

TECHNICAL ASPECTS

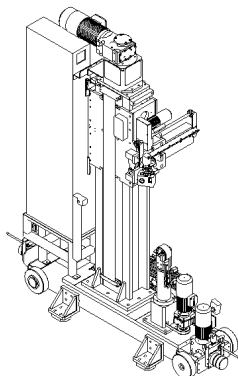
Metrocargo: the unique solution for intermodal transport.

Metrocargo system is modular with each module consisting of:

- Four lifting towers;
- One shuttle;
- Platforms.

Equipment: lifting tower

Lifting system consists of **four independent units** that identify and lift a unit load placed on the wagon train. This lifting system operates on the outside of the corner block.



The **synchronous movement** of the towers allows **precise positioning** through the acquisition of the locations of the 4 corner blocks for all types of cargo units (containers and swap bodies).

Each tower is equipped with **independent electric panel completed of PLC**, wireless communication system, drives for engine, motors for lifting and shifting, control systems and security.



Equipment: shuttle

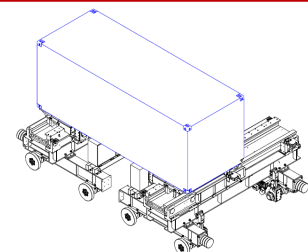


The shuttle has two **semi-shuttles** moving parallel to the rail-road track.

Each semi-shuttle has a **mobile device transfer** that moves perpendicular to the rail track. Each semi-shuttle is equipped with **electrical power, distribution and full PLC control** of coordination and with communication system dedicated.



The semi-shuttle **adapt its position automatically** according to size of the unit load to be moved.



Equipment: platforms

The staking platforms are **structures made of steel shaped** to accommodate all types of unit load devices and equipped with **fixed center** and **position sensors**.

The number of bays is a function of operations requested by the customer.



Auxiliary systems: control room

The plant is monitored in a unique place where all systems of management, control and supervision are collected together.

The system has an **intuitive graphical interface** that properly provides information to the operating staff.

Auxiliary systems: scheduling

The scheduling system (second level control) controls dispatching and scheduling of missions.

The **optimization system**, user configurable, deals scheduling tasks' sequences to be assigned to each component (dispatching missions) with the objective to **minimize handling time**.

Auxiliary systems: automation

Single components are managed by the "**PLC coordination**" that, through a dedicated data transmission network, sends different commands to the system.

The PLC coordinating represents an interface between the "scheduling systems" and forms of (un)loading freight train.



Auxiliary systems: train identification portal

This equipment **identifies the unit load** and recognizes the ISO code through a dedicated **OCR system**.

Train's composition is sent to the control room where all data are processed.



Auxiliary systems: active safety system

Making use of customized softwares and advanced technologies, this system allows to control the operational area of the plant, in total security of the staff.

Through a constant and accurate monitoring, the system intervenes in case of danger by stopping the operation.

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***I.LOG Iniziative Logistiche s.r.l.** is an engineering company specialized in the development and the promotion of innovative activities in the logistics field. Founded in 2004, the company employs engineers and corporate managers with a deep experience in logistics, company and project management. The company propose its solutions to small and medium-sized firms and to public administration, with the aim to offer them complete, reliable and flexible services. I.LOG avails itself of the collaboration of many international firms as partners and leads the European project MIT – Metrocargo Intermodal Transport.*

***Metrocargo Automazioni s.r.l.** is a company specialized in design and manufacture of equipments and automated handling systems. Headquartered in Genoa, the company is committed to the commercialization of Metrocargo system, an innovative concept for the development of intermodal transport designed to improve the efficiency of unit loads loading and unloading process thanks to its horizontal shift technology. Complete automation, quickness, adaptability to any kind of train and container size, low environmental impact, high security and the capacity to be installed under the catenary (without the need for any shunting activities) are the most valuable assets of Metrocargo technology, a unique solution for ports, interports, and logistics operators.*



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