ThyssenKrupp Stainless
High-Performance Alloys, Key Figures and Forward Strategy

Dr. Jürgen Olbrich
CEO of ThyssenKrupp VDM GmbH

ThyssenKrupp Field Day
October 17, 2008
ThyssenKrupp AG
ThyssenKrupp Stainless, fields of activity and business units

ThyssenKrupp AG

ThyssenKrupp Stainless
Sales 8.7 bn €  EBT 777 m €  Employees 12,182

Field of activity

Stainless Steel flat

Stainless Steel flat -Distribution-

Titanium

Processing

Nickel alloys

Companies
ThyssenKrupp Nirosta
ThyssenKrupp Mexinox
ThyssenKrupp Stainless USA (Project stage)
Shanghai Krupp Stainless
ThyssenKrupp Stainless International
ThyssenKrupp Acciai Speciali Terni
ThyssenKrupp VDM

Sales unconsolidated
3,839 m €
707 m €
454 m €
1,570 m €
3,244 m €
1,463 m €

Employees
4,665
1,347
546
436
3,354
1,772

* FY 2006/07
ThyssenKrupp VDM
Detailed Company Profile

Production Sites

- ThyssenKrupp VDM
- Production Sites:
  1. Unna: Melting & Casting/Forging
  2. Siegen: Hot Rolling
  3. Altena: Rod & Bar/Sheet & Plate
  4. Werdohl: Strip/Wire/Service Center
- Florham Park & Reno: Bar production, USA
  ~3,000 t aero alloys per year

Products & Services

- Products & Services:
  - Nickel and Cobalt based Alloys, specialty steels
  - Plate & Sheet
  - Strip
  - Rod & Bar
  - Wire
  - Welding Consumables
  - Forgings & Billets
  - Service Center

Key Figures*

<table>
<thead>
<tr>
<th></th>
<th>2004/05</th>
<th>2005/06</th>
<th>2006/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales [m €]</td>
<td>789</td>
<td>998</td>
<td>1,463</td>
</tr>
<tr>
<td>Sales [t]</td>
<td>46,700</td>
<td>44,500</td>
<td>47,100</td>
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<tr>
<td>Employees</td>
<td>1,760</td>
<td>1,746</td>
<td>1,772</td>
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*Considering the complete TKL-VDM alloy portfolio
ThyssenKrupp Titanium
Detailed Company Profile

Products
- Commerically pure Titanium
- Low alloyed Titanium
- Alloyed Titanium

Product forms: Cf. next page

Business areas
- Melting
- Forging
- Hot Rolling
- Cold Rolling
- Tube Welding

Customer groups
- Aerospace & Chemical Industry
- Medical Industry
- Energy Sector
- Seawater Desalination
- Offshore Industry
- Heat Exchanger

Key Figures

<table>
<thead>
<tr>
<th></th>
<th>2004/05</th>
<th>2005/06</th>
<th>2006/07</th>
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</thead>
<tbody>
<tr>
<td>Sales [m €]</td>
<td>67</td>
<td>109</td>
<td>141</td>
</tr>
<tr>
<td>Employees</td>
<td>218</td>
<td>243</td>
<td>269</td>
</tr>
</tbody>
</table>

ThyssenKrupp Titanium
Viale Brin
Terni
Italy

Altendorfer Straße
Essen
Germany

www.thyssenkrupp-titanium.com
ThyssenKrupp Titanium
Detailed Company Profile – product forms

Raw material: Titanium sponge

Semi finished product: Titanium ingots

Finished products:
- Tubes
- Bars
- Sheets and plates
- Coils
## High-Performance Alloys cover a wide Range of Product Forms within TKL

Product Portfolio of ThyssenKrupp Stainless: Stainless Steel and High-Performance Alloys

<table>
<thead>
<tr>
<th>HIGH-PERFORMANCE ALLOYS</th>
<th>Slabs</th>
<th>Hot rolled strip</th>
<th>Cold rolled strip</th>
<th>Precision strip</th>
<th>Tubes &amp; pipes</th>
<th>Forgings</th>
<th>Rod &amp; bar</th>
<th>Wire</th>
<th>Sheet &amp; plate</th>
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<tbody>
<tr>
<td>ThyssenKrupp VDM</td>
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<td>ThyssenKrupp Titanium</td>
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<td>Tubificio di Terni</td>
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<td>Società delle Fucine</td>
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<td>ThyssenKrupp Nirosta</td>
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<td>ThyssenKrupp Acciai Speciali Terni</td>
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<td>ThyssenKrupp Mexinox</td>
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<tr>
<td>Shanghai Krupp Stainless</td>
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<tr>
<td>ThyssenKrupp Stainless International*</td>
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Nickel alloys: 
Titanium alloys: 

