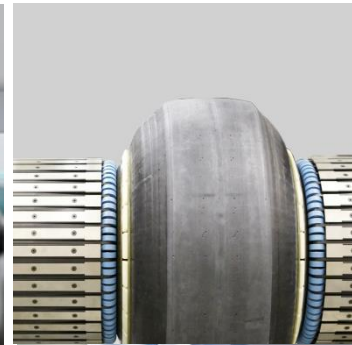
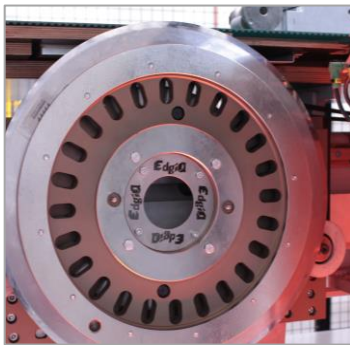
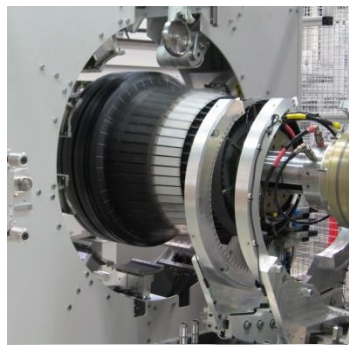




TIRE BUILDING INDUSTRY

Introduction

Guido Roncken, COO VMI Group

Capital Markets Day
30 November 2016

TKH Group the solution provider 

WELCOME

TKH
GROUP



**1 TIRE
EVERY
33
SECONDS**

T<H
GROUP

Tire Building Industry

Growth drivers

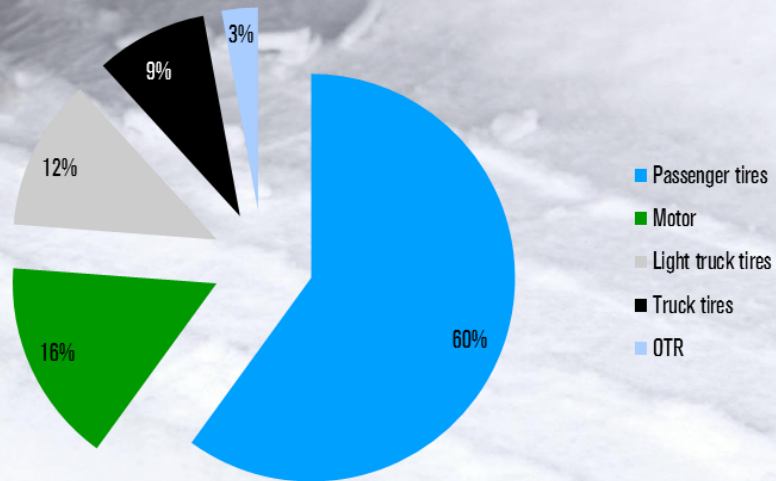
- > High priority within the tire manufacturing industry to replace existing technology with an emphasis on high productivity, efficiency, waste reduction, quality improvement and smaller batches
- > The number of tire types for passenger cars has increased more than tenfold in the last decades. This calls for more flexible production methods
- > The trend towards ever larger tire dimensions and towards safer, better-quality tires demands technology development
- > Local manufacturing - Innovations have become essential to reduce the working capital requirement in the supply chain of the tire manufacturing industry
- > Over 70% of the existing tire manufacturing systems are older than 15 years
- > Due to the high prices of raw materials, there is a need for a more efficient use of materials in the production of tires
- > Rising labour costs demand for systems with higher productivity and more operator independence – ‘eyes & hands off’ manufacturing

Position

- > Market share TKH in outsourced market: > 70%
- > Total market share including top five tire manufacturers: > 20% – target >50%
- > Technology leadership through high level of R&D - protected with patents and high innovation level
- > Proprietary vision technology strong differentiator for the technology leadership



Market Segmentation (%)



Segment	Units [Millions]
Passenger	1,495
Truck & Bus	184
LT	250
Total	1,929

Tire Building Industry

Key targets & strategy



Key targets & strategy

- ROS > 14%
- Organic growth > 10%
- Grow market share within top 5 tire manufacturers to >50%
- Strong focus on selected building blocks with high growth potential
- High level of innovations in combination with solutions approach
- Focus within customer base on outsourcing trend and efficiency solutions

Key Challenges

- Keep technology leadership in place and avoid loss of IP
- Avoid dominant market position and being seen as too powerful
- Maintain efficiency level in VMI despite quarterly peaks in demand
- Attract enough high talented personnel

Top Execution Priorities

- Operational excellence of organization
- Further penetration within top 5 tire manufacturers
- Focus in R&D programs on vision technology applications.
- Expand product portfolio in tire building through high-end innovations and R&D

GROWTH DRIVERS (example 1)

Demand for Higher Productivity and Automation

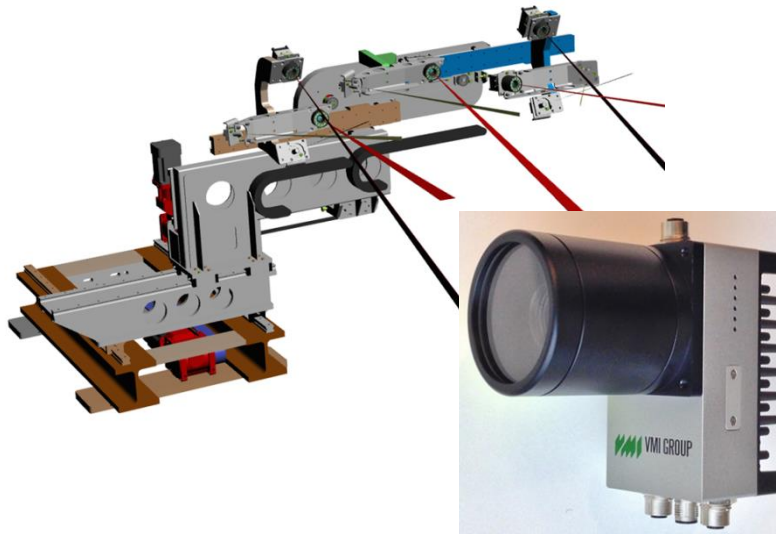
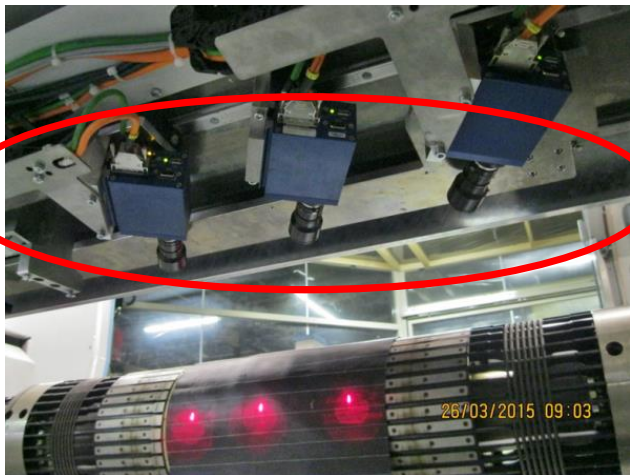


GROWTH DRIVERS (example 2)

