BEUMERGROUP

FAM
MEMBER OF BEUMERGROUP

BEUMER Group
Minerals & Mining

Fast Train Loading for Bulk Materials

Lukas Paul, 11/2023 (Lukas.Paul@beumer.com)

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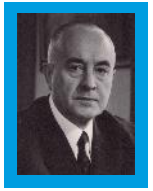
Company Profile



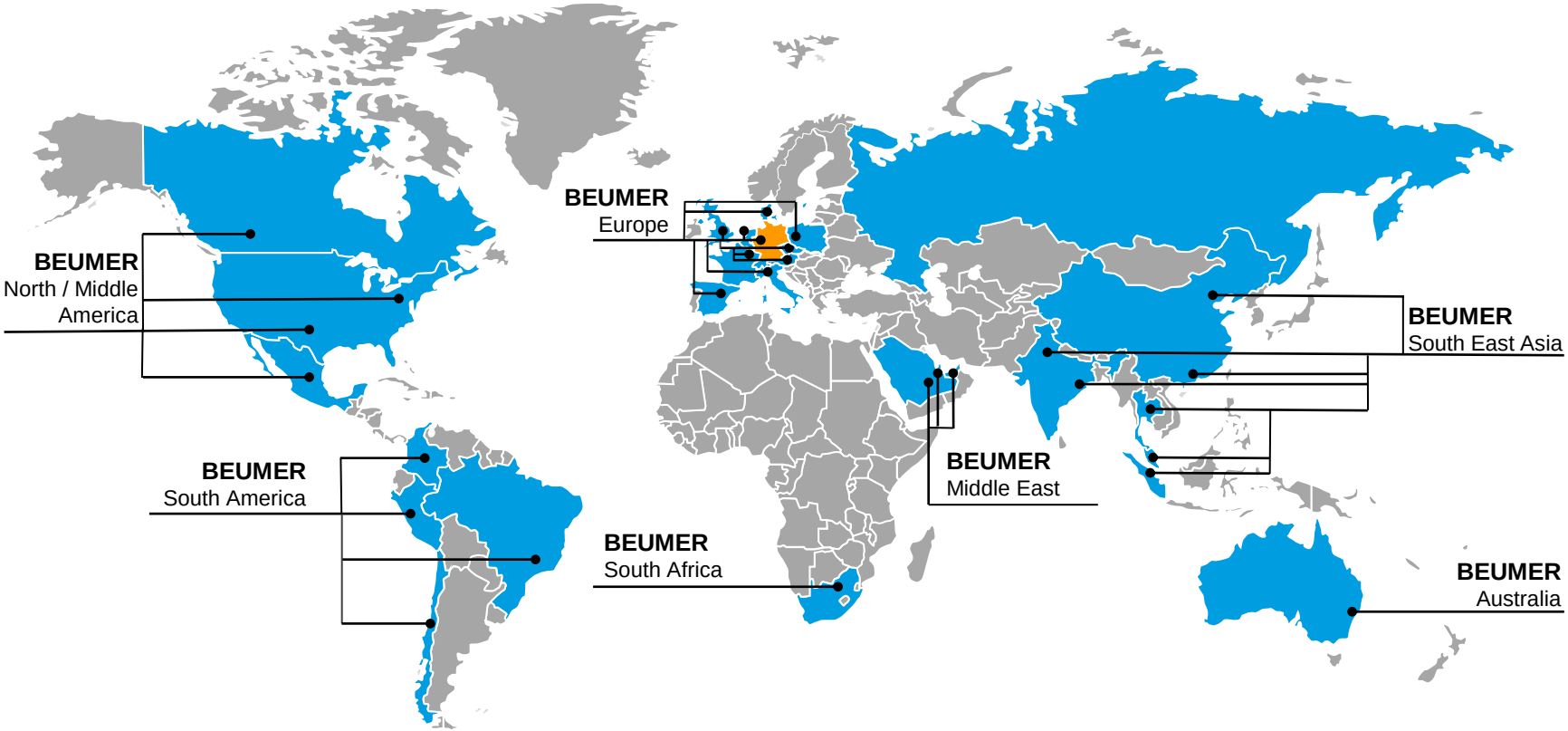
- Company founded in **1935**
- Independent, privately owned in 3rd generation

