IMIA WGP 102(17)
Rolling Stock
50th Annual IMIA Conference
Munich, Germany

Christoph Guntersweiler
Head Engineering Switzerland
Helvetia Insurance
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Work Group - Members
A global topic meets a team of regional experts

- Sponsor: Guido Benz, Swiss Re

- Members:
  - Christoph Guntersweiler, Helvetia, Chairman
  - Heiko Hammacher, Helvetia
  - Eric Benz, Scor
  - Ho Kun Hong, Scor
  - Ed Chan, RSA
  - Brendan Reed, Codan
  - Thomas Gebert, AXA
  - Denis Kocan, Swiss Re
  - Darren Smart, Liberty
  - Bruno Ternisien, Naudet
  - Colin Hamling, High Speed 2
  - Richard Day, Arup
  - Raik Wittowski
Content and goal of the paper

**Definition and Values**
- What do we understand by Rolling Stock
- Costs of Rolling Stock

**Rolling Stock in Engineering Insurance**
- Rolling Stock Industry, Rail Transport Market
- Technology, Development, Maintenance, Testing, Security, Standardisation/Regulation

**Loss Examples**
- Loss Data
- Losses during Assembly, Testing, Storage and Operation

**Underwriting Considerations**
- Underwriting / Pricing
- PML

**Goal:**
Provide support and information about Rolling Stock insurance for:
- Engineering Lines Underwriters
- Risk Engineers
- Claims Managers
What do we understand by Rolling Stock

- Rolling Stock is on dual Rails
- Rolling Stock is rolling

Infrastructure
- Tunnels
- Bridges
- Rails / Tracks

Special vehicles / trains
- Grinding Machines
- Magnetic Trains
- Cable Cars
- Ski Lifts

- in scope
- out of scope
Rolling Stock in Engineering Insurance
Statistics – Rolling Stock Industry

Current market volume (MV) and growth rate (CAGR) by regions until 2020

- **Western Europe:**
  - MV: €44.4bn
  - CAGR: 3.2%

- **Eastern Europe:**
  - MV: €11.4bn
  - CAGR: 0.6%

- **CIS:**
  - MV: €20.2bn
  - CAGR: 0.8%

- **North America:**
  - MV: €25.7bn
  - CAGR: 1.4%

- **South/Central America:**
  - MV: €5.3bn
  - CAGR: -2.0%

- **Africa/Middle East:**
  - MV: €7.1bn
  - CAGR: 7.1%

- **Asia:**
  - MV: €51.6bn
  - CAGR: 2.6%

- **Australia/Pacific:**
  - MV: €3.4bn
  - CAGR: 2.6%

Source: SCI "The Worldwirde Market for Railway Industries 2016"
Rolling Stock in Engineering Insurance
Top 10 Manufacturers – Rolling Stock Industry

Source: SCI "Worldwide Rolling Stock Manufacturers 2016"
Rolling Stock in Engineering Insurance Statistics – Rail Transport Market

Worldwide rail transport performance and CAGR by segment

Source: SCI "Rail Transport Markets – Global Market Trends 2016-2025"
Rolling Stock in Engineering Insurance
Differences in Regions—Rail Transport Market

Worldwide rail **freight** performance 2015 (tkm, %)

Worldwide **passenger** rail performance 2015 (pkm, %)

Source: SCI "Rail Transport Markets – Global Market Trends 2016-2025"
Rolling Stock in Engineering Insurance
Additional Information

- **Technology**
  - Present
    - Dual Mode (Power) Vehicles
    - Gauge Changing
    - Energy Storage Systems
    - Hybrid Vehicles
    - ......
  - Future
    - Internet of Things
      - Improving availability, reducing unplanned maintenance activity
    - Energy reduction
      - Reduction in weight, optimization of energy recovery system

- **Standardisation and Regulation**
- **Maintenance**
- **Security Equipment**
- **Testing**

**Maintenance of wheels**
- Thermal cracks
- Skidded wheels effect
Lessons learned:
Often, losses are not the result of one single root cause, but rather a chain of causes initialized by human error.

Source: eurostat "Datas from Europe 2010-2014"
Loss Examples
Causes of Loss

Assembly, Testing & Storage

- Testing, Speeding, Human Failure
- NatCAT

Operational

- Human Failure
- Fatigue Crack
- Landslide
- Poor Maintenance
- Flood
- Fire
- Brake Failure
Loss Examples
Rhätische Bahn, Landslide (1)
Loss Examples
Rhätische Bahn, Landslide (2)
### Underwriting Considerations

**Focus on Project and Operational**

<table>
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<tr>
<th>Insurable Interests / Contractual Obligations</th>
<th>Project (Assembling &amp; Testing)</th>
<th>Operational</th>
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<td>Insured Property</td>
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<td>Third party liability</td>
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<tr>
<td>Type of coverage ➔ Wording / Concept of cover</td>
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<tr>
<td>Risk Assessment / Quality of Risk and PML considerations</td>
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<td>Project Period, Transfer and Storage</td>
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<td>Pricing related to the above</td>
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PML Considerations

Underwriting Information
- Project or Operational
- Insured values
- Concept of Cover

Risk Assessment
- Accumulation
- Period of business interruption

Loss Estimate Scenarios
- Storage or Maintenance Depot (Christmas Event)
- Fire
- Natural Catastrophe
- Equipment Failure
- Collision or Derailment
- Business Interruption (BI) and Contingent Business Interruption (CBI)

PML (Probable Maximum Loss)
Based on the definition of IMIA
Conclusion

- Contractual obligations on Rolling Stock are complex and the insurance solutions should be assessed by experienced underwriters.

- Some losses can be catastrophic in nature, very often human error is a key point of failure.

- Rail as a reliable form of transport continues to grow at a positive rate.

- New technology, lighter weights and higher speeds will further increase complexity.
Thank you very much for your attention.