Trends towards safer and better quality tires & cost reduction

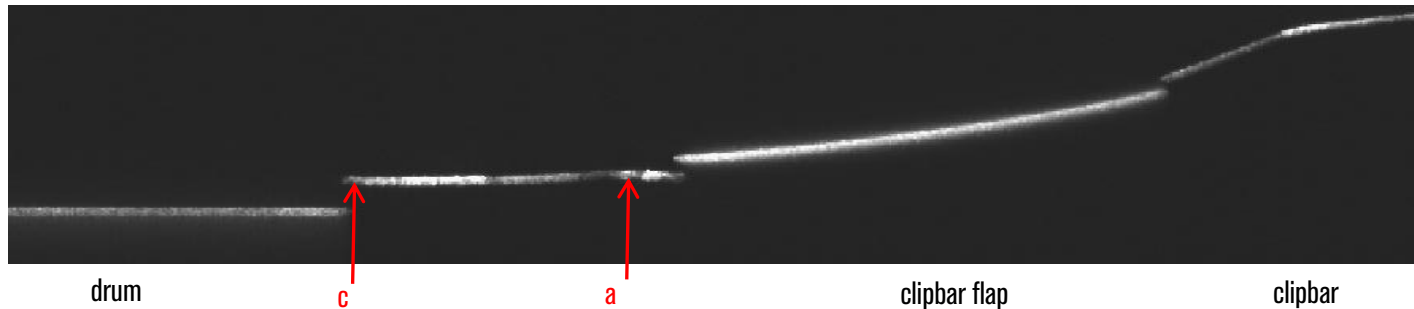
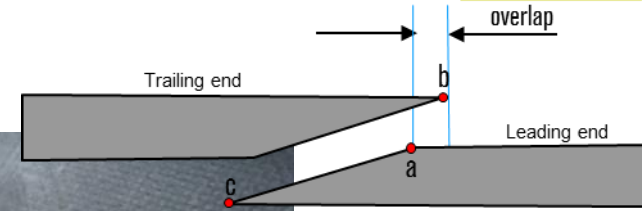
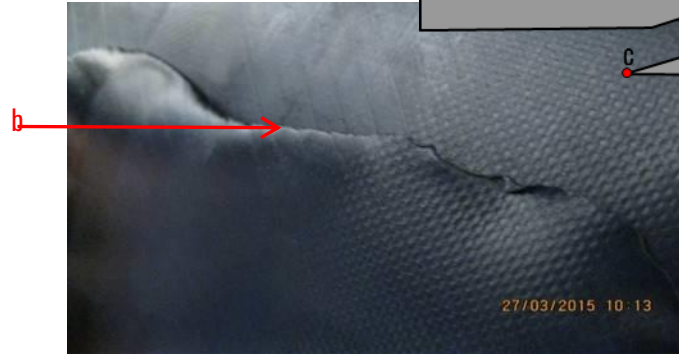


TKH VISION TECHNOLOGY PLAY A CRUCIAL ROLE



GROWTH DRIVERS (example 2)

Trends towards safer and better quality tires & cost reduction



Growth Building Blocks

Growth verticals (in € million)	2012	2014	2015
Tyre Building	175	338	291

Growth scenarios
450 550

UNIXX Technology

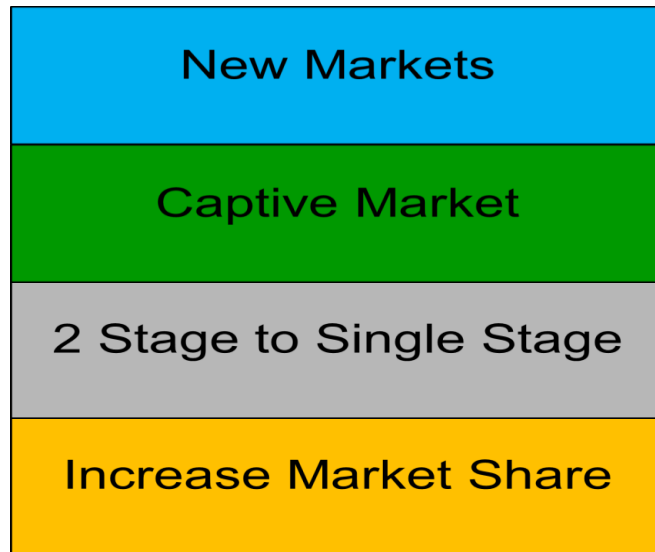
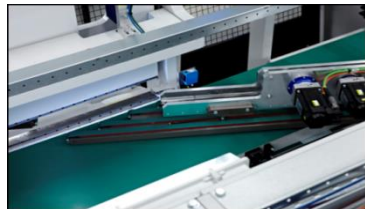
Truck Tire Building

Tire component
manufacturing

Service & Spare parts

Top 5 tire manufacturers

Development market position



Maintain Market Share / Customers

Trends within Top 5 Tire manufacturers

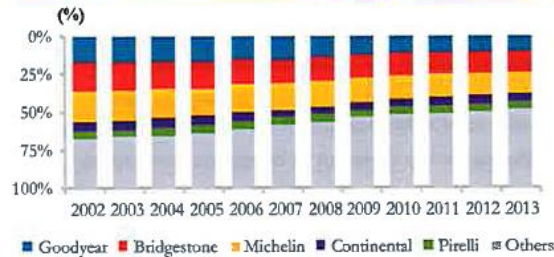
Growing demand for Tires but increasing pressure on market share

- Global market is growing by 2 – 3 %
- Top 5 market share decreased considerably
- Installed base relatively old
- Competition uses modern equipment

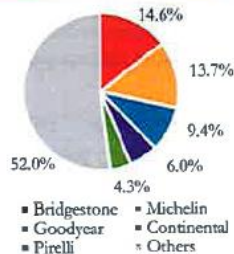


DOMINANCE OF BIG PLAYERS ERODING GRADUALLY

BIG 5 MARKET SHARE DEVELOPMENT

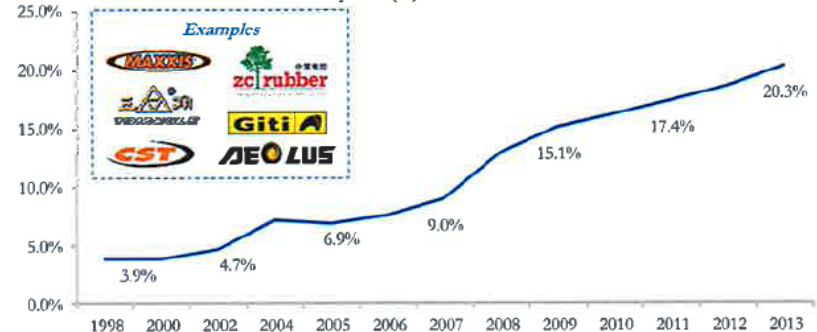


GLOBAL TYRE MARKET SHARE

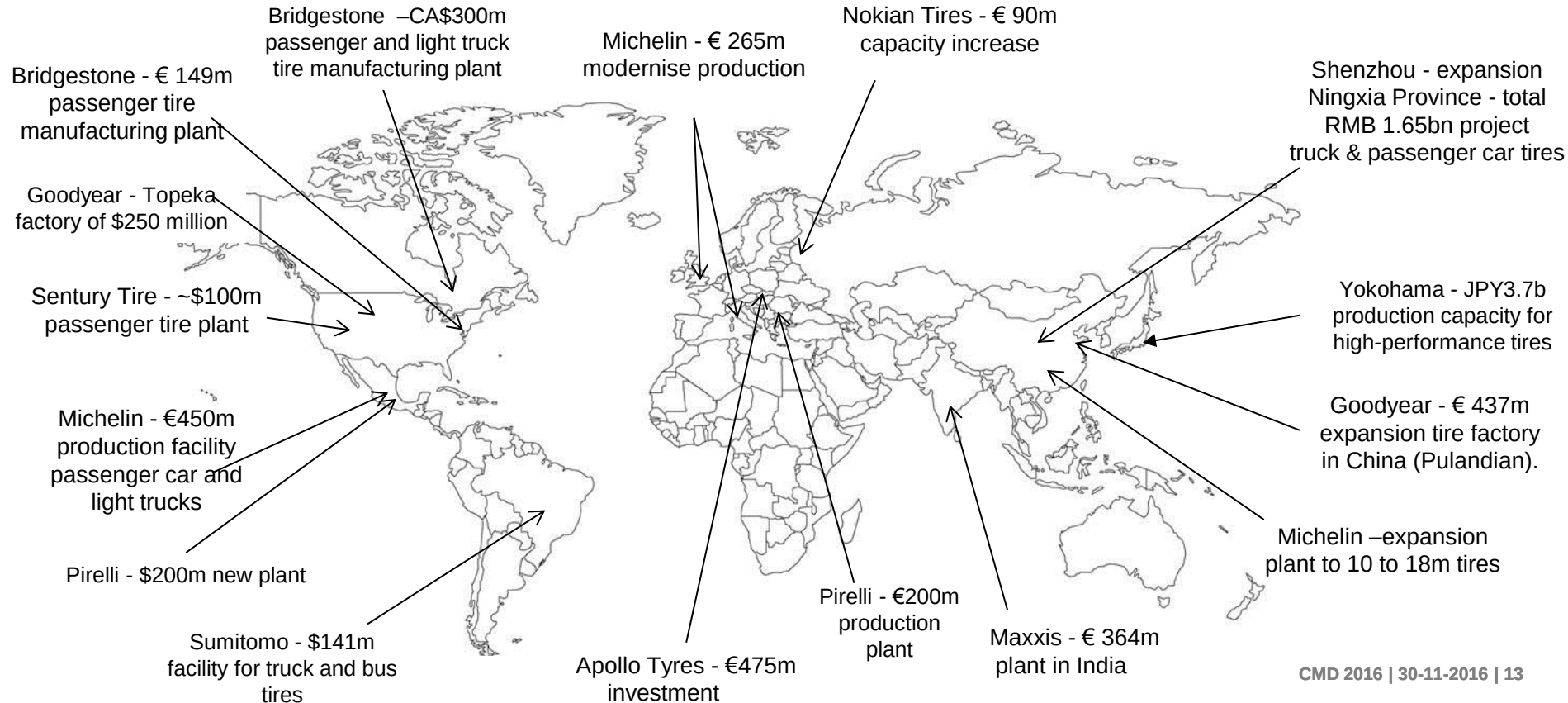


EMERGING ASIAN PLAYERS CONTINUE TO GROW STRONGLY

Global Market Share of Asian Players^(b) (%)



