CargoBeamer
Electromobile freight logistics of the future
No emissions, no road congestions
CargoBeamer – freight logistics of the future

Executive Summary

1. Germany and Europe is at the brink of an absolute traffic gridlock: Expected growth does not fit on motorways anymore.

2. Railway is providing significant spare capacities for freight logistics, which in addition could be more economical, more efficient and environmentally friendly, too.

3. CargoBeamer’s innovative and patented technology enables nearly all semi-trailers the consistent automated and digitalized travelling by train with cost and efficiency advantages for carriers and logistic providers in evidence.

4. CargoBeamer terminals provide for a cost benefit of more than 50 % in comparison to all other loading technologies which adress non cranable semi-trailers.

5. CargoBeamer terminals have been constructed with a compact design and by far, provide for the greatest handling capacity. Considering the very few appropriate areas available, CargoBeamer in fact is the enabler to cause the desired shift from road to rail to happen – targets start to become real.

6. By using the CargoBeamer system, carriers could reduce their direct transport cost by up to double-digit percentage rates.

CargoBeamer stands for both, innovative and profitable logistics and opens a real opportunity to reach climate objectives in the traffic sector.
Europe is at the brink of an absolute traffic gridlock
Since 2010, the freight load on our motorways has exceeded its capacity - and the hours in traffic congestions have exploded

In general, industry production and thus, logistics are on the rise. However:

• An increase of traffic congestions is not acceptable: there is hardly any room left on the roads for more trucks.
• Emission volumes turn into hard cost factors: combustion engine-based cargo transport system costs rise – leading to rail services becoming more and more attractive

The federal ministry of traffic and digital infrastructure (BMVI) expects a growth of goods to be transported by rail of 42.9% until 2030! By means of the decisions taken, railways will become an innovative, competitive provider. [6]
CargoBeamer: Quantum leap for the rail freight transport

By applying moderate investments, CargoBeamer solves traffic congestion and emission problems

In fact, there is a well-established and proven technology available which – without exorbitant investments – can put an end to the capacity and environment problems related to freight cargo:

In comparison to motorways, rail provides significant spare capacities within the network.

However, with 95%, the vast majority of all semi-trailers cannot board a train – due to the lack of compatibility with container cranes.

For the first time, CargoBeamer enables nearly all semi-trailers* efficient access to rail transport – anyone can easily get on board.

* 75% of all transports on our motorways

Comprehensive electric cargo transport is instantly possible

All semi-trailers can use CargoBeamer with no modifications to be made

Handling equipment is compact, automated and can be used anywhere

CargoBeamer is compatible with existing container cranes

CargoBeamer is not a pilot project, it is reality

The rail!
Innovation, digitalization and automatisation for the rail
The three technology corner stones of the CargoBeamer transport system

1. **Wagons for all semi-trailers in Europe**
   - „Soft“ loading: Horizontal shifting with universal loading pallets
   - All carriers can use their existing semi-trailer equipment without any modifications, special codifications, etc.
   - CB rail wagons are fully with the existing ‘conventional’ terminal network in Europe

2. **Terminals: Quantum leap for rail freight transport**
   - Automatisation and parallelisation: the pure loading and unloading of an entire trains in record time: 15 minutes
   - Up to 1,000 semi-trailers per day and terminal
   - Compact design, no cranes, quiet electrified operations

3. **Digitalisation** from wagon to customer
   - GPS-, server- and internet-based digital platform
   - Information, booking, planning, monitoring and maintenance of transports and wagons
   - Coordinated digital cooperation: customer – terminal – rail operation
   - Online-monitoring of wagons and quality assurance
CargoBeamer is not a project but reality
Successful business divisions: train operator / terminal operator / wagon lessor

1. **Train operator:**
   - Trains on the route Germany - Italy
   - Successful development of own block trains since 2015
   - So far, loading is done conventionally by cranes / reach stackers though
   - Growth of operative performance:
     - Doubling of transports each year since start of commercial operation
     - Shifting performance up to now: 30,900 semi-trailers / 372 mn. tn.-km.

2. **Terminal operator:**
   - OEM services for automotive industry
   - Pilot technology project: OEM services for the automotive industry 2013-2016
   - Nomination as “top 10 logistics innovation” by Volkswagen AG 2015
   - Final report of Volkswagen:
     - „The operative availability is close to 100%. During the time period as of May 2015 there has not been a single malfunction (availability 100%)."