- Annual order intake of about **€ 1.1 bn. 2022**

- **+ 5,400** employees on all continents

- Strong global setup with references in more than 80 countries worldwide

Global Setup 2022



BEUMER Group – Portfolio

Industries & Technologies

Mining, Materials Handling & Processing

Filling, Palletizing & Packaging

Logistic Systems

Airport Systems

Customer Support

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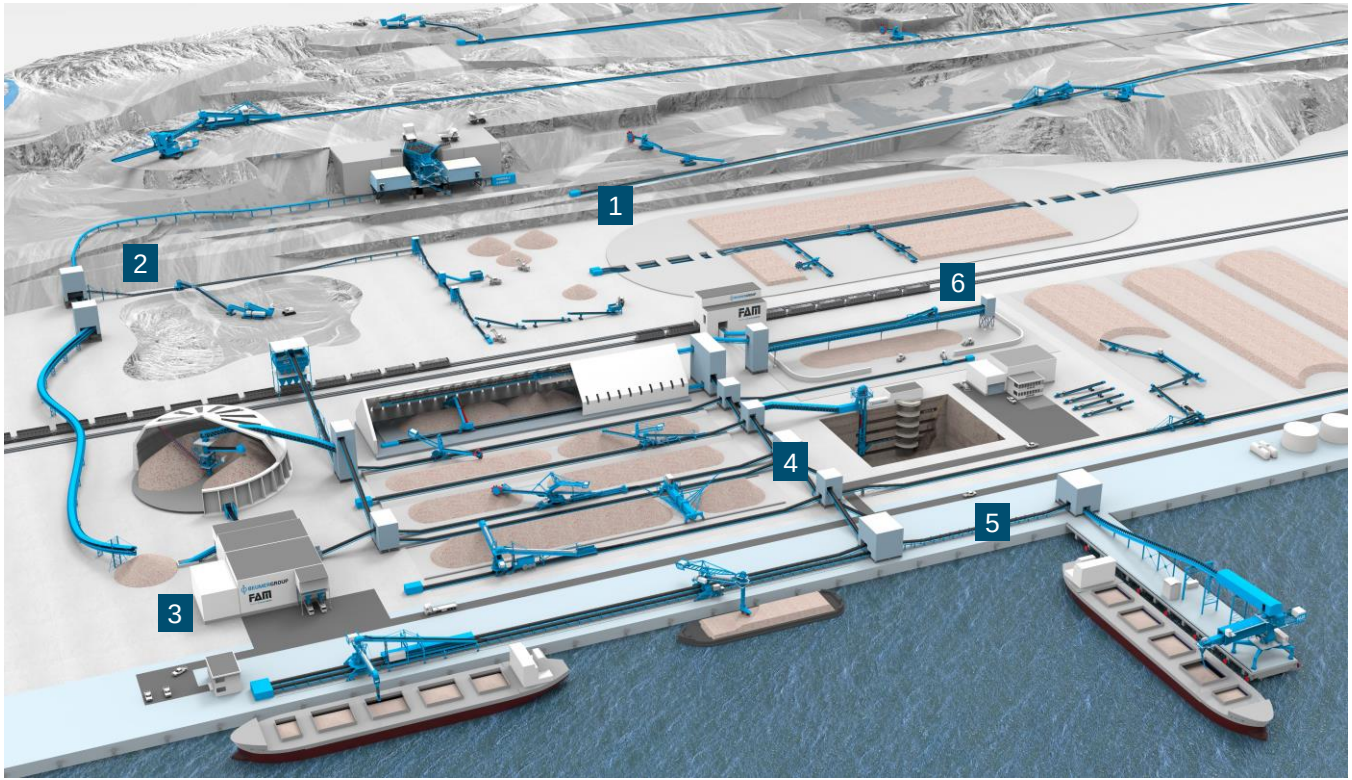
Portfolio Minerals & Mining



1. **OPENCAST MINING SYSTEMS**
   - Bucket wheel excavators
   - Spreaders and belt wagons
   - Crawler-mounted conveyor bridges
   - In-pit crushing systems

2. **STOCKYARD TECHNOLOGY**
   - Stackers and stacker-reclaimers
   - Portal, semi-portal and side reclaimers
   - Circular stacker-reclaimers
   - Bridge-type reclaimers
   - Bucket wheel reclaimers
   - Blending beds

3. **LOADING AND UNLOADING SYSTEMS**
   - Train loading & unloading
   - Truck loading

4. **MINERAL PROCESSING**
   - Crushers and mills
   - Apron feeders
   - Roller screens

