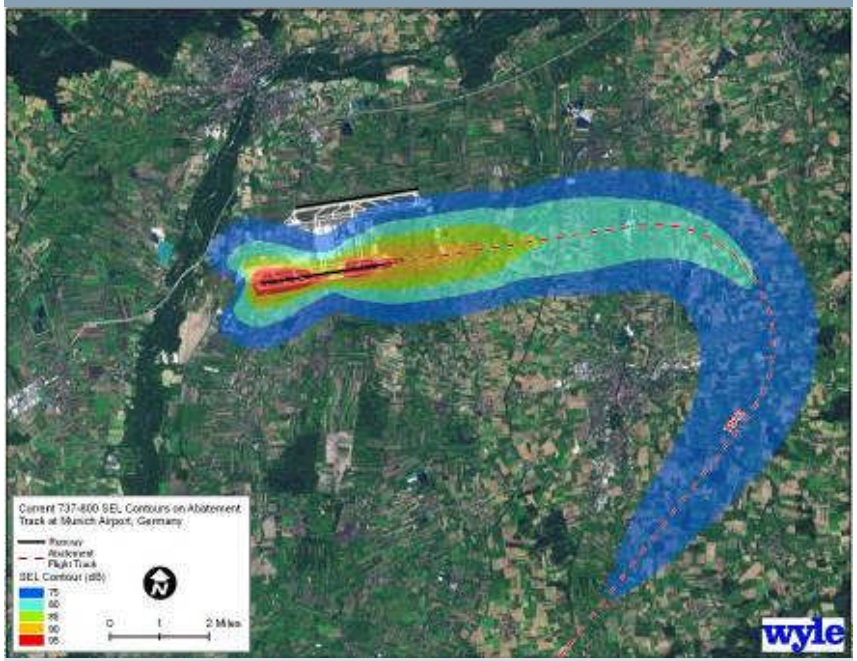


- Reduced stage and airfoil count due to high rotational speed
- Reduced weight and cost
- High efficiency due to low aerodynamic loading and high row velocity ratio
- Low noise due to high Blade Passing Frequency

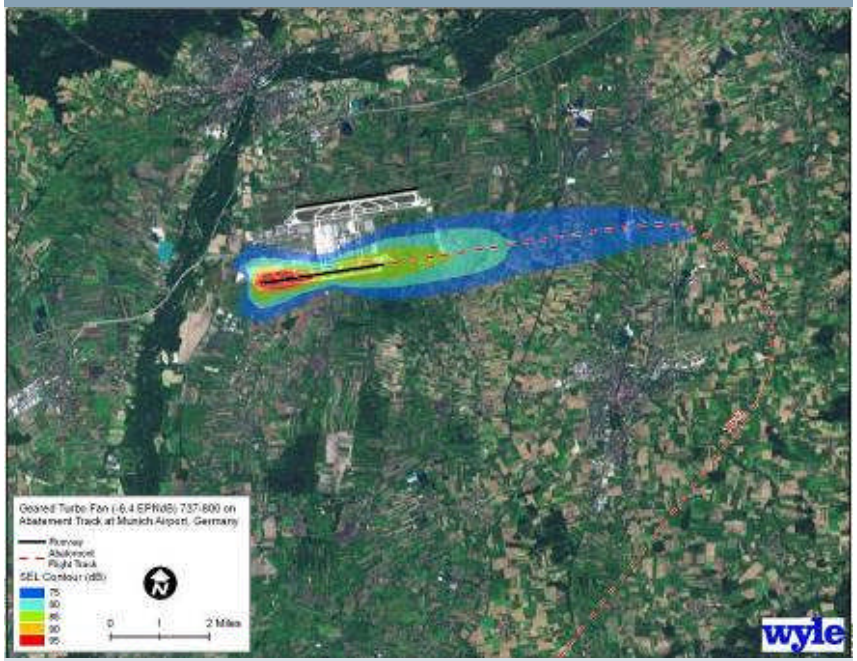
Significantly Reduced Noise Emission

Munich International Airport (MUC)