Increased expansion plan activity level will support higher order intake VMI



TKH well positioned for further penetration in Top 5



Technology development drives opportunity for penetration

- Competition uses modern equipment
- MAXX[®] manufacturing technology and PIXXEL[®] vision technology make TKH an attractive partner, improves technology position and offers higher return on investment
- New breakthrough technology and innovation of VMI will support market position

Opportunities

- Large volume, base flow of machines in VMI production after substantial lower manufacturing cost price
- Long Term Relationship – offers reliable partner
- Prestige and image for VMI – will develop further to outstanding level
- Forces VMI to raise its game: continuous improvement



Top 5 tire manufacturers can improve their competitive position



Situation within Top 5 Tire Producers

- Top 5 designs “unique” tires and therefore require “unique” tire building machines, which will continue their technology lead
- Costly large in-house engineering and machine manufacturing capabilities can be outsourced with big cost saving and efficiency and productivity improvements
- Costly special designed machines
- Overhead costs for development of equipment



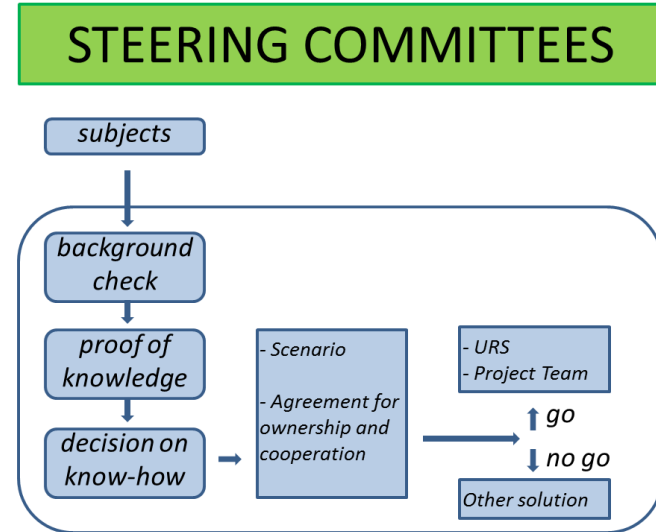
What can VMI offer

- High quality innovative technology that can adopt unique tire construction of a very attractive price
- Flexible manufacturing
- Highest standard in conformity of tires
- State of the Art vision technology to cope with track and traceability trends in automotive and tire industry

Breakthrough within Top 5 tire manufacturers leads to new challenges

Requirements are at very high level

- Higher demand compared to other customer base
- Customer specific solutions requires engineering
- Cooperation in R&D / Developments
- Thorough testing programs (> 2 years)
- Exclusivity requirements
- IP needs to be well protected
- Long complex legal negotiation process
- Trust and confidence - protection
- Cost price

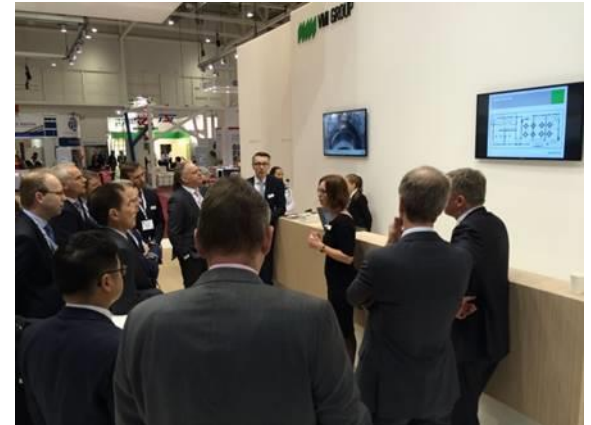


Execution of penetration well in place

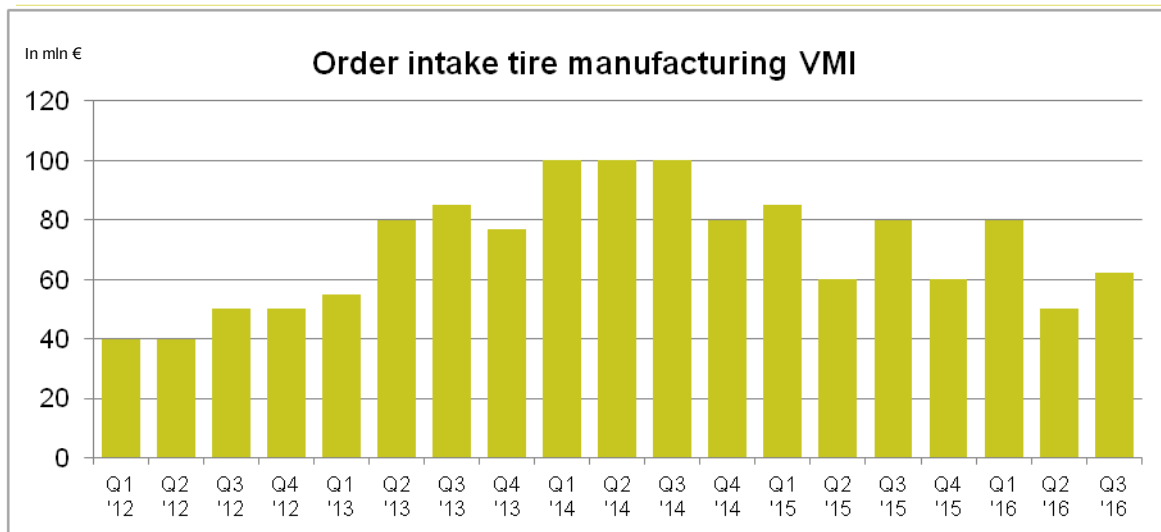


Action plans

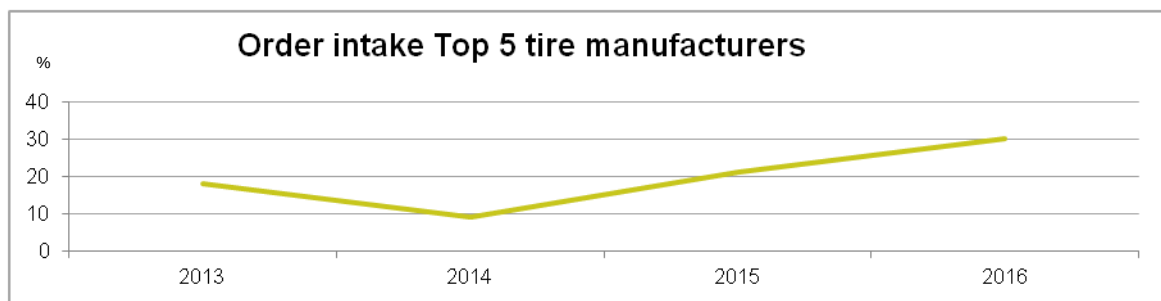
- Specific teams for sales & projects
- Target communications to various levels
 - Top level management
 - Engineering
 - Factory management
 - Operational staff of factories
- Contact customer-of-our-customer
- Brand labeling
- Specific teams in engineering
- Focus on cost savings
- More flexibility next to standardization and version management



Development of order intake Top 5 tire manufacturers



- Target is to achieve structural > 50% of order intake from Top 5
- Traditionally VMI order book ~ 10%
- In 2016 expected intake > 30%
- So still a lot gain!



Benefits of VMI Technology towards our customers



- High speed and unprecedented output
- High OEE
- High precision bringing higher quality products
- High level of automation
- High quality checking devices based on proprietary camera systems
- High level of integration with MES & ERP systems

Expansion of capacity to cope with quarterly order intake of > € 120 million

VMI Poland Sp. z o.o.

