![innofreight logo]

MonTainer

Proven solution

Efficient transport of
heavy bulk materials

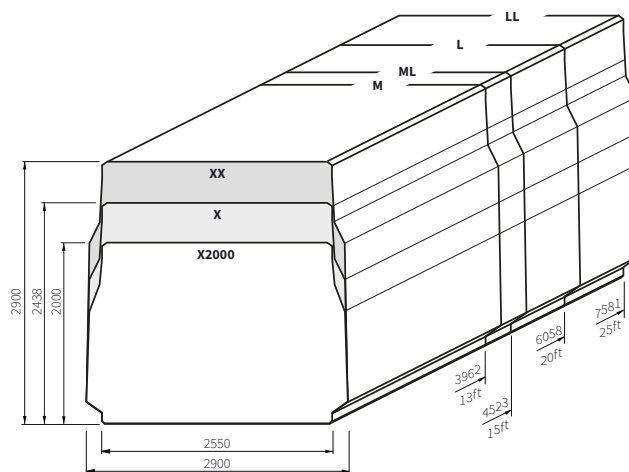| 01	02	03	04	05
INNOVATIVE	EUROPEAN	PROFESSIONAL	ECOLOGICAL	MODULAR

The MonTainer system optimizes the transport of heavy bulk materials. It consists of efficient special containers, particularly lightweight InnoWaggons and the appropriate unloading solution.

System benefits

> MonTainer in various lengths and heights, suitable for bulk material with different weights

> High payload in combination with InnoWaggons

> Optimized payload with minimized train lengths

> Separation of MonTainer and InnoWaggon during the unloading process

> No contamination of the InnoWagon during unloading

> Optionally available with cover for transporting moisture-sensitive bulk materials

> Full utilization of wagon capacity for track class D

> Wagon runs in profile G1 without additional permits

MonTainer heights and lengths

	MonTainer XM 2000	MonTainer XM	MonTainer XM	MonTainer XML
InnoWaggon (IW)	**2x40 ft**	**2x30 ft**	**2x40 ft**	**2x30 ft**
No. of MonTainer per IW	6	4	6	4
Length over buffer (LoB)	26,620 mm	22,500 mm	26,620 mm	22,500 mm
Tara	40,600 kg	36,700 kg	40,900 kg	37,900 kg
Max gross	180,000 kg	180,000 kg	180,000 kg	180,000 kg
Payload	139,400 kg	143,300 kg	139,100 kg	142,100 kg
Volume	114 m³ (6 x 19 m³)	94.4 m³ (4 x 23.6 m³)	141.6 m³ (6 x 23.6 m³)	120 m³ (4 x 30 m³)
MonTainer height	2,000 mm	2,438 mm	2,438 mm	2,438 mm
MonTainer width	2,900 mm	2,900 mm	2,900 mm	2,900 mm
MonTainer length	13 ft / 3,962 mm	13 ft / 3,962 mm	13 ft / 3,962 mm	15 ft++ / 4,893 mm
Goods (examples)	building material, soil	iron ore, ore pellets	building material, coal	iron ore, limestone
Total height	3,155 mm	3,593 mm	3,593 mm	3,593 mm
Total width	2,900 mm	2,900 mm	2,900 mm	2,900 mm
Loading gauge	G1	G1	G1	G1

MonTainer

2x40 ft InnoWaggon with MonTainer XXL

Suitable and robust MonTainers are available for every type of bulk material, regardless of weight and volume. As a complete logistics solution, the MonTainer system is designed that the containers together with the InnoWaggons allow optimum payloads with minimized train lengths.

Depending on requirements, unloading is carried out mobile, using a forklift with rotator, or by a stationary unloading machine. Both systems guarantee efficient logistics and year-round operational reliability under all weather conditions.

Typical bulk materials for MonTainer are various types of ore, limestone, gypsum, coal, coke as well as building materials and contaminated soil.