3. **Wagon lessor:**
   - Pilot project with DB Cargo
   - DB Cargo Logistics has been renting CargoBeamer wagons since 2017
   - Simple add-on to existing trains by attaching CB wagons
   - DB Cargo:
     - „Benefit for the client: transport easier to schedule without traffic congestions passing through three countries “
     - „There is a chance that this concept can be rolled out across our complete European network “

Source: [https://railways.dbcargo.com/](https://railways.dbcargo.com/), S. 43

CargoBeamer technology video: [www.cargobeamer.com/Technologie-758631.html](http://www.cargobeamer.com/Technologie-758631.html)
CargoBeamer has started to realize an European network of high-performance road/rail terminals for all standard road semi-trailers

- The first route Kaldenkirchen (DE) near Venlo (NL) to Domodossola (IT) is active since 2015
- On this route, CargoBeamer has doubled transport figures in 2016 and 2017 each
- End 2018, more than 350 Million ton-kilometers of freight volume have been shifted to rail in > 1000 cargo trains
- CargoBeamer has signed first real estate contracts in France and Germany to realize a network of automated high-performance terminals across Europe
- Nevertheless, as CargoBeamer wagons are compatible to all existing container terminals, rail transport of standard road semi-trailers can start almost everywhere
CargoBeamer’s high performance terminals handle 1000 trailers per day

- little floor space required: 400 x 50 metres incl. parking areas
- lower investment requirement: approx. 20 million € (without land acquisition, additional side tracks, etc.)
- high throughput: 15 minutes to load and unload up to 36 rail wagons at a time. Capacity of about 1,000 semi-trailers a day (14 trains at 700m) corresponds to approx. 250,000 semi-trailers annually
- fully automated: No (zero) manual operation during the handling phase. Preloading of 36 semi-trailers with electric terminal cars into waiting loading pallets prior to the arrival of the train
- purely electrical operation: Highest energy efficiency and minor noise emission
Emissions are reduced by 73% (CO₂) and by 81% (NOₓ) in the real electricity mix, and by 100% taking clean (eco) power as a basis.
Summary: CargoBeamer USPs (unique selling points)

Outstanding advantages for a future, sustainable and emission-free cargo logistics

1. This classic combined transport (CT) addresses only about 5% of the transportation markets - CargoBeamer, however, 80% - the semi-trailers

2. CargoBeamer reduces handling costs for semi-trailers that cannot be loaded with cranes to one THIRD

3. CargoBeamer wagons have unparalleled benefits...
   ... their universal transport loading pallets can hold all types of truck trailers – they are unique among intermodal transport,
   ... they are compatible with all terminals in Europe – without any additional loading ramps.
   ... they do not require staff to load or unload in contrast to the classic wagon,
   ... they are extremely robust – and achieve a very high system availability of > 97% incl. scheduled maintenance - smaller than 2 ct / km in real operation!

4. For growth in intermodal transport, the handling units are without alternative: CargoBeamer terminals ...
   ... are particularly compact: Area is 19 by 20 metres, installation height smaller, modular scalable and fit on many abandoned handling rail tracks
   ... are unmatched in energy-efficiency and economy with only 1.2 kWh energy consumption per hub and fully automated: minimal low cost
   ... are forerunners in durability and system availability during real operation: > 99%
   ... boast an unmatched high throughput: handling of a full train within 15 minutes,

5. CargoBeamer “eLogistics”: end-to-end digitalisation maximises transparency and efficiency
   Fully digitalised processes: From booking over trailer check, to follow-up and billing of all transports, maximum integration and thus transparency and acceptance on the market is created

6. In total, CargoBeamer is by far the most efficient and economical technology for the shift of large freight volumes from the road to the rail
   The system components allow for continuous electric, automated and emission- as well as congestion-free cargo transport ramp to ramp. The investment and transport cost comparisons are optimal compared to all alternatives: CargoBeamer is certainly high time.
Reports:

Der Kampf gegen den Transitverkehr: https://www.youtube.com/watch?v=HJVPbeC_svg

Tirol: Stau im Inntal droht zu eskalieren / Kontrovers / BR Fernsehen: https://www.youtube.com/watch?v=Ny3QdiYBKRo

Vergleich Bahnpolitik Deutschland – Schweiz / odysso / Wissen im SWR: https://youtu.be/9RVVwMyTdC4

Ausbeutung: Der Preiskampf der Spediteure / Autobahn, LKW: https://youtu.be/V_Oo9kEKFQw

Sources:

[1] Bundesamt für Straßen – Auswertung Verkehrszählstellen, own calculations