1st phase investment in workshop and offices.
VMI will realize 13.500m² in July 2017.



is Market leader
in production machines
www.vmi-group.com



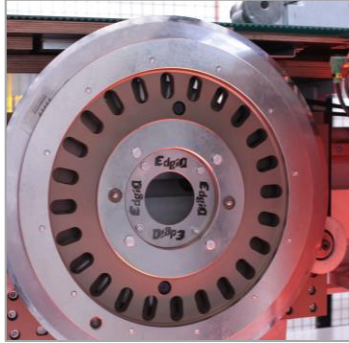
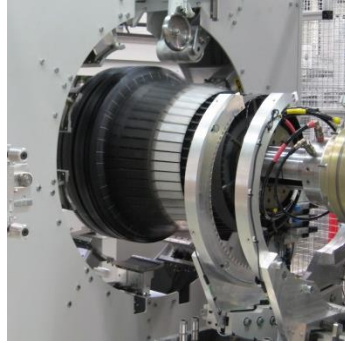
2015:
Expansion Epe



2015:
Expansion Yantai (China)



TKH Group the solution provider <



TIRE BUILDING INDUSTRY

Service & Spare Parts

Riaan Diener - VP Global Services VMI Group

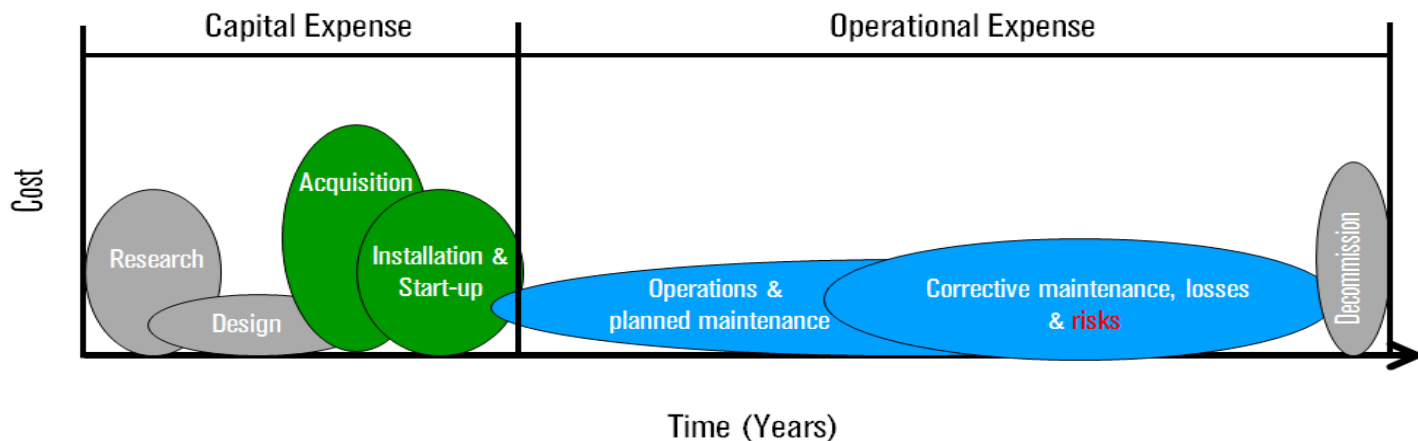
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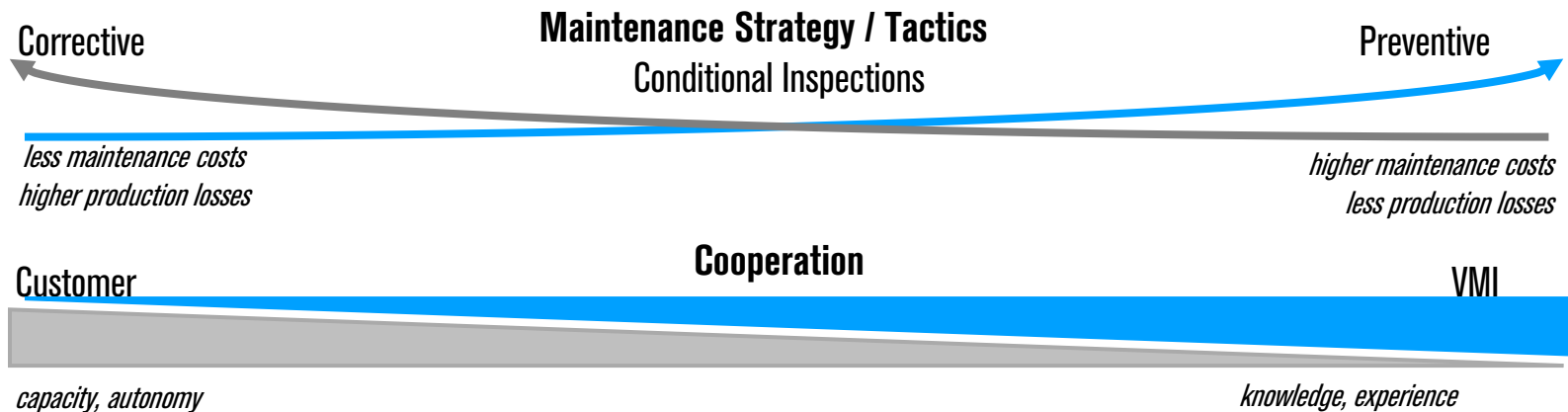
Growth drivers of Global Services

- › Customers do not just buy machines anymore!
- › Customer focus moves from Purchase Price (Capital Expense) to Total Cost of Ownership
- › VMI will go to market emphasizing our strength across the complete Life Cycle of our solutions
- › VMI delivers a high quality machine that can run for more than 20 years while customer and VMI both benefit from retrofitting new innovations to older machines

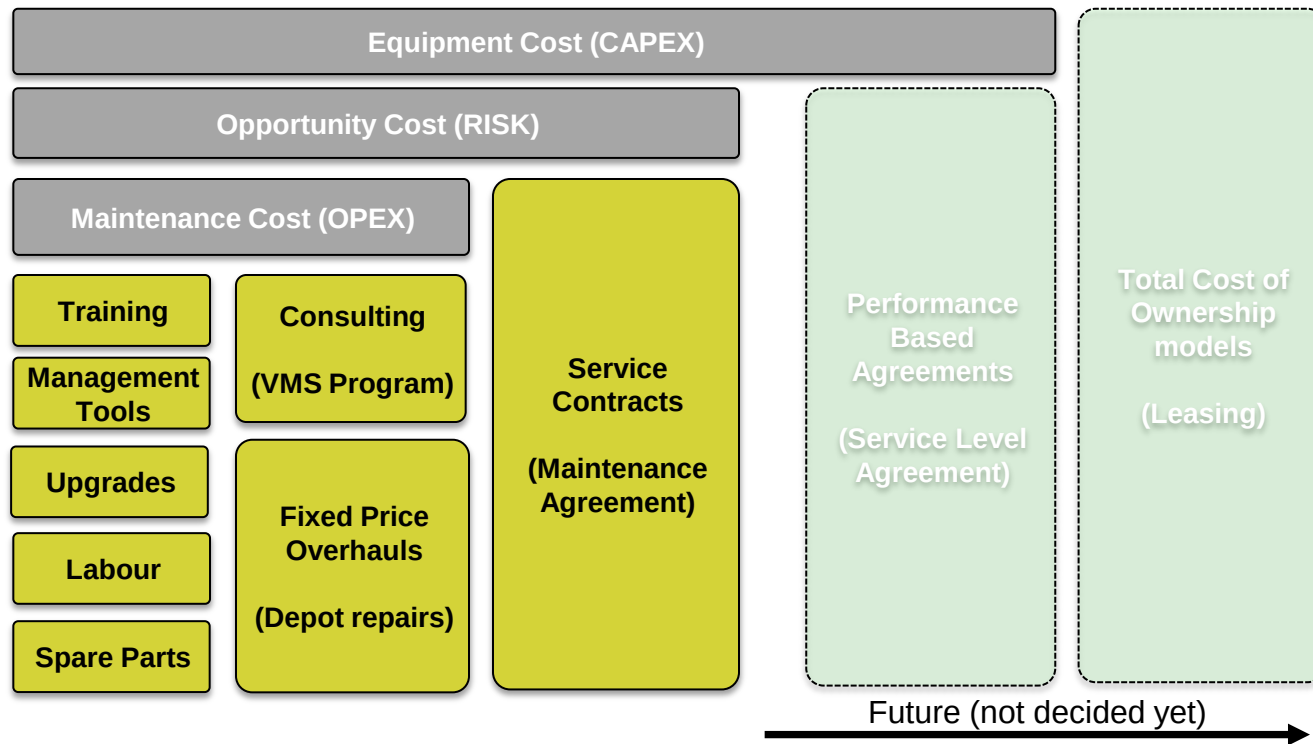


Basic Principals of Support

- > VMI will not provide an one-size-fit-all service to their customers. Customers from different regions, or with different needs have different requirements
- > VMI setup our Service Organization in Regions to localize our approach and be closer to our customers
- > VMI furthermore defined our products in a modular way to allow combining products into customer specific packages that better fit a customer's needs



Servitization Roadmap



VMI will innovate our service offering to best fit and integrate in our customer's operation.

