July 4th, 2011, Rome

AIPAS International Workshop
Marco Fuchs
New OHB Group structure with two Business Units

<table>
<thead>
<tr>
<th>Space Systems</th>
<th>Aerospace + Industrial Products</th>
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<td><strong>100%</strong></td>
<td><strong>70%</strong></td>
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<td>OHB System AG</td>
<td>MT Aerospace AG</td>
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<td>Bremen</td>
<td>Augsburg AG</td>
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<td>Kayser-Threde GmbH</td>
<td>Aerotech Peissenberg GmbH &amp; Co. KG</td>
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<td>Munich</td>
<td>Peissenberg, KG</td>
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<td>CGS S.p.A.</td>
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<td>Antwerp Space N.V.</td>
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<td>OHB Sweden AB</td>
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</table>
Total staff: 2,206
Status: 2011/03/31
Total consolidated revenues over 8 years in EUR million

Year | Revenue (EUR million)
--- | ---
2003 | 105.8
2004 | 114.1
2005 | 117.1
2006 | 185.7
2007 | 223.3
2008 | 260.0
2009 | 321.8
2010 | 453.3
Telecommunications

Small GEO
- Design & development of a cost-effective satellite platform for GEO applications (communication, EO/meteo, science)

Hispasat AG1
- Mission based on the new Small GEO platform will be launched end of 2013

Heinrich Hertz (German telecom mission)
- DLR programme for in-orbit validation for innovative SatCom technologies based on COMED and SGEO, utilization planned by German Army
- Ka-Band and X-Band payload
- Phase 1 completed, program decision expected in 2011 for launch in 2015

EDRS European Data Relay Satellite
- ESA ARTES-7 programme to serve the GMES satellites for data downlink via GEO data relay
- SGEO satellite optimized for data relay functions
- Authorization to Proceed signed on April 13, 2011, launch planned in 2015

Iridium Next
- MT Satellite Products selected to supply 81 tanks to TAS after fierce international competition
Small GEO / HISPASAT

- Small GEO
  - Design & development of a cost-effective satellite platform for GEO applications, like:
    - Communication, earth observation/meteo, scientific missions

- HISPASAT
  - Contract for development of “Hispasat AG1” signed in 2009
  - Mission based on the new Small GEO platform will be launched end of 2013
SGEO for data relay applications (EDRS)

- EDRS program
  - ESA ARTES-7 program to serve the GMES earth
  - Observation satellites for data downlink via GEO data relay
  - SGEO satellite optimized for data relay functions

- Status
  - Authorization to Proceed was signed on April 13, 2011 (EUR 7.4 million)
  - Order volume for OHB: EUR 150 million
  - Launch planned in 2015
Earth Observation

Meteosat Third Generation

- Constellation of 6 satellites in geostationary orbit, based on SGEO platform
- TAS mission prime, OHB prime for 2 MTG-S satellites with an infrared sounding instrument (IRS) for cloud and rain forecast improvement and further payloads (Kayser-Threde payload prime), first launch in 2019

EnMAP German hyperspectral EO-Mission

- Global determination of ecosystem parameters and bio-physical, bio-chemical and geo-chemical variables; potential for analysis after natural disaster and pollution of land and water
- Kayser-Threde prime, OHB-System is co-prime for the platform, launch planned in 2014
METEOSAT Third Generation (MTG)

- ESA/EUMETSAT program
  - Constellation of 6 satellites in geostationary orbit
  - 2 MTG-S satellites with an infrared sounding instrument (IRS) for cloud and rain forecast improvement and further payloads, OHB-System MTG-S mission prime, Kayser-Threde is payload prime, first launch in 2019
  - OHB-System is also prime for the 6 platforms, based on SGEO platform
  - Expected OHB order volume EUR 750 million

- Program status
  - First contract (ATP) signed with Thales Alenia Space in November 2010
  - Development and procurement activities already started
Project EnMAP – Hyperspectral Satellit

- German hyperspectral EO-Mission
- Global determination of ecosystem parameters and bio-physical, bio-chemical and geo-chemical variables
- Potential for analysis after natural disaster and pollution of land and water
- Kayser-Threde (KT) is prime, OHB-System is co-prime for the platform
- Mass: 900kg; Power: 800W, X-band downlink: 320Mbps

- Status
  - Launch planned in 2014
  - Mission duration: 5 years
CarbonSAT- constellation for coordinated CO2 & Methane measurements from space

- 5 satellites will cover a complete global coverage per day
- Allows a transparent monitoring of the compliance of climate protection targets
Navigation

Galileo FOC satellites
- Contract signed for construction, testing and assembling of 14 satellites in January 2010
- Launch of the first two satellites planned for end of 2012, system should be operative in 2014

Mission Data Distribution Network
- Secured ground local networks for Galileo centres
- IOV contract nearly completed by Antwerp Space
- FOC contract (around 10M€) negotiated with TAS-F within Ground Mission Segment Contract
Galileo – European Satellite Navigation System

- Program
  - Contract signed for construction, testing and assembling of 14 satellites in January 2010
  - Launch of the first two satellites planned for end of 2012, system should be operative in 2014
  - Order volume: EUR 566 million

- Program status
  - First Hardware (Common Security Unit, CSU) in test phase
  - Progress according to schedule
  - All relevant suppliers and subcontractors are selected
  - Build-up of the first structures (EM) started in April 2011
Science and exploration

**Exomars**
- OHB will be responsible for the Orbiter (Structure, Thermal and Propulsion based on SGE) for the 2016 mission.
- Kayser Threde is involved in payloads for the Rovers in the 2018 mission

**Atacama Large Millimeter Array (ALMA)**
- 25 x 12m-antennas for ESO in Atacama desert (Chile) in co-prime with TAS
- Status: Successful handover of antenna 1 and 2

**Sardinia Radio Telescope**
- 64m radio telescope for INAF
- Official handover August 2011
- Engineering, fabrication, erection incl. Subreflector Positioner, commissioning & tests
Exomars - Spacecraft und Rover

OHB is responsible for the orbiter of the 2016 mission (structure, thermal design and drive based on SGEO)

KT: significantly involvement of the payload of the rover (2018 mission)
MT Aerospace manufactures 10% of the launcher hardware
With a capacity of up to 8 launchers per year
This is the largest contribution to ARIANE outside of France
Ariane 5 Launch Schedule
Status: June 2011
Products

- MT Aerospace supplies
- Tanks and booster casings
- Satellite & orbital transfer system components
- Structures
- Ceramic matrix composites
In Summary

- OHB remains family-run and independent
- Space is the “core business”
- OHB is present in several ESA Member States and will continue to support new ESA programmes
- OHB has a strong business relationship with Thales Alenia Space: (e.g. Exomars, MTG, Alma, …)
- OHB is the largest non-French shareholder of Arianespace and a trustful and reliable partner of the Ariane system
- “Innovation and competitiveness” is OHB’s motto