Forum Motion & Drives
Challenges for SMEs in the bearing industry

Christian Kunze
Deputy Managing Director
The future of drivetrain production

- Innovation trends in Germany and Europe
- Challenges in drivetrain and bearing industry
  - Data driven business models
  - Reduced time-to-market
  - Data transparent products
- Instruments and tools to prepare change
  - VDMA Future Business
  - Pre-Competitive research
  - Workbench
  - REXS
- Summary and outlook
The future of drivetrain production

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Innovation trends

- closed loop
- additive manufacturing
- drive trains
- predictive maintenance
- fuel cells
- electric motor
- industry 4.0
- power electronics
- supply chains
- batch size one
- new materials
- sensors
- electric drive components
- battery production
Innovation reality

Innovation decreases by company size

Innovation is concentrated on fewer industry sectors

Innovation is dependend on:
- Budget
- Human Ressources
- Understanding future business
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Data driven business models

50% OF REVENUE BY DIGITAL SERVICES IS REALISTIC... BUT NOT BEFORE 2050

Völlig neue Dienstleistungen

Audi-Geheimplan: Digitalgeschäft soll 2020 Hälfte des Umsatzes ausmachen

Gabriel Pankow am 04. Februar 2016 um 12:17 Uhr
Aktualisiert am 16. Februar 2018 um 14:04 Uhr

Source: www.automobil-produktion.de

Source: Accenture based on iHS, Allied Market Research, ABIresearch, BlackRock/MCK

Car related revenues will decline, digital services will overcompensate

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Data driven business models

• Car sharing is exponentially increasing
• Sharing economy is based on digital business models
• Each driver/customer creates and utilizes data
• New challenges also for „old“ products -> reduction of downtimes

Source: Bundesverband car sharing e.V.
Reduced Time-to-market

APPLE TIMELINE

Steve Jobs, who transformed the worlds of personal computing, music and mobile phones, died on Wednesday at the age of 56 after a years-long battle with pancreatic cancer.

- Aug 24, 2011: Steve Jobs resigns from Apple, Tim Cook becomes CEO.
- Oct 4, 2011: iPhone 4S unveiled.
- Jan, 2010: First iPad is launched.
- 2001: First iPod introduced, Mac OS X launches.
- 2006: MacBook Pro and new iMac becomes first Apple computers to use Intel chips.
- 2003: iTunes Store goes live, heralding online music services.

(Source: Apple Inc.)
Reduced Time-to-market: Product Innovation cycles

Disruptive Innovation

Innovation cycles are dropping drastically from 1st industrial revolution till today
Transparent products

- Utilization and availability of data increases.
- Digital twin leads to data transparent products.
- Data transparent products are enabler for cyber-physical-system.
- Consistency and transparency of data needs to be ensured!

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Instruments and tools to prepare change

“What if we don’t change at all ... and something magical just happens?”
Instruments and tools to prepare change

VDMA Future Business: Trendscouting

Orientation for 2030+
Think Tank
for Mechanical and plant engineering

https://future.vdma.org/trends
Instruments and tools to prepare change

VDMA Corporate Foresight: Best Practices, How-to Coaching

Be prepared
Learn to ride the waves of change (instead of drowning!)

https://future.vdma.org/foresight

Dr. Eric Maiser
FVA - A worldwide unique network for drive technology

- More than 200 companies (12 international members)
- 2000 industry experts
- 242 research projects (2018)
- Since 1967: About 2000 projects, more than 250 Mio. Euro invested
- 100 research institutes
- 300 research staff professors and senior engineers

Knowledge transfer
FVA - More than research

Worldwide unique network of experts

Knowledge and tools for the development of more resource-efficient, efficient drive technology

Pre-competitive research projects within the framework of the industrial joint research

Fastest possible transfer of latest research results into the practice of the member companies

Training of industry specialists on the basis of the latest research findings

Significant shortening of the time-to-market times

Education and training of tailor-made specialists for the industry
New FVA Software Release - FVA-Workbench 5.5

Released July 2019
Free BETA-Workshops ahead!

Increased efficiency in day-to-day business with the FVA-Workbench

- Simple modeling & parameterization
- High-performance
- High-quality output of results

www.fva-service.de
FVA Software - What’s New in FVA-Workbench 5.5

High-quality results reports

REXS Interface
www.rexs.info

Import & integration of CAD models

Detailed simulation of plain bearings

www.fva-service.de
FVA Software - What’s New in FVA-Workbench 5.5

- Updated SKF, Schaeffler, and DIN/ISO 281 bearing catalogues
- Complete system collective calculation
- Flexible wheel bodies

www.fva-service.de
REXS - Simple Exchange of Gearbox Data

REXS establishes a comprehensive standard for the calculation and simulation of gearbox models.

Simple, automated exchange of data between CAE tools, e.g. Bearinx and FVA-Workbench (Most commercial software providers have already implemented the interface).

www.rexs.info
VDMA develops OPC UA Companion Specification

FVA develops REXS as data dictionary for drivetrains
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Summary and outlook

- Major challenges for SMEs (also in the field of bearings) are right ahead.
- Innovations are developed by fewer companies in fewer sectors
- 4th industrial revolution is happening right now. I4.0 has turned real!!!
- Innovation will speed up further in the next years and we have to cope with that.

- Strong networks are more important than ever to innovate and keep up pace with the change.
- Data analytics and data maintenance will be value adding process just like grinding or honing.
- Common interfaces and specifications will create equal conditions for the entire industry.
- FVA and VDMA will support SMEs to change successfully and sustainably.
Gadgets from „Back to the future“ that came true

- Video conferencing
- Fingerprint recognition
- Tablet computers
- Drones
- Electromobility
- Wearables

Source: Motion pictures „Back to the future“, „Back to the future II“, „Back to the future III“ – Universal Pictures
BACK TO THE FUTURE

FVA - Forschungsvereinigung Antriebstechnik e.V.
Forum Motion & Drives – Hannover 2019

sharing drive innovation