Growth plan:
Double turnover in the next three years.

Benchmark for Service Providers

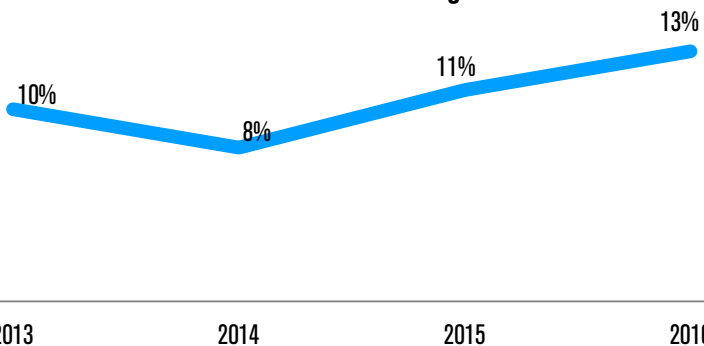
Source: Logistiek.nl 2012

	Share of service and parts business in overall sales
Global Industry	Average (percent)
Aerospace and defense	47%
Automotive and commercial vehicles	37%
Diversified manufacturing and industrial products	20%
High technology and telecommunications equipment	19%
Life sciences/medical devices	21%
All companies	26%

Source: Capgemini Consulting 2007

Revenues in service management	Mean	Median
High-tech industry today	13 %	5 %
High-tech industry in next 5 years	19 %	11 %
E&M industry today	16 %	12 %
E&M industry in next 5 years	25 %	23 %

VMI Service Turnover Contribution Target



Global Services Vision & Mission

VMI questioned various customers on what they need from VMI and based on the feedback our Global Services vision & mission was created:

“Together with our customers we ensure that VMI solutions have competitive Total Cost of Ownership; at maximum reliability and consistent high quality.”

VMI aligned our Strategy with this vision

VMI have created 16 strategic projects covering the next three years that has the goal to change the organization in such a way that customers satisfaction and revenues increase



Strategic projects

Strategic Projects	2015	2016	2017	2018
1. Implement Organizational structure to manage local service entities and				
2. Establish Local Service Engineers (4x Asia, 2x Europe)				
3. Trainers to train our customer service agent network (2x Europe)				
4. Formalize the creation of VMI Academy				
5. Establish Helpdesk team (2x Europe)				
6. Develop Remote services				
7. Improve the quality of the Parts tool and Training manuals				
8. Implement 'designed for maintenance' principle on new products and Retrofits.				
9. Ensure more stock at the local level				
10. Establish a local parts inventory				
11. Reduce time to quote (Engineering effort), advise customers on what to buy				
12. Evaluate Pricing strategy and implement cost reduction				
13. Develop maintenance training materials				
14. Implement a new CRM, management software and fill database				
15. Develop OE assessments				
16. Implement performance monitoring				

Together with our customer...

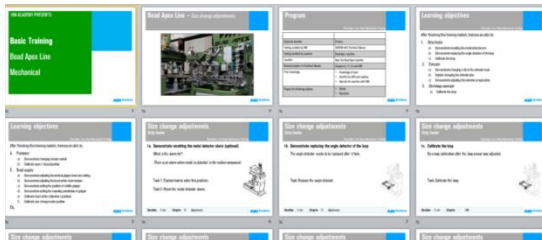
...competitive Total Cost of Ownership...

...maximum Reliability...

...consistent High Quality.

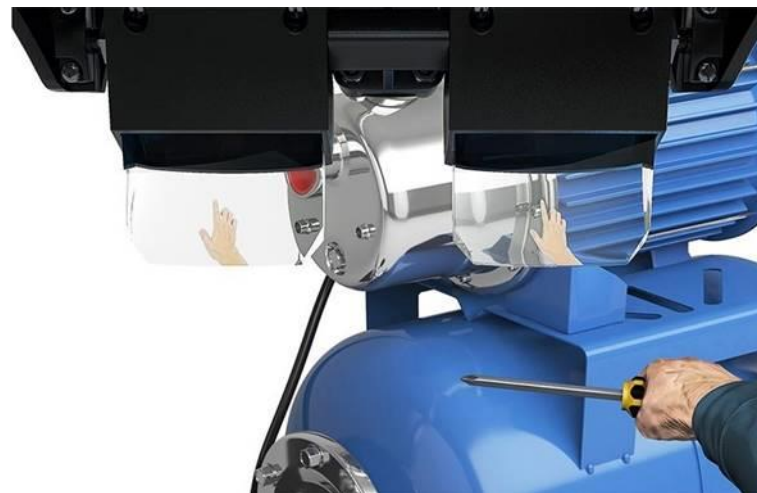
Strategic projects

Together with our customer... VMI Academy



Strategic projects

Together with our customer... Remote Support and Helpdesk



Under development – Soon to be released.

Strategic projects

...competitive Total Cost of Ownership... Maintenance Kits



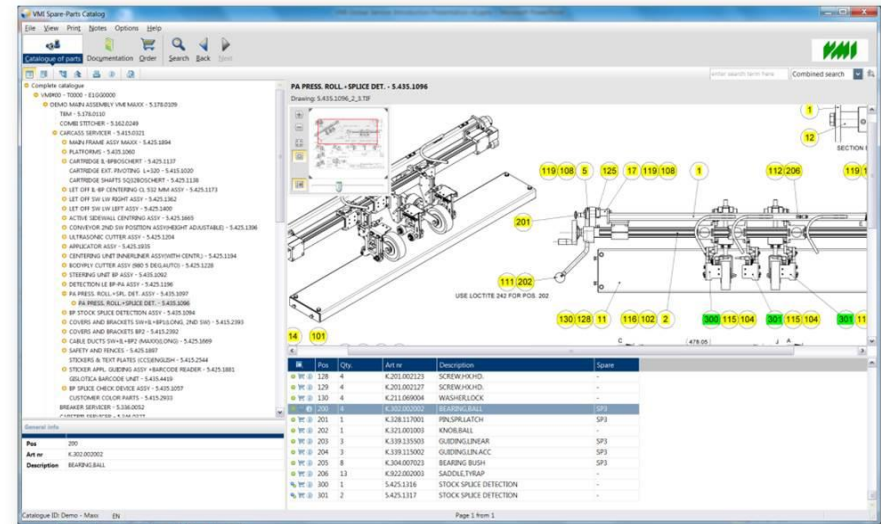
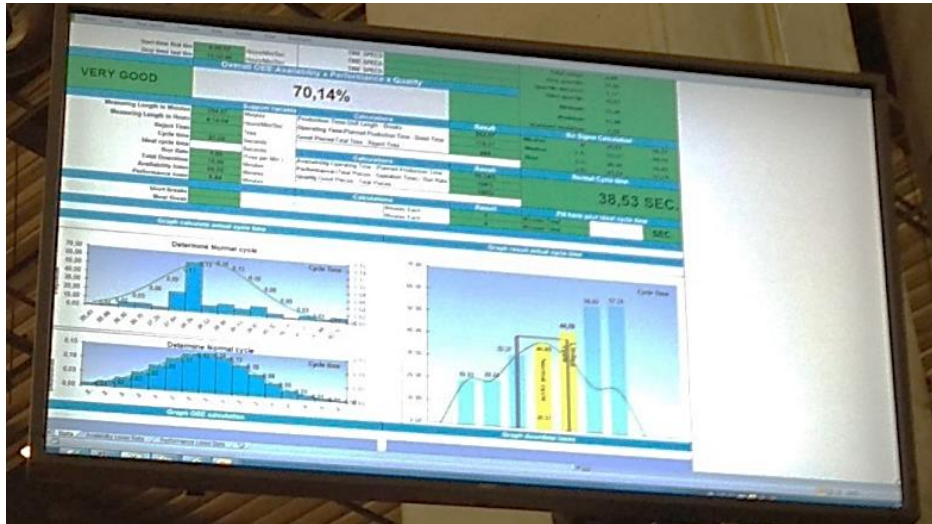
Strategic projects

