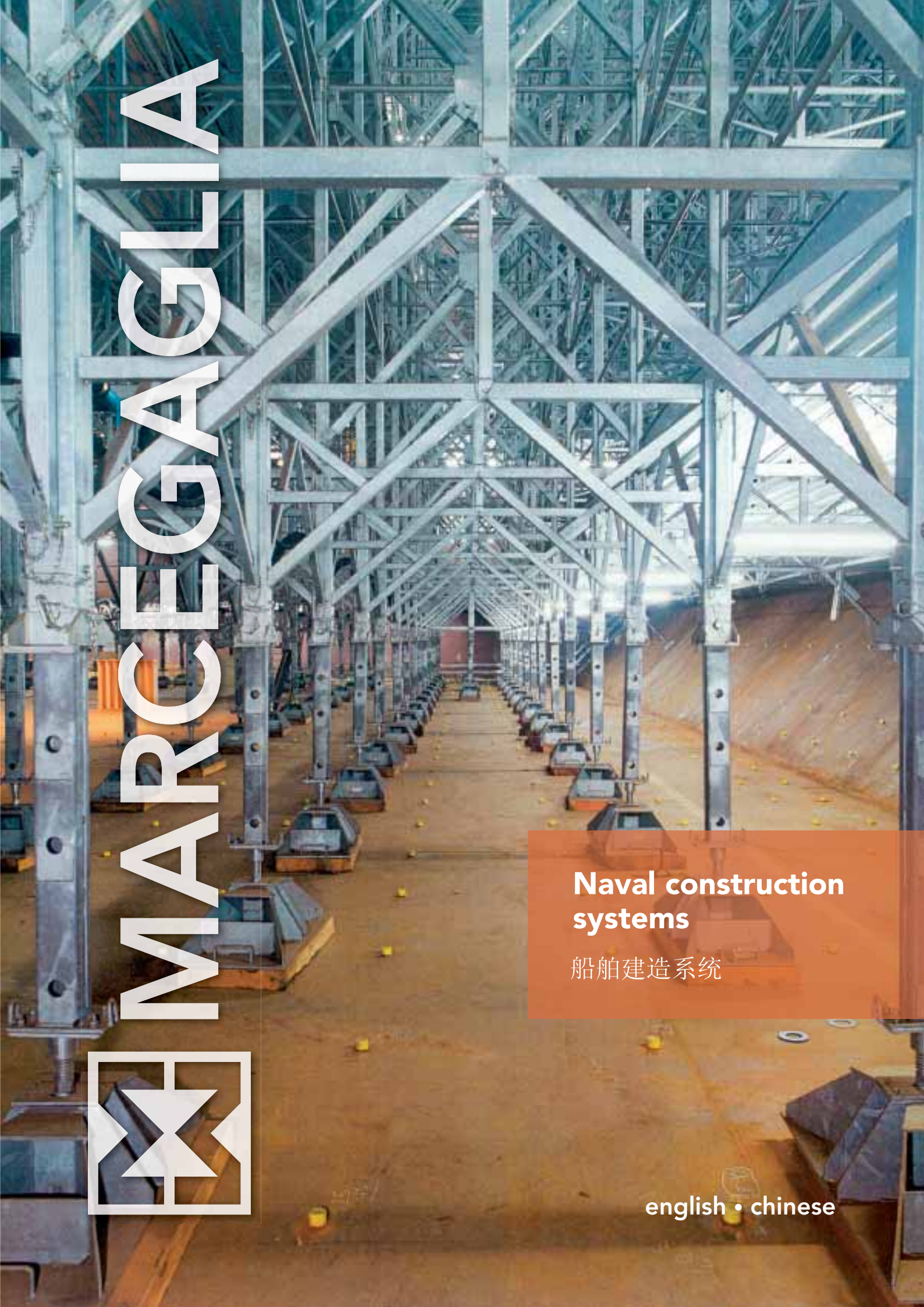


MARCEGAGLIA

Naval construction systems

船舶建造系统

english • chinese

International certifications

SCAFFOLDING: PREFABRICATED FRAMES

CNAS - MCC
Test reports no. TC-JG1-Q-2009-08; 15; 16; 17; 18.

Frame Realpont 105,
Diagonals, Bracket, Ledger

China

MARQUE NF
Equipements de chantier

Structure à cadres
Realpont 105

France

ICECON
Certificat de conformitate nr. 459/2007

Schele de fațadă,
din oțel RP 105

Romania

IGQ
Certificati di prodotto P021H, P021L

Realpont 105/EU92
a telai prefabbricati

Italy

CNAS - MCC
Test reports no. TC-JG1-Q-2009-09; 15; 16; 17; 18.