* Distribution company with own Service Centers

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Typical areas of Application of High-Performance Alloys – a selection

- Heating Elements
- Power Generation
- Aviation
- Architecture
- Electronics
- Offshore
- Turbines
- Astronautics
- Automotive
- Tooling
- Chemical Industry
- Heat Exchangers

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High-Performance Alloys are distributed Worldwide via own Network

Worldwide Sales Organization of TKL-VDM distributes both Titanium and Ni-Alloys

Subsidiary (TKL-VDM, also Titanium)
Agency
Sales Office (TKL-VDM, also Ti)
Stock and Service Center (TKL-VDM)

1) In addition 2 Titanium stockists
2) In addition 1 stockist (Ti)
3) Distribution Ti via TKL-VDM network
Market Environment – Nickel Alloys

TKL-VDM holds a leading position in the market for Nickel Alloys*

**Shipments Nickel Alloys**

<table>
<thead>
<tr>
<th>Company</th>
<th>Deliveries in 2007</th>
<th>1,000 tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Metals (US)</td>
<td></td>
<td></td>
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<tr>
<td>TKL-VDM (D)</td>
<td></td>
<td></td>
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<tr>
<td>Allegheny (US)</td>
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<tr>
<td>Hitachi (JPN)</td>
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<tr>
<td>Carpenter (US)</td>
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<td>IUP (Arcelor, FR)</td>
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<td>Haynes (US)</td>
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<tr>
<td>DNICK (D)</td>
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</tbody>
</table>

Source: ThyssenKrupp VDM; estimates 2007

The 6 largest producers stand for 66% of all worldwide shipments

**Nickel Alloys*, World Market Consumption in 1,000 t**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Europe</th>
<th>Rest of World</th>
<th>Europe</th>
<th>Rest of World</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>43</td>
<td>119</td>
<td>162</td>
<td>43</td>
<td>119</td>
</tr>
<tr>
<td>2007</td>
<td>163</td>
<td>67</td>
<td>162</td>
<td>67</td>
<td>163</td>
</tr>
</tbody>
</table>

Source: AMS; preliminary data 2007

**Nickel Alloys*, VDM Sales by Industry**

- Automotive 7%
- Aerospace / Turbines 14%
- Electronic / El. Engineering 16%
- Chemical Process Ind. / Energy 22%
- Oil & Gas 18%
- Others 23%

**based on sold qty. incl. US production, CY 2007**

*Per definition: Nickel >30%

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Market Environment – Titanium

TKL-Titanium is among the leading Titanium producers worldwide

Titanium Semis

Deliveries in 2007
1,000 tons

TKL is the only integrated Titanium Producer in Western Europe

Titanium, World Market Consumption in 1,000 t

Total
Rest of World
Europe

1990
2007

Titanium Sales by Industry

Emerging 6%
Industrial 40%
Aerospace 54%

The 5 largest producers stand for 67% of all worldwide shipments

Source: ThyssenKrupp Titanium (estimates 2007)

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ThyssenKrupp Stainless follows Megatrends – both in Nickel-Alloys…
…with Current Portfolio and R&D Investments of TKL-VDM

<table>
<thead>
<tr>
<th>Global challenges</th>
<th>...driving force for TKL-VDM</th>
</tr>
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<tbody>
<tr>
<td><strong>Mobility</strong></td>
<td></td>
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<tr>
<td>Alloys for Aerospace</td>
<td></td>
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<tr>
<td>Applications</td>
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<tr>
<td>Alloys for Catalytic</td>
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<tr>
<td>Converters</td>
<td></td>
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<tr>
<td>Alloys for Solid</td>
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<tr>
<td>Oxide Fuel Cells</td>
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<tr>
<td>Alloys for 700°C</td>
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<tr>
<td>Power Plants</td>
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<tr>
<td>Alloys for Flue-Gas-</td>
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<tr>
<td>Desulphurization</td>
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<tr>
<td>Alloys for Gas Turbines</td>
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...as in Titanium Applications
...with the highly sophisticated products of ThyssenKrupp Titanium