...Maximum Reliability... Depot Repair Centers



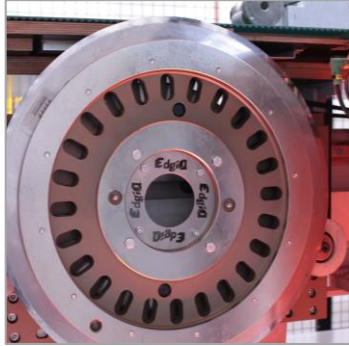
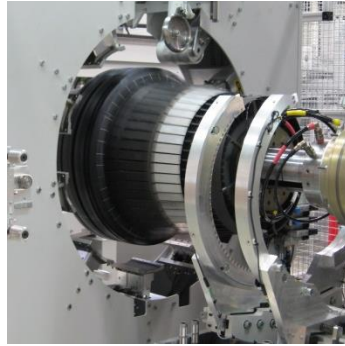
Strategic projects

...consistent High Quality. Management Support Tools





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TIRE BUILDING INDUSTRY

Distinctive technologies

Jan Grashuis - Vice President Global R&D VMI Group

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Challenges for the Tire Industry

Developments in tire technology

- bio-renewable materials
- half-weight tires
- new materials to improve performance/labeling
- smart tires
- runflat solutions
- noise cancelling



Challenges for the Tire Industry

Developments in tire manufacturing

- increasing number of tire-specs:
managing complexity

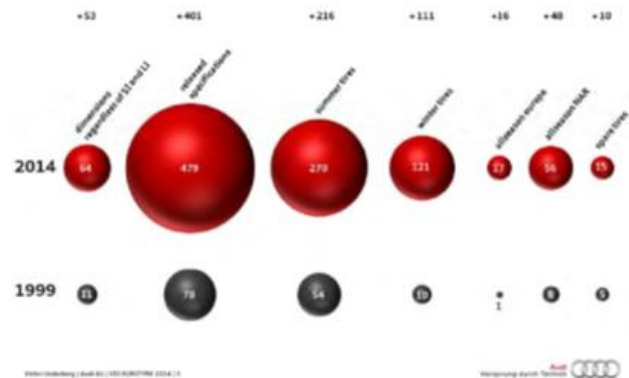
New challenges for the tyre development Introduction – Vehicle line up 15 years ago



New challenges for the tyre development Introduction – Vehicle line up today



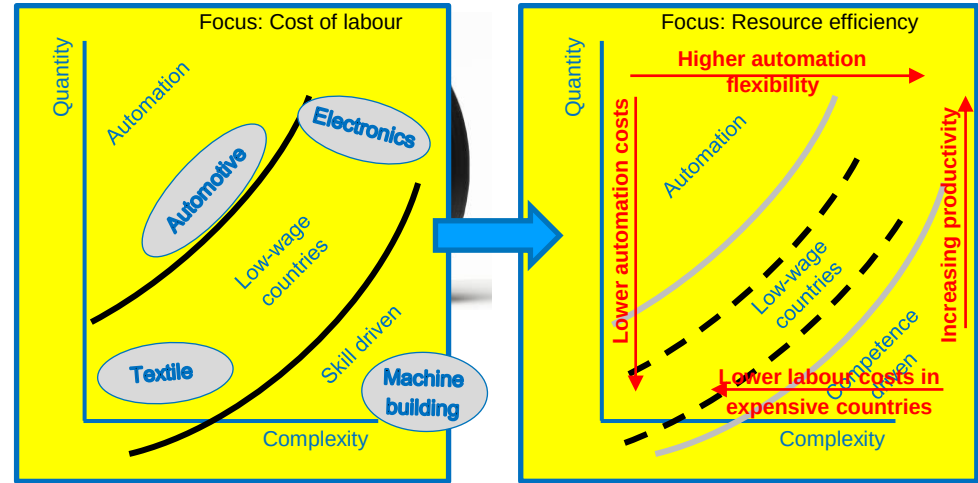
New challenges for the tyre development Tyre program – cars in production 1999 vs. 2014



Challenges for the Tire Industry

Developments in tire manufacturing

- increasing number of tire-specs: managing complexity
- faster development cycles for car industry
- quality demands from car industry
- increasing automation: connecting all 'islands of automation'
- green production
- global competition and rising labour costs in China
- reshoring industry



source: Fraunhofer IPA

Changes & chances in tire technology and manufacturing technology

Challenges for the Tire Industry

Tire technology innovations require
Innovative and Productive Equipment

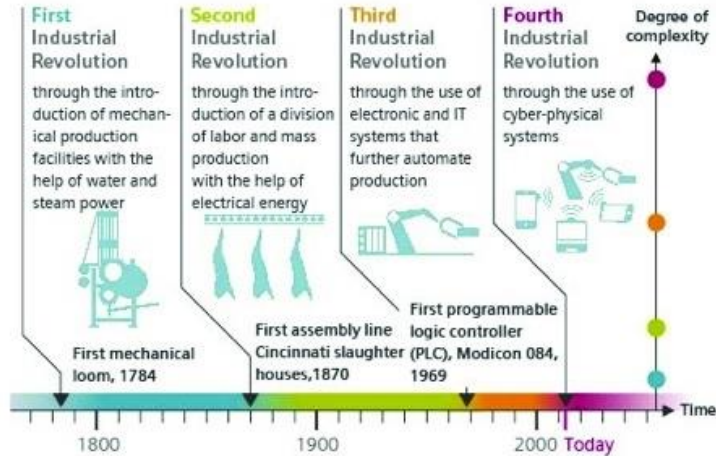
The Smart Factory

- will be flexible and produces individualized products in high volumes
- will slash production costs by improved monitoring & autonomous decisions
- will be resource efficient and enables countries globally to stay competitive



Another Industrial Revolution

From Industry 1.0 to Industry 4.0

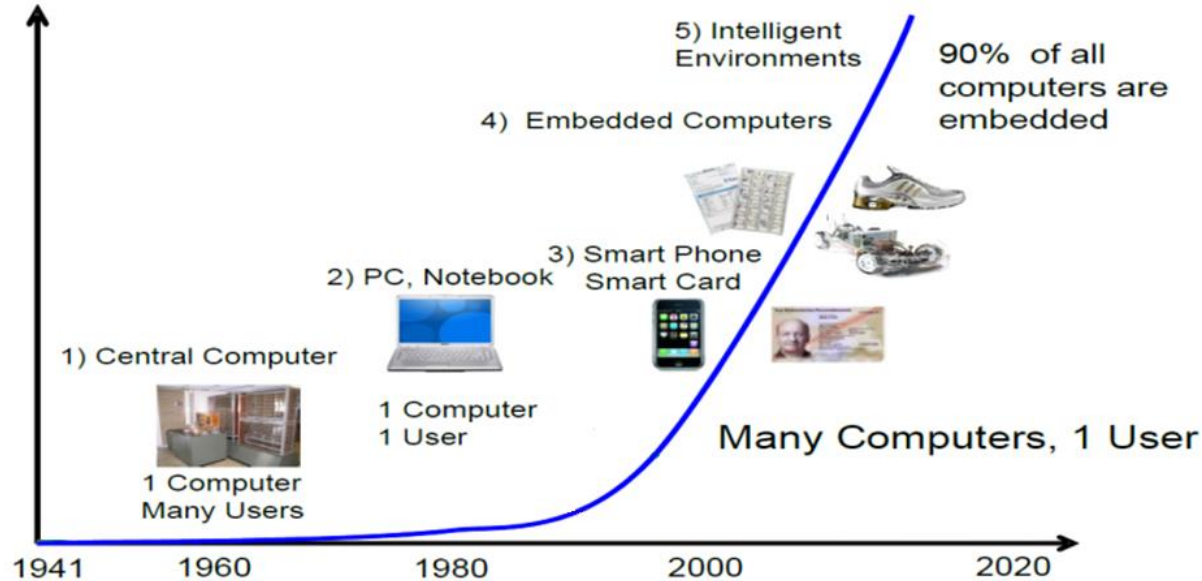


Source: DFKI (2011)

