Today’s journey

1. DHL Automotive – A Global Tire Logistics Leader
2. Driving the Digital Tire Supply Chain of the Future
3. Supporting your Tire Supply Chain in South Africa
DHL Automotive – A Global Tire Logistics Leader

Major customers

- Bridgestone
- Continental
- Goodyear
- Hankook
- Michelin
- Pirelli

Countries with DHL Tire logistics presence

GLOBAL

Presence in more than 60 countries

Working with all major tire manufacturers

Our Comprehensive Service Portfolio

<table>
<thead>
<tr>
<th>Raw materials</th>
<th>Testing Tires</th>
<th>12M Transport (Int &amp; Dom)</th>
<th>Factory Warehouse</th>
<th>In plant logistics</th>
<th>Wheel fitting &amp; Kitting</th>
<th>International FCL/FTL movements</th>
<th>X-docking platforms</th>
<th>Aftermarket Warehouse &amp; Distribution</th>
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- Testing Tires
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- International FCL/FTL movements
- X-docking platforms
- Aftermarket Warehouse & Distribution
We provide adapted Value Propositions to our customers

- **Passenger Vehicles**
  - Evolutive product responding to increasingly demanding and connected customers, leading to Supply Chain continuous shift

- **Commercial Vehicles**
  - A working tool requiring high logistics service levels and having a lower production output compared to industry standards

- **Component Manufacturers**
  - High supply chain complexity due to product variety, complicated supplier landscape and customer dependency

- **Tires**
  - A product with very specific logistics requirements, mainly present in the aftermarket and subject to high seasonality
We can support you in all your tire business segments globally

- **Off The Road Tires**
  - Warehousing and transport of OTR tires in India

- **Racing Tires**
  - Nascar Racing Tire storage and transport in the US

- **Aviation Tires**
  - Aviation tires transport in the Netherlands

- **Passenger Car Tires and Wheels**
  - Tire & Wheel mounting in Sweden
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**MARKET CHANGES**

Environmental regulations push premium tires

**TECHNOLOGY**

Intelligent tire sensors can spin-off into mobility & fleet management services by monitoring various data to support autonomous driving

**CONSUMER BEHAVIOR**

Online tire sales is estimated to reach approximately 20% of the global market by 2020

Consumers’ buying behavior becomes more digital, has emerged across multiple geographies including emerging markets

- **8.7%**
  - 8.7% is the growth rate of the premium & performance tire market globally
  - More than 2x faster than standard tires

- **>17 inches**
  - 17” or larger tires have a huge impact of +17$ GP per tire on profit compared to smaller sizes

- **>20%**
  - Online tire sales is estimated to reach approximately 20% of the global market by 2020

- **>17$**
  - 17” or larger tires have a huge impact of +17$ GP per tire on profit compared to smaller sizes
Digitalization is a huge opportunity for the tire supply chain

Inventory Carrying Cost
- SC optimization: ~25%
- Digitalization: ~35-50%

Lost Sales
- SC optimization: ~3-10%
- Digitalization: ~65-75%

Enabling Technologies for Supply Chain Digitalization
- Big Data
- Blockchain
- Internet of Things (IoT)
- AI/Machine Learning
- Robotics
- Augmented & Virtual Reality

Logistics Cost
- SC optimization: ~5-10%
- Digitalization: ~15-50%

Lead time
- SC optimization: ~10-25%
- Digitalization: ~30-40%

Source: DHL
### Our Tire Warehouse of the Future Approach

We built a technology assessment framework to structure our approach

<table>
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<tr>
<th>Technology trends</th>
<th>Technology trend analysis</th>
<th>Applications for tires</th>
<th>Technology variants</th>
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<tbody>
<tr>
<td>Use case structure</td>
<td>Processes involved</td>
<td>Unloading</td>
<td>Put away</td>
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<tr>
<td>Benefits</td>
<td>Employee engagement</td>
<td>Quality</td>
<td>Productivity &amp; density</td>
</tr>
<tr>
<td>Maturity assessment</td>
<td>Research</td>
<td>PoC</td>
<td>Pilot</td>
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<tr>
<td>Data collection &amp; analysis</td>
<td>DHL global innovation footprint</td>
<td>Expertise sharing</td>
<td>Implementation details</td>
</tr>
<tr>
<td></td>
<td>Tire technology supplier dialogs</td>
<td>Industry insights</td>
<td>Request for quotation</td>
</tr>
</tbody>
</table>
DHL’s Digital Warehouse of The Future Vision