5. **PORT TECHNOLOGY**
   - Movable and stationary ship loaders
   - Continuous ship unloader

6. **CONVEYING SYSTEMS**
   - Overland conveyors
   - Pipe conveyors
   - In-plant conveyors
   - Jump conveyors
   - Shiftable and mobile belt conveyors
   - Bucket elevators

Conveying Systems








Ship Loading & Unloading

Stockyard technology

Opencast mining systems

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Pipe Conveyor: Dust Free Belt Conveyor

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Fast Train Loading

- Physical Infrastructure
- Digital Improvements

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  - ✓ Splitting up loading speed and loading precision
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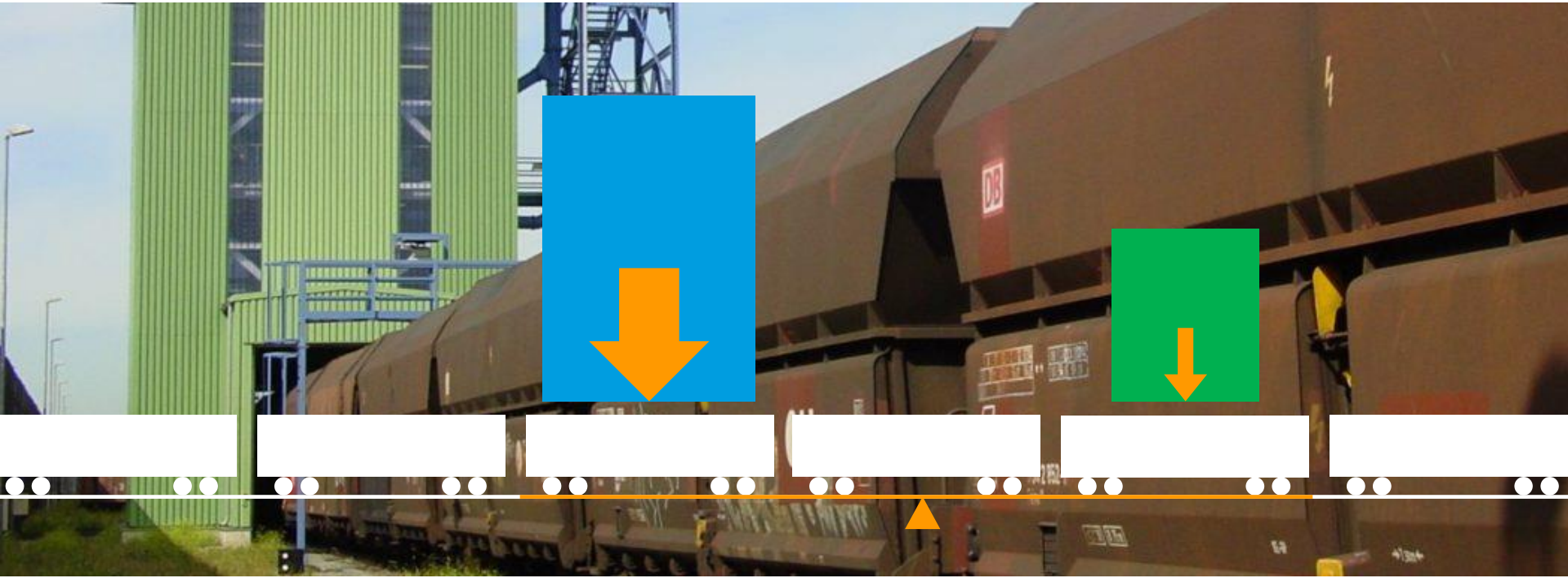
Loading speed / loading precision



Fast Train Loading

- Physical Infrastructure
  - ✓ Splitting up loading speed and loading precision
- Digital Improvements
  - ✓ Integrating processes
  - ✓ Increasing availability while decreasing maintenance efforts

BEUMER *Flow Minerals*

Flow Minerals **(Train Loading System)**
Scheduling // controlling // monitoring // documentation

Integrating Processes

- Automatic camera-based rail car recognition

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- Automatic laser-based rail car geometry measurement system

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- Precise material tracking

  (train loading without bunker is possible!)