Today's Aircraft



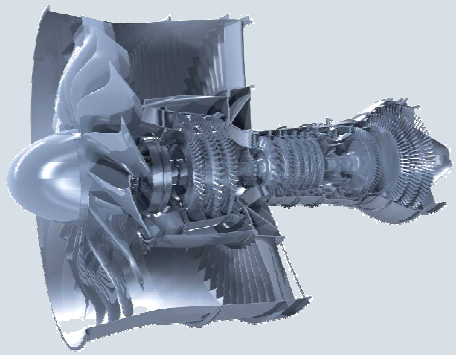
Geared Turbofan Powered Next Generation Aircraft



Noise Simulation: Pratt & Whitney
SEL Contour Source: Wyle Laboratories

72% Reduction in 75dB Single Event Noise Contour

Geared Turbofan in Comparison with Alternative Concepts



Geared Turbofan

- - 15 % fuel burn rel. to year 2000 engine
- - 24 EPNdB noise emission rel. to year 2000 engine
- Technology readiness 2008

Open Rotor

- Potential SFC benefit in comparison to Geared Turbofan, but not (fully) useable
- High noise!
- Significant installation and weight risks
- Technology readiness 2020 or later

The Geared Turbofan is the only concept which allows significant reduction in fuel burn and noise at the same time

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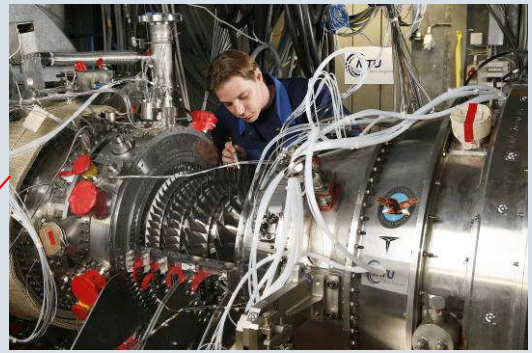
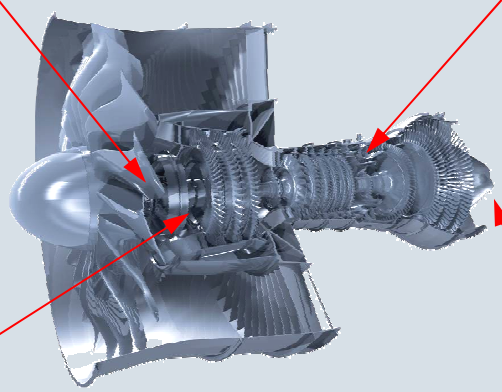
Technology Development & Validation

Gear System Test Facility (P&W)



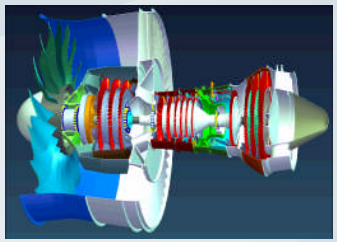
HPC Rig (MTU)

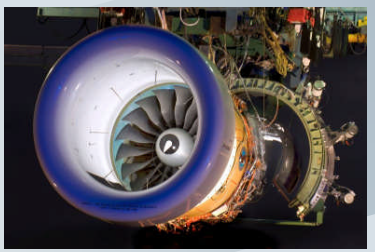


LPC Rig (P&W)

LPT in the Clean Demo.
(ATF Stuttgart)

Geared Turbofan Demonstrator Program Milestones





Build Start
May 2007

Ground Test
Nov. 2007

747 FTB 1st Flight
July 2008

A340 1st Flight
4Q 2008

2007

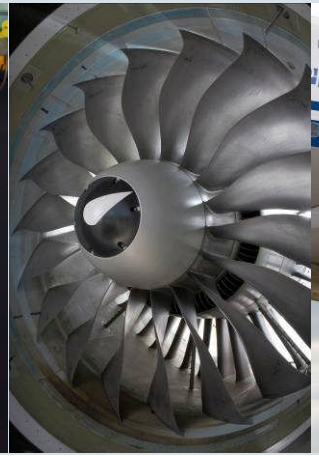
2008

- Ground and flight test to demonstrate performance, noise and engine installation
- Technology Readiness by end of 2008 to support product EIS end of 2012