Industry 4.0 will need 20 years to develop all technology



Internet of Things



Smart sensor and communication technology Milexx

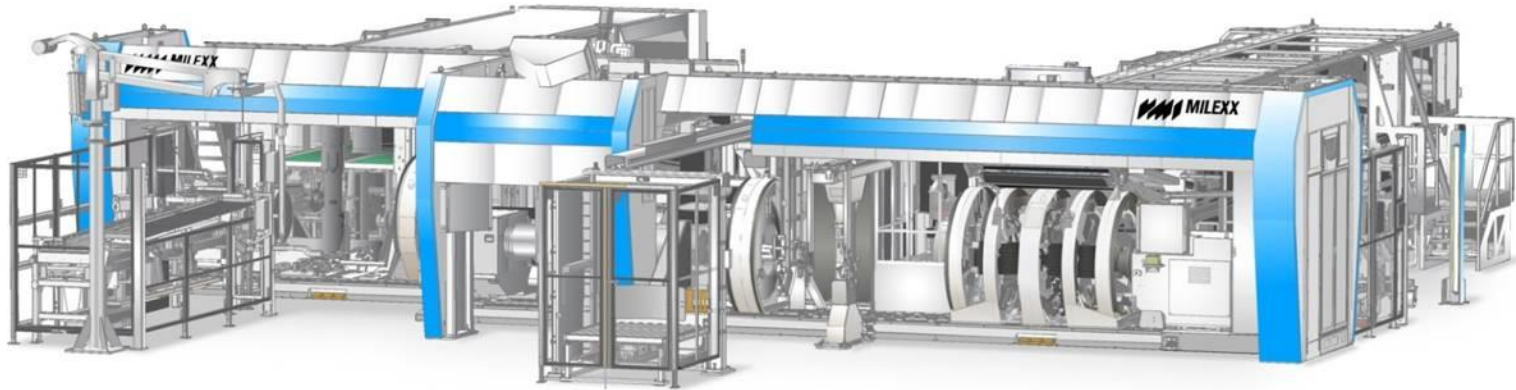
Pixxel

- Centring of components
- QA monitoring



Cortexx

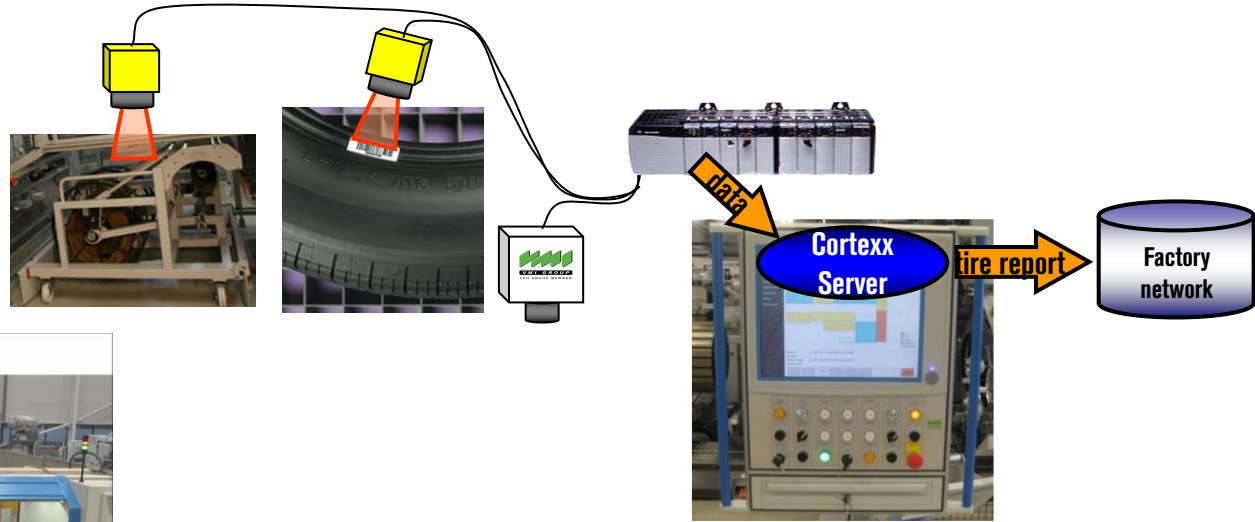
- human machine interface
- datalink to overhead systems



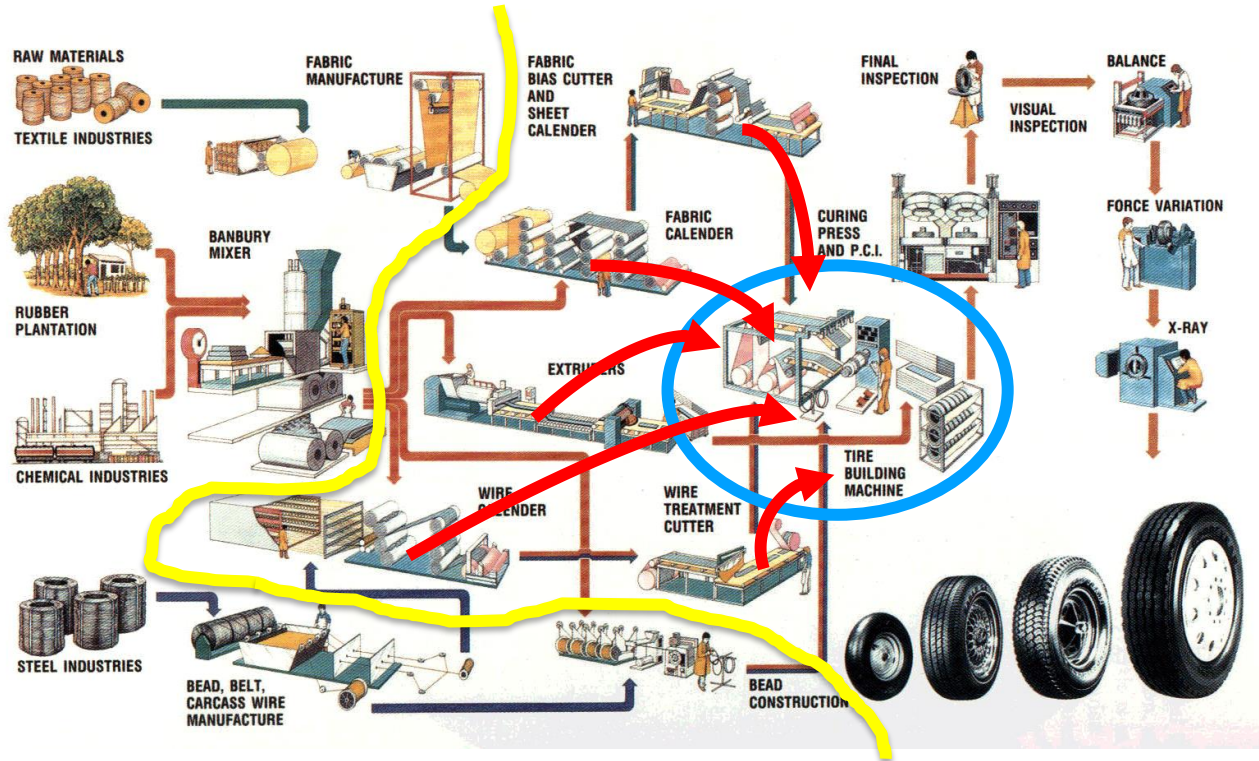
Smart sensor and communication technology MAXX



- Machine generates data
- Cortexx connects to factory network



Flexible production technology Unixx



- Unixx development is in phase of Full Scale Design
- Prototype acceptance at VMI is planned for start Q4-17
- Test and industrialization at launching customer in 2018
- Product released in 2019

Flexible production technology

Unixx

UNIXX is important for VMI

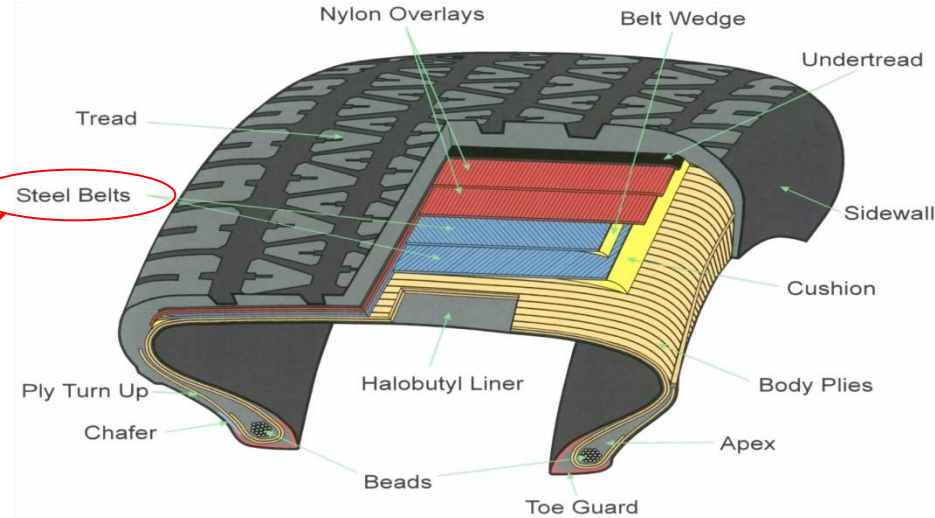
- Asian copiers start innovating themselves
→ **VMI needs to make a breakthrough innovation**
- After MAXX and Exxium, VMI needs to restrengthen its innovative image
- UNIXX creates larger turnover/tire for VMI