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  ➡ Reducing Efforts for Observation

- Precise material tracking
  (train loading without bunker is possible!)
- Job scheduling, quality control

Fast Train Loading

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  - ✓ Splitting up loading speed and loading precision
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  - ✓ Integrating processes
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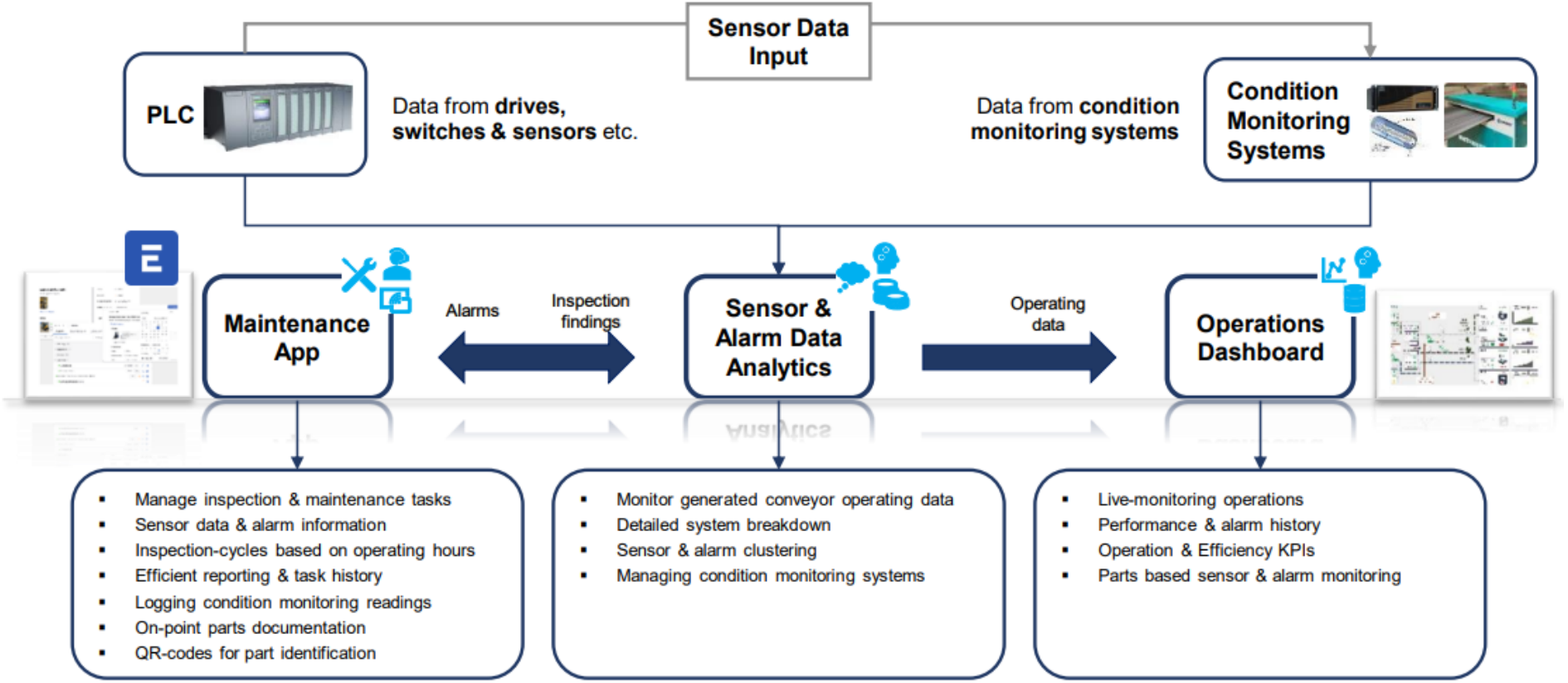
Digitalizing the equipment



Condition Monitoring and Beyond

I. Condition Monitoring

- **Risk Management** — mediating risk of catastrophic failure of system
- **Maximum Availability** — minimizing impact & frequency of shutdowns

II. Operation Monitoring

- **Best-in-class efficiency** — by understanding & optimizing basic system parameters
- **Maximum Capacity** — enabled through continuously monitoring material & machine behavior

III. Data Supported Maintenance

- **Efficient O&M** — supported by digital copy of your system in custom maintenance app
- **Wear Part Performance** — logging load collectives on parts & comparing estimated with actual life

Developing Condition Monitoring

Developing Condition Monitoring

Developing Condition Monitoring

Intelligent Data Gathering

Eliminate Unplanned Shutdowns = Increase Plant Availability

Better Information about Plant Condition → Reduce Maintenance Efforts

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Thank You For Your Attention!
Any Questions?

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