Mobility
- Aerospace sector
- Forged pieces
- Plates alloyed with VCF** treatment

Power
- Energy
- Plates CP*
- Tubes
- Coils

Urbanization
- Seawater desalination
- Tubes

Healthcare
- Medical application
- Forged pieces
- Plates alloyed with VCF** treatment

*CP = Commercially Pure (Titanium); **VCF = Vacuum Creep Flattener
Forward Strategy ThyssenKrupp VDM
Growth opportunities in the Area of Nickel Alloys

1. **Optimization of internal efficiency / performance**
   → Project “VDM - Value Driven Mobilization”

2. **Insourcing of vital production steps** and reduction of bottlenecks
   - additional *remelting capacities*
   - commissioning of the *Forging Press*

3. **Expansion of the value chain**
   → New Stock and Service Centers
   - *Germany* (Werdohl)
   - *China* (Guangzhou)

4. **Merging of production locations**
   → Wire Mill relocated to Werdohl and modernized
Continuous improvement ("Earn the right to grow")

Project VDM "Value Driven Mobilization“ and TK Best initiative – reach operational excellence in results and Capital Employed

<table>
<thead>
<tr>
<th>Sales Force</th>
<th>Performance (EBT)</th>
<th>Capital Employed (CE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increase sales volume</td>
<td></td>
<td></td>
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<tr>
<td>• Optimize sales organization</td>
<td></td>
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<tr>
<td>• Sales and Service initiative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Increase transparency through holistic logistics-concept</td>
<td></td>
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<tr>
<td>• Net Working Capital initiative</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Production</th>
<th>• Optimize value creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increase efficiency of production</td>
<td></td>
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<tr>
<td>• Optimize processes (KAIZEN)</td>
<td></td>
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<tr>
<td>• Net Working Capital initiative</td>
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<tr>
<td>• Six-Sigma</td>
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<tr>
<td>• Reduce lead-times</td>
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<tr>
<td>• Optimize inventories</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall Processes</th>
<th>• Purchasing initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increase effectiveness and efficiency of administration</td>
<td></td>
</tr>
<tr>
<td>• Implement new production planning system</td>
<td></td>
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</tbody>
</table>
Investment Package (2006-2008) ("Become Lead Supplier of Specialties")

Forward strategy TKL-VDM

Investment package

<table>
<thead>
<tr>
<th>Standard alloys</th>
<th>High Performance Alloys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance and quality increase in established markets</td>
<td>Ensure growth, strengthen competitive position in markets Aerospace, Oil &amp; Gas</td>
</tr>
<tr>
<td>▪ Modernization and relocation of the Wire Mill</td>
<td>▪ Expand VAR-/ESR*- capacity</td>
</tr>
<tr>
<td>▪ Optimize/ expand production Sheet &amp; Plate</td>
<td>▪ Invest in state-of-the-art Open-die Forging Plant</td>
</tr>
</tbody>
</table>

16 m €  

56 m €

Σ 72 m €

*VAR= Vacuum Arc Remelting; ESR= Electro Slag Remelting
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Focusing on High-Performance Alloys
Implementation of the Forward Strategy High-Performance Alloys

- **Remove Remelting Bottleneck**
  - Investment in new VAR / ESR capacity

- **Reduce Dependencies**
  - Improve cooperation within the TK Group

- **Integrate Forging**
  - Investment in new 40/45 MN Open-die Forging Plant, completion of process route

**TKL-VDM fully integrated supplier of forged products**
ThyssenKrupp VDM Forging
Forging Press commissioned in 2008, plant Unna

**Equipment & Manufacturing Capabilities**

**Equipment**
- 40/45 MN SMS Forging Press
- Railbound Manipulators 18/60 t
- Mobile Charging Manipulator
- Batch Furnaces
- Car Bottom Furnaces

**Manufacturing Capabilities**

**Especially designed** for ingots up to 8 t made of extremely hard **nickel and titanium** alloys required by the **aerospace industry**.

Also suitable for carbon steel ingots up to 60 t.