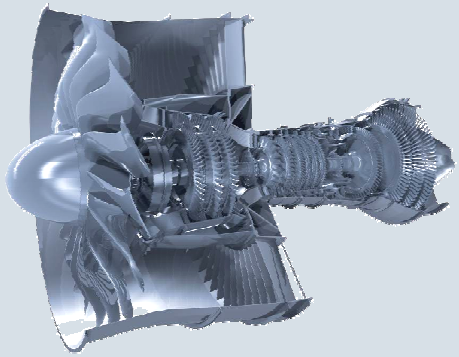
The Geared Turbofan Demonstrator Program Has Gained Significant Attention from Airliners and Airframers

The GTF Demo Program met all targets; it has completed 250 hrs bench testing and achieved approximately 50 hrs flight testing.

„I think it‘s going to be a good engine (the P&W-GTF$_{TM}$). We don‘t think the gearbox is going to be a problem. They‘ve done their homework to make sure it‘s going to work“ says Mike Bair, VP Boeing Commercial Airplanes Business Strategy and Marketing
(Aviation Week & Space Technology, September 1st, 2008)



The Favorable Concept for Various Applications



Mitsubishi MRJ

Bombardier CSeries

A320 / B737 Successor

- First two exclusive applications to new aircraft families
- Installation on today's wide body and single aisle airplanes appears possible