2x40 ft InnoWaggon with MonTainer XXM

MonTainer XML II	MonTainer XL	MonTainer XXM	MonTainer XXL	MonTainer XXL + XXLL
2x30 ft	2x40 ft	2x40 ft	2x40 ft	2x45 ft
4	4	6	4	4 (2 x XXL + 2 x XXLL)
22,500 mm	26,620 mm	26,620 mm	26,620 mm	29,520 mm
36,200 kg	38,600 kg	42,300 kg	42,700 kg	41,500 kg
180,000 kg	180,000 kg	180,000 kg	180,000 kg	180,000 kg
143,800 kg	141,400 kg	137,700 kg	137,300 kg	138,500 kg
108 m³ (4 x 27 m³)	164 m³ (4 x 41 m³)	174 m³ (6 x 29 m³)	184 m³ (4 x 46 m³)	206 m³ (2 x 46 + 2 x 57 m³)
2,438 mm	2,438 mm	2,900 mm	2,900 mm	2,900 mm
2,900 mm	2,900 mm	2,900 mm	2,900 mm	2,900 mm
15 ft / 4,523 mm	20 ft / 6,058 mm	13 ft / 3,962 mm	20 ft / 6,058 mm	20+25 ft / 3,962+7,581 mm
iron ore, limestone	coal, coke	building material, coal	coal, coke	coal, coke
3,593 mm	3,593 mm	4,055 mm	4,055 mm	4,055 mm
2,900 mm	2,900 mm	2,900 mm	2,900 mm	2,900 mm
G1	G1	G1	G1	G1

2x45 ft InnoWaggon + MonTainer XXL + MonTainer XXLL — Volume: 206 m³, max. payload: 138,500 kg

2x40 ft InnoWaggon + MonTainer XXL — Volume: 184 m³, max. payload: 137,300 kg

2x40 ft InnoWaggon + MonTainer XL — Volume: 164 m³, max. payload: 141,400 kg

2x40 ft InnoWaggon + MonTainer XXM — Volume: 174 m³, max. payload: 137,700 kg

2x40 ft InnoWaggon + MonTainer XM — Volume: 141.6 m³, max. payload: 139,100 kg

2x40 ft InnoWaggon + MonTainer XM 2000 — Volume: 114 m³, max. payload: 139,400 kg

2x30 ft InnoWaggon + MonTainer XML — Volume: 120 m³, max. payload: 142,100 kg

2x30 ft InnoWaggon + MonTainer XML II — Volume: 108 m³, max. payload: 143,800 kg

2x30 ft InnoWaggon + MonTainer XM — Volume: 94.4 m³, max. payload: 143,300 kg

Stationary unloading machine

A stationary unloading machine enables a cost-efficient operation. It offers work, process and supply safety at the highest level and the latest state of the art.

Without additional manpower and machinery, unloading can be carried out safely and efficiently without interruption, even during the cold season. There is no difference between summer and winter operation.

The system is operated by joystick from an air-conditioned operator's cabin – protected from dust and noise. A high level of work safety is ensured at the unloading machine, as there are no unloading personnel in the wagon area.

An integrated dedusting system protects the environment against dust and an automatic shunting robot ensures safe shunting of the wagons.

Special features	Compact, sampling, Semiautomatic
Unlaoding capacity	1,200 m³/h | 1,000 t/h
Unloading time	2 min
Max. load capacity	40 t
Operator	1 person

Stationary unloading machine with dedusting system

Forklift with rotator

The mobile unloading system ensures safe, flexible and fast unloading of the MonTainers.

Only one driver per forklift is required to unload a container. The driver can control all important operations, such as lifting or lowering the container from/to the wagon and turning it out, safe from the driver's cab.

During the unloading of the containers, there are no persons in the immediate danger zone. The driver of forklift sits in a protected cabin with sufficient safety distance to the unloaded goods. He comfortably controls the unloading from there and is protected from influences such as noise, dust and weather.

The forklift is available in various sizes and loading capacities as well as an electric version with battery technology.