Introduction breakers

Breakers protect a tire against punctures and keep the tread flat

Variation in: width, angle, rubbercompound, steelcord and gumstrip

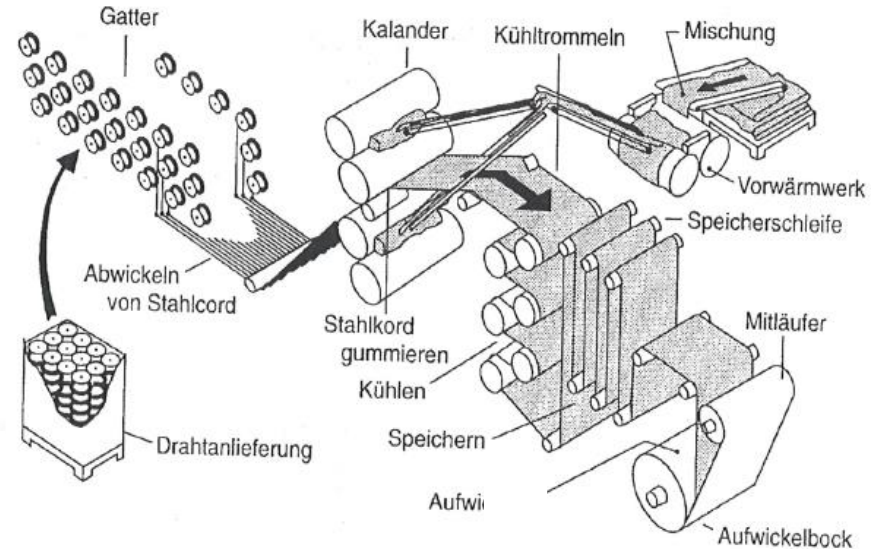
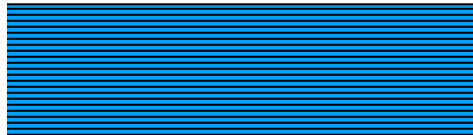


Breaker production - traditional process

Calandar

- High output
- Huge and expensive line
- No flexibility
- No redundancy

Final product:



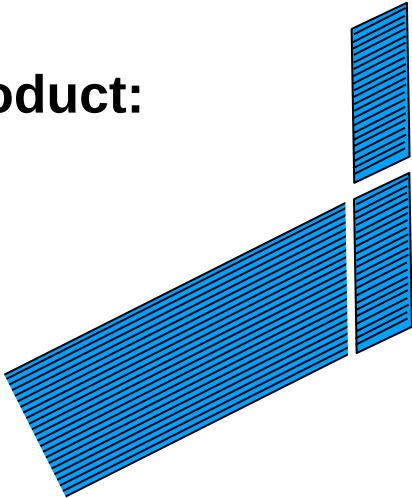
Breaker production - traditional process

Breaker cutter

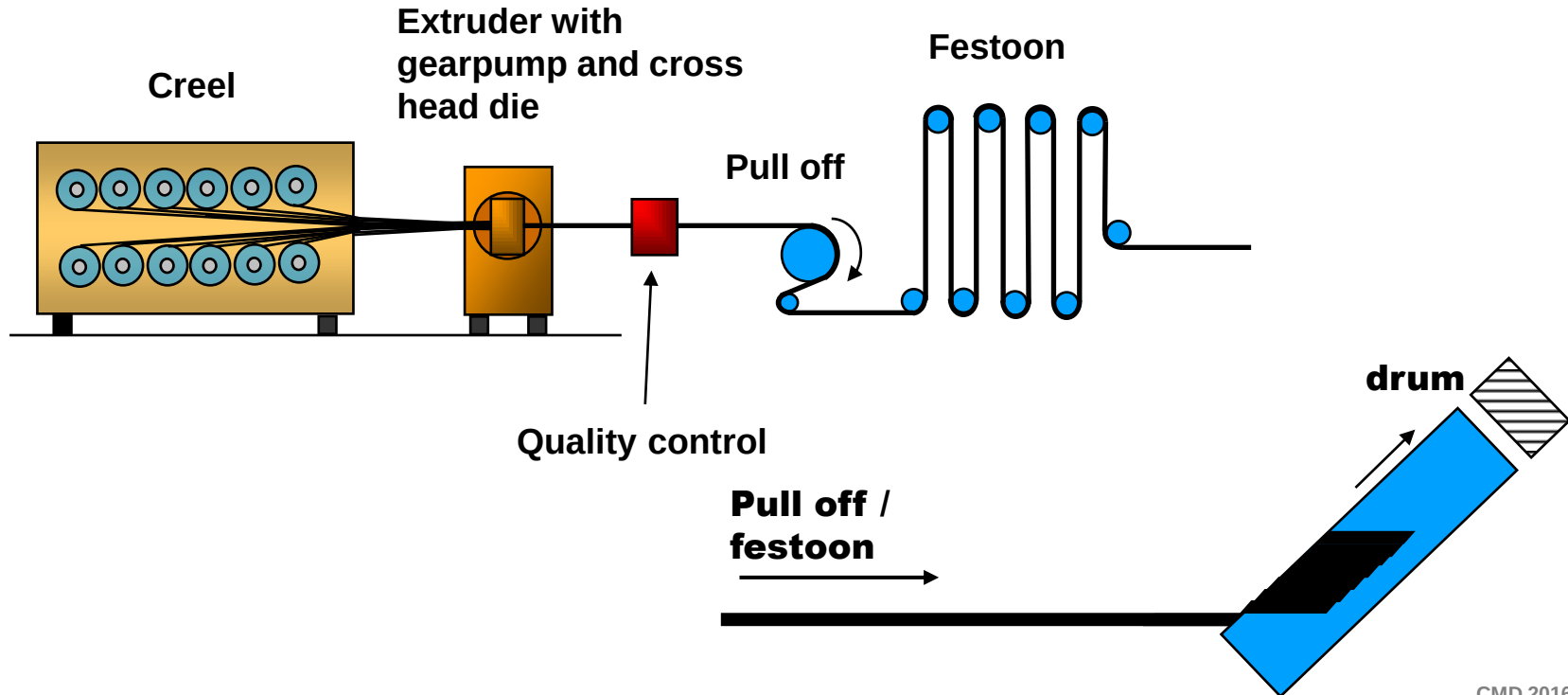
- High output
- Huge line
- Little flexibility



Final product:



Breaker production - Flexx process



Breaker production - Flexx process



- Consistent number of steel cords in each tire
- No stretch or angle variation
- Accurate width
- Accurate centring

Breaker production

Spin-off: offline breakermaking with Flexx 400

Breakermaker for conventional process

- › Flexible
- › Capacity increase in smaller steps
- › Accurate
- › Combines Unixx technology with conventional tire building
- › Offers advanced technology and high quality which makes it interesting for high-end customers
- › Shows a positive business case at a lower cost/breaker
- › Prepares the market for Unixx technology



The smart tire factory - conclusion

Crystal ball: the tire industry in 2030

- > in 2035: 12 million self driving cars are expected:
 - > owned by consumers (still the 'holy cow') → still focus on different sizes and UHP
 - > simply a service → tire will be commodity
- > ongoing development in the area of renewable materials, which will challenge tire manufacturers and their suppliers
- > conversion of industry to Industry 4.0 principles
- > Bits and pieces of **The Smart Tire Factory** are already available
- > Many techniques that are currently being developed, will create new possibilities
- > Smarter factories will be highly flexible and have reduced operator influence for consistent product quality and reduced labour costs.
- > VMI has an R&D-team of over 130 people working on the technology of tomorrow



TKH Group the solution provider <