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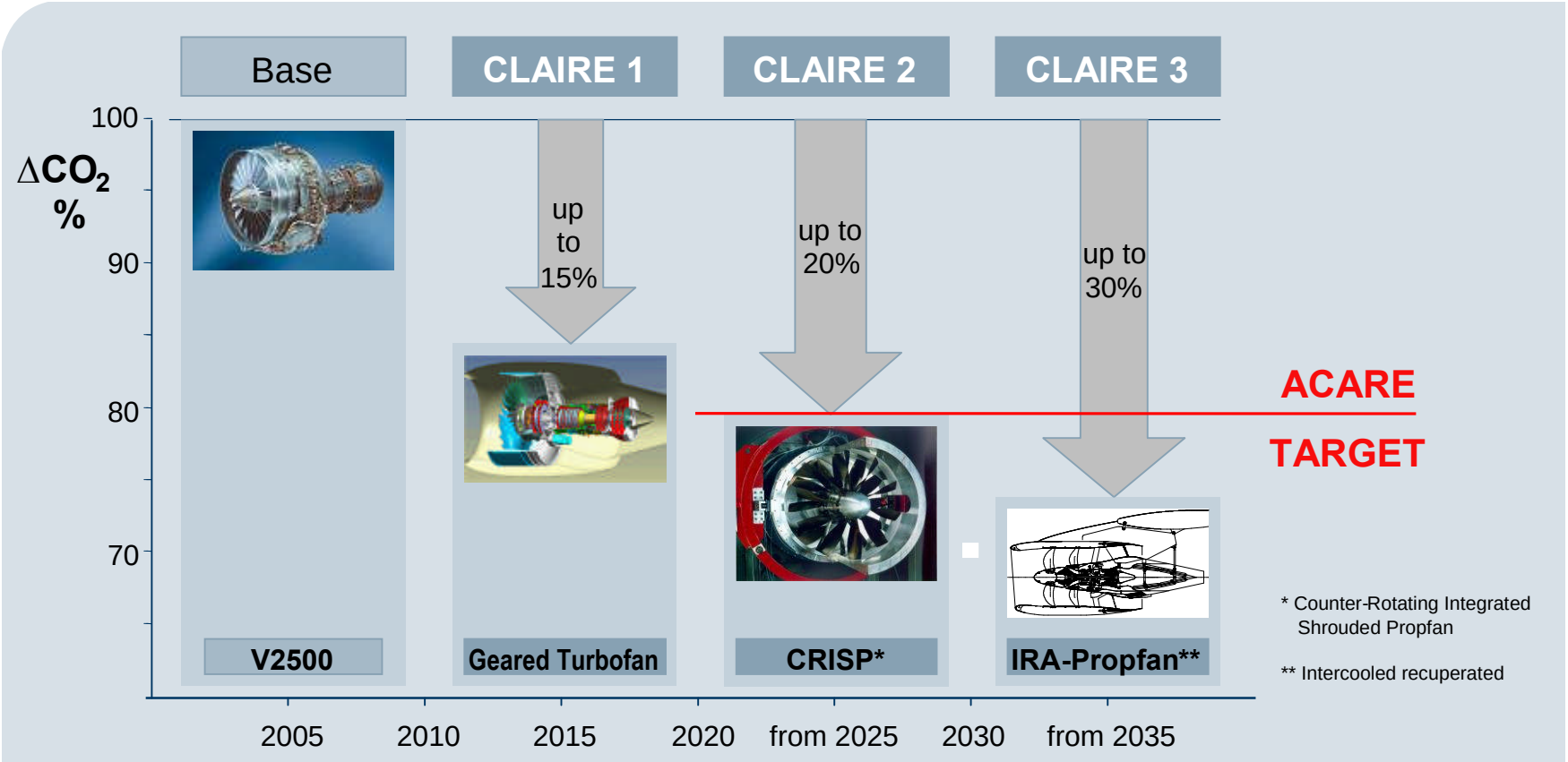
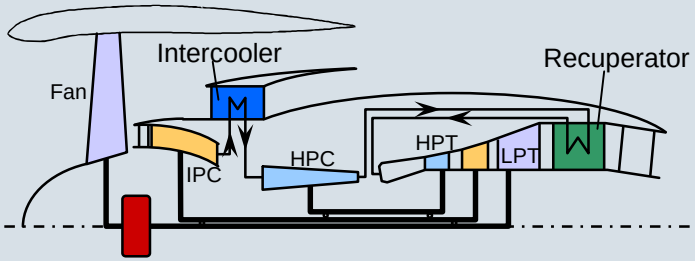
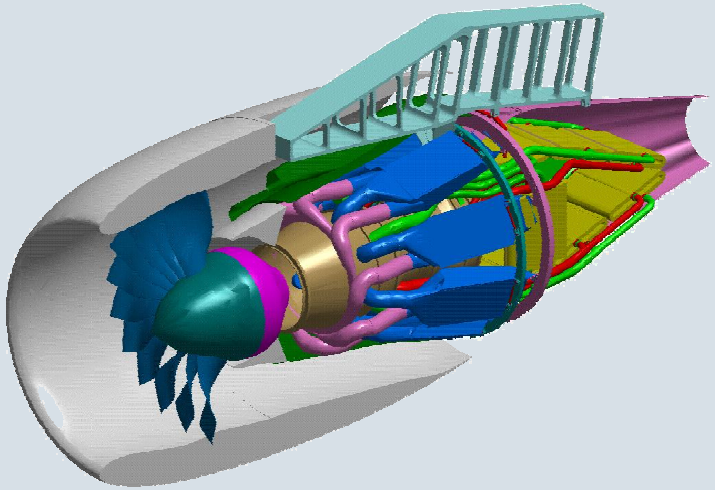
MTU Technology Program CLAIRE
CLean AIR Engine Technology Program



MTU is prepared to deliver technologies for further CO_2 reduction

Intercooled Recuperated Aero Engine





Advanced engine cycle

- **Recuperator** to exploit the heat of the exhaust gas
- **Intercooler** to reduce work needed to compress air

The Intercooled Recuperated Engine offers high thermal efficiency and low NO_x-emissions.

Summary

- Future engines need to reflect increasing environmental and economical challenges
- The Geared Turbofan offers huge benefits with respect to fuel consumption, noise, and maintenance cost
- The Geared Turbofan has achieved technology readiness and has been demonstrated in flight. The engine was selected by Bombardier and Mitsubishi for their new families of aircrafts
- Open Rotor engine concepts incorporate significant technical risks. Entry into service, if ever, would not occur before 2020
- MTU’s CLAIRE Technology Plan will provide further improvements

Cautionary Note Regarding Forward-Looking Statements

Certain of the statements contained herein may be statements of future expectations and other forwardlooking 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.