**Benefits**
- Computerized process simulation
- Fully integrated process control and data documentation
- Integrated tool magazine, automatic tool and table shifting
- Fast and reliable
Stock & Service Center Concept
Inventory & prefabrication capabilities

Equipment & Stock & Prefabrication Capabilities

**Equipment**
- Laser cutting
- Bar & billet sawing
- Waterjet cutting

**Stock**
Permanent stock of a wide variety of alloys, see brochure „Service Center“

**Prefabrication Capabilities**
- Cut to length and blanking
- Rolling (round to flat wire)
- Sawing of bars and billets
  - length: 15 - 6000 mm
  - bars dia: 10 – 540 mm
  - billets max: 630 x 540 mm
**ThyssenKrupp VDM Division Wire**
Relocation and modernization in 2008, Werdohl Plant

**Equipment**
- New drawing and shaving lines
- New wet drawing lines
- New straightening and cutting equipment
- Pickling and annealing lines

**Benefits**
- New efficient plant layout
- Modernized production lines
- Higher productivity & profitability
- Focus on attractive product portfolio
ThyssenKrupp VDM focuses its product portfolio on more profitable HPA markets

The market for High Performance Alloys (HPA) is continuously growing... TKL-VDM already expanded its HPA share in Industrial Engineering. In the future TKL-VDM focuses on more profitable HPA markets (Aerospace and Oil & Gas).
**Forward Strategy Titanium**

**Growth in market segments, where competitive advantages exist**

- **Single investment (e.g. VAR)** to use high market demand/prices opportunistically

- **Exploit market potential in Non-Aerospace applications requires higher depth of added value**

- Enhanced use of downstream capacities of TKL-AST (Strip production)

- Collaboration with VDM forging shop for highly sophisticated aerospace and medical products

- **Sponge supply:**
  - As of today, enough sponge capacities existing worldwide

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**Current Situation**

- TKL Titanium as established player in the market with significant potential

**Systematic Development**

- Make market potentials accessible and diversification of raw material usage:
  - New EB-Furnace* enables usage of scrap and increases Ingot-/slab-capacity

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**World market leader in CP** flat products and producer of highly specialized alloyed products

- Exploit market potential in Non-Aerospace applications requires higher depth of added value

- Enhanced use of downstream capacities of TKL-AST (Strip production)

- Collaboration with VDM forging shop for highly sophisticated aerospace and medical products

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2004/05

*EB furnace* = Electron Beam Furnace; **CP** = Commercial Pure (Titanium)
Titanium’s strategy: expand Industry share of the business

2006/07

55%

Strategic Goal

Expand proportion of Industry-related business

65%

Product Forms

- Ingots
- Blooms
- Billets
- Bars
- Plates
- Coils
- Tubes
Electron Beam (EB) Furnace ThyssenKrupp Titanium

- First slab of the EB Furnace produced in June 2008
- Equipment follows planned ramp-up curve
- Certification process ongoing
Expand proportion of Industry-related business at Titanium

Bright Annealing Line in Terni: through specific technical equipment, the line became a key unit for Titanium-Strip production

Manufacturing of tubes, especially for recuperator-tubes

Vacuum creep flattener for Titanium sheets
Plant Visit
TKL-VDM Unna

- Melting / Remelting

- Processing: Forging of Billets & Bars
  - High Performance Alloys
  - Stainless Steels
  - Tool Steels
ThyssenKrupp VDM

Process flow Unna

Unna Plant

- EAF
- VOD
- IF
- VLF
- Casting
- Contin. Casting
- Electrode
- ESR
- VAR
- Ingot
- Slab
- Forging –Billet & Bar– Unna
- Drawing, Finishing –Rod & Bar– Altena

Processing

Plate & Sheet, Strip, Rod & Bar, Wire (Altena, Werdohl)

*EAF=Electric Arc Furnace; VOD=Vacuum Oxygen Decarbonization; IF=Induction Furnace; VLF=Vacuum Ladle Furnace; VIM=Vacuum Induction Melting

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(i) market risks: principally economic price and volume developments,
(ii) dependence on performance of major customers and industries,
(iii) our level of debt, management of interest rate risk and hedging against commodity price risks;
(iv) costs associated with, and regulation relating to, our pension liabilities and healthcare measures,
(v) environmental protection and remediation of real estate and associated with rising standards for real estate environmental protection,
(vi) volatility of steel prices and dependence on the automotive industry,
(vii) availability of raw materials;
(viii) inflation, interest rate levels and fluctuations in exchange rates;
(ix) general economic, political and business conditions and existing and future governmental regulation; and
(x) the effects of competition.

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