Special features	Calibrated weighing scale, scalable, flexible
Unlaoding capacity	600 m³/h | 500 t/h
Unloading time	3-5 min
Max. load capacity	30 t
Operator	1 person

Forklift with rotator
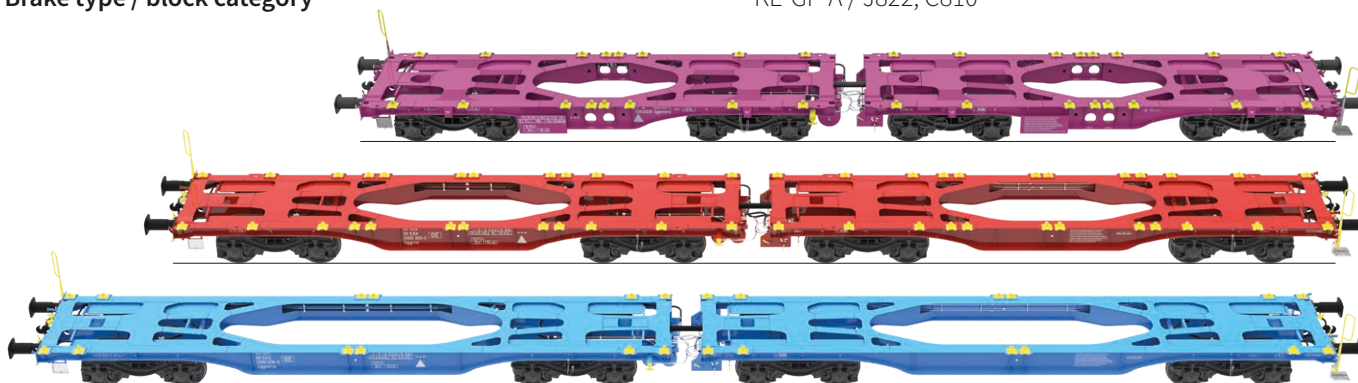
InnoWaggon – the lightweight base

Every superstructure needs a suitable base – the weight-optimized InnoWaggons provide the optimum base for the MonTainer. They consist of two close-coupled wagons in a special lightweight design, each with four axles. The wagons are approved for a maximum speed of 120 km/h.

All InnoWaggons are equipped with GPS sensors from Nexxiot that transmit position, speed, temperature and shock events. This data, available in the Innofreight OS app and on the Innofreight OS platform, can also be imported into customer systems via interfaces.

The InnoWaggon family offers double wagons in three variants: 2x30 ft, 2x40 ft and 2x45 ft, providing the appropriate basis for all Innofreight superstructures, depending on the transported goods.

Technical data	2x30 ft InnoWaggon	2x40 ft InnoWaggon	2x45 ft InnoWaggon
Classification	Sggmmrrs, 4658	Sggrrs, 4854	Sggmrrs, 4657
Track class	A, B1, B2, C2, C3, C4, D2, D3, D4		
Tare weight	28.4 t (2 x 14.2 t)	29.7 t (2 x 14.85 t)	29.9 t (2 x 14.95 t)
Max. payload	151.6 t	150.3 t	150.1 t
Max. axle load	22.5 t	22.5 t	22.5 t
Max. meter load	8.00 t/m	6.76 t/m	6.09 t/m
Max. container pins	32	48	32
Floor height above rail level	1,155 mm	1,155 mm	1,155 mm
Loading length	2 x 10,310 mm	2 x 12,370 mm	2 x 13,820 mm
Length over buffer	22,500 mm	26,620 mm	29,520 mm
Width	2,874 mm	2,878 mm	2,878 mm
Distance between bogie pins	6,500 mm	8,070 mm	9,520 mm
Bogie wheel base	1,800 mm		
Wheelset diameter	920 mm		
Number of axles	8 (2 x 4)		
Min. curve radius	75 m		
Max. speed	120 km/h		
Brake type / block category	KE-GP-A / J822, C810		

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