ISU - Innovative Semi-Trailer Handling Unit

Key Words:
Access to transport networks, infrastructure and nodes; Freight consolidation and transhipment; Innovative vehicles, vessels and equipment; cooperation; Innovative operational solutions; Value added services, development (or extension) of services; Service quality and sustainability agreements/certification; Transport management, fleet management; Interoperability and standardisation: vehicles, equipment, loading units, infrastructure

Description
With ISU (Innovative Semi-Trailer Handling Unit) non-cranable semi-trailers can also be transported by rail.

In the framework of the EU research project CREAM, a production concept “ISU – Innovative Semi-Trailer Handling Unit” which is unique in Europe was developed under the direction of Rail Cargo Austria.

For the first time, this system also enables rail transportation of non-cranable semi-trailers. With ISU, Rail Cargo Austria offers an environmentally friendly transport alternative to road transport for long-haul traffic.

Benefits
• Possible use of multiple common wagon types.
• Minor adaptations on the Wagons, if at all.
• Technology is in the terminal, not in the wagon.
• Simple construction of additional handling equipment.
• No additional large scale infrastructure in the terminals.
• Working processes in the terminal comparable with today practice.
• Flexibility, use of common terminal equipment.
• Automation of the loading and unloading process possible.
• Integration into existing terminal procedures

Starting point/objectives/motivation:
For transport companies which serve the long-distance relations all over Europe and even to Asia and Africa, the optimisation of trans-ports is necessary, to be competitive and to guarantee quality for their customers. Therefore also rail freight transport and alternative intermodal transport services are interesting in specific destinations.

As most of the semi-trailers used are non-cranable, the conventional intermodal technologies on terminals do not offer suitable solutions to skip transports from road to rail.

With new and innovative technologies and services it is possible, to offer intermodal transport options also for this large market segment in the transportation market.

Solution
• ISU covers the whole range of 3-axle semi-trailers to mega-trailers.
• The dimensions of the trailers may reach a height of up to 4 m and a width of up to 2.6 m.
• Trailers with tire sizes with a diameter of 850 mm to 1150 mm can be loaded.

The system is actually in operation an serves the line between Wels (Austria) and Trieste (Italy).

Further lines are actually under evaluation and will be implemented due to transport market demand.

ISU developed from a research approach to a full commercial implementation operated by the market leading carrier in Austria.

The technologically unique approach and the business model to settle up new relations together with key customers fosters the development of intermodal transport and supports a sustainable model split.

Success factors

Supported strategic targets
Ideal utilisation of infrastructure; Competitive logistics and transport system; Acceptance and influence; Balanced provision of goods and services; Increased amenity value; Highest safety and security; Increased efficiency / productivity of logistics processes; Increased company profitability; Minimisation of financial risks; Increased competitiveness; Increased quality; Limited climate change; Reduced emissions; Conservation of resources
Case description (cont.):

Loading procedure:
1) Driving of the articulated truck on the loading platform – uncoupling – preparations for loading
2) Connecting of the hoisting ropes to the wheel grippers – bringing together by means of forklift trucks and securing of the hoisting beam with the king pin – ready for loading
3) Hoisting in the trailer pockets of the wagon – fastening of the beam to the jack stand and securing with wheel grippers and beam – removal of the hoisting ropes
4) Repeated check of the fasteners – ready for departure

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Transport mode or supply chain elements

Transport modes involved:
• Heavy rail
• Road/ truck

Main actors involved:
• rail freight operator
• intermodal terminal operator
• forwarding companies
• research & development partners

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