<table>
<thead>
<tr>
<th>From outside the warehouse...</th>
<th>... To inside</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomous vehicles</td>
<td>Drones</td>
</tr>
<tr>
<td>IT &amp; Data Analytics</td>
<td>Automation</td>
</tr>
<tr>
<td>IoT &amp; wearables</td>
<td>MHEs</td>
</tr>
<tr>
<td>Blockchain</td>
<td>IoT &amp; wearables</td>
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</tbody>
</table>

**Short term**
- Resilience 360
- Freight visibility platforms
- Standard TMS
- End-to-end asset tracking
- Device based freight visibility
- Conveyors for loading & unloading
- Assisted picking
- Ring scanner
- Exoskeletons
- MHE Collision avoidance
- Quickcharge batteries
- WMS driven RF operations
- OMS
- Velocity slotting
- Security rounds

**Medium term**
- Truck platooning
- Advanced predictive analytics
- Driver monitoring devices
- SC transparency & traceability
- Gantry sorter
- Automated VNAs
- Smart yard management
- Autonomous ground transport
- Fuel cell
- LMS
- YMS
- Inventory cycle counting

**Long term**
- Autonomous shuttles
- Leaner global freight flows
- Smart contracts
- Fully automated warehouse
- Real time ops tracking
- Autonomous picking & putaway
- Resilience 360
- Freight visibility platforms
- Standard TMS

Note: Elements in bold are covered in this session
Technology deep dive example
Different types and features available for tire conveyors

Conveyor types
1. Telescopic mobile conveyor
2. Telescopic fixed conveyor
3. Sorting conveyor

Added features
A. Automated Labeling
B. Automated Scanning
C. Optical Character Recognition (DOT code)
Easy-to-Implement Innovations Providing **Fast Returns on Investments**

**Loading / Unloading Conveyor**

- Improved safety for employees thanks to less manual handling
- Improved productivity (around 30%)
- Opportunity to implement additional features like scanners or labeling machines

**Ring scanner**

- Allow tire handling with two hands
- 10-15% improvement in productivity
- Cheaper than regular handheld scanners
End-to-End asset tracking enables real time shipment visibility

A worldwide real-time, end-to-end asset tracking solution which relies on a cloud-based platform to be easily scalable on-demand.

Solution
- Modern tracking & tracing by active devices (GPS & BLE) including comprehensive set of data
- Multiple beacons attached to mother device that acts as gateway

Benefits
- Improved asset utilization
- Reduce asset losses
- Increased transport performance

Developments
- Pilot live in Europe for an automotive customer
- Pilot implementation ongoing in the US
Smart Yard Management Solutions

Streamlining yard management operations through **real time dock status visibility** using NB-IoT technology

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**Solution**

1. Drives in
2. Waits at parking area
3. Receives entrance information
4. Unloads
5. Departs

- Dock P01#
- Dock P02#
- Dock P03#

- Real-time dock status pushed to driver
- Driver checks-in; operator inputs vendor info
- Driver receives a queue number, returns to vehicle

**Benefit**

- 20-30% productivity improvement in unloading process
- ~30% improvement in on-time-delivery

**Developments**

- Pilot live in China for an automotive customer

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Vehicle detector uploads real-time dock status into system

DHL
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The South African Tire Industry is still heavily relying on imports.

### Share of imports per tire type

<table>
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<tr>
<th>Type</th>
<th>Percentage</th>
</tr>
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<tr>
<td>Passenger Car</td>
<td>40%</td>
</tr>
<tr>
<td>Commercial vehicles</td>
<td>60%</td>
</tr>
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</table>

**11% CAGR**

ZA Domestic Tire Market Growth by 2020

Seamless International Logistics will be key to benefit from the positive market outlook.
Leveraging our global expertise to ensure local relevance of our services

Commercial & Strategic Level
- Contract Manager

Tactical Level
- Satellite Office APAC
- Control Tower & Invoicing Control Center EMEA
- Satellite Office LATAM

Local Level
- Local operations center in South Africa
- Export & Import management
  - Document management
  - Carrier booking
  - Origin & destination coordination with hauliers
  - Proactive alert sharing
- Bond Store management
  - Staging / releasing of cargo
  - Stock counts
- Full customs clearance management

Benefits
- Contractual agreement
- Central approach
- Simplified rate-card
- End-to-End visibility
- Local support & adaptation
« IT IS NOT WHERE YOU START BUT HOW HIGH YOU AIM THAT MATTERS FOR SUCCESS »

- NELSON MANDELA