Frame Realpont 75,
Diagonals, Bracket, Ledger

China

MARQUE NF
Equipements de chantier

Structure à cadres
Realpont 75

France

ICECON
Certificat de conformitate nr. 459/2007

Schele de fațadă,
din oțel RP 75

Romania

IGQ
Certificato di prodotto P021I

Realpont 75 a telai prefabbricati

Italy

SCAFFOLDING: TUBE-COUPLER SYSTEM

CNAS - MCC
Test report
no. 2009-52558

Steel tube scaffold couplers

China

ICECON
Certificat de conformitate
nr. 458/2007

Schele de fațadă,
din oțel T/C

Romania

IGQ
Certificati di prodotto
P021A

Ponteggio metallico fisso
a tubi e giunti

Italy

Technischen
Universität München
Prüfbescheinigung gemäß
DIN EN 74

Rohr-Kupplungs-System9466

Germany

SCAFFOLDING: SM8 MULTI-LEVEL SYSTEM

CNAS - MCC
Test reports no. TC-JG1-
Q-2009-07; 14.

SM8 scaffold

China

MARQUE NF
Equipements
de chantier

Structure multidirectionelle
SM8

France

ICECON
Certificat de conformitate
nr. 460/2007

Schele de fațadă,
din oțel SM8

Romania

IGQ
Certificati di prodotto
P021G

SM8 a montanti
e traversi prefabbricati

Italy

Technischen
Universität München
Untersuchungsbericht
nr. 2681'vdH/1998

Modulgerüst System SM8

Germany

Naval construction systems

船舶建造系统

Modular system for liquid natural gas carriers

液化天然气运输船的组合系统

Metal structures that allow creating working floors to service holds' inside walls of LNG ships (holds' bottom and ceiling included). Metal structures that allow creating working floors to service holds' inside walls of LNG ships (holds' bottom and ceiling included).

Features:

- Horizontal telescoping of the working floor, all around its perimeter (max. extension 1 m).
- Vertical telescoping of the end part of the base of each upright (max. extension approx. 1 m).
- All base bearings in a longitudinal row can be simultaneously risen (aft-bow direction).
- Service elevators for all working floors.
- Service ladders at construction ends for all working floors.
- Boltless connection of structural members.
- Wooden tread floors (birch/fir multi-layer).

能够用于液化天然气船内舱壁支撑的作业平台的金属结构（包括支撑的底部和顶部）

特点：

- 整个工作平台四周可水平伸缩（最大延伸1 米）
- 每个支腿的底端可垂直伸缩（最大延伸约1 米）
- 所有的纵向负荷支腿可以同时升起（船艉–船艏方向）
- 为所有工作平台提供作业升降机
- 为所有工作平台的建造端提供作业楼梯
- 结构性组件无螺栓链接
- 木面板（桦木/枞木多层）

MATERIAL

原材料

- Hot dip galvanized steel S235JR and S355JR

- 热浸镀锌钢材 S235JR 和 S355JR

FEATURES

特点

- Working platforms: 10 or more;
- Tread floor area: over 4000 m^2 each floor, made of pre-galvanized metal sheets coated with fix birch/fir multi-layer panels.
- Max load per floor: 250 kg/m^2;
- Estimated load composition (fixed decks):
  - no. floor, 250 kg/m^2 (3rd floor)
  - no. floor, 200 kg/m^2
  - no. floors, 160 kg/m^2
  - no.1 floor, 90 kg/m^2 (7th floor);

Point load of 420 kg on a 90x30-mm area;
- Ground pressure at each upright: < 5 kg/cm^2;
- The whole structure is made of hot dip galvanized steel S235JR and S355JR; the metal floor system is made of pre-galvanized steel plate.

-工作平台：10 层或更多；
-踏板面积：每个作业平台 4000m^2以上，由预先镀锌的金属板制成，外面包有桦木/枞木多层面板。
-每个作业平台最大负荷：250 千克/m^2
-预估的负荷组成（固定的甲板）：
  - 平台编号，250 千克/m^2（第三层）
  - 平台编号，200 千克/m^2
  - 平台编号，160 千克/m^2
  - 第 1 平台，90 千克/m^2（第七层）

90 x30mm^2面积上的点负荷为 420 千克
-每个支撑腿的地面压力：< 5 千克/cm^2
-整体结构由热浸镀锌钢材 S235JR 和 S355JR 制作而成；金属平台系统由预先镀锌的钢板制作而成。

DIMENSIONS

尺寸

Approx. width 大约宽度	**Approx. length** 大约长度	**Free central span** 中心自由跨度	**Approx. height** 大约高度
40 m	**44 m**	**20 m**	**30 m**

- Dimensions are approximate and may be changed to requirements.
- 尺寸为约数，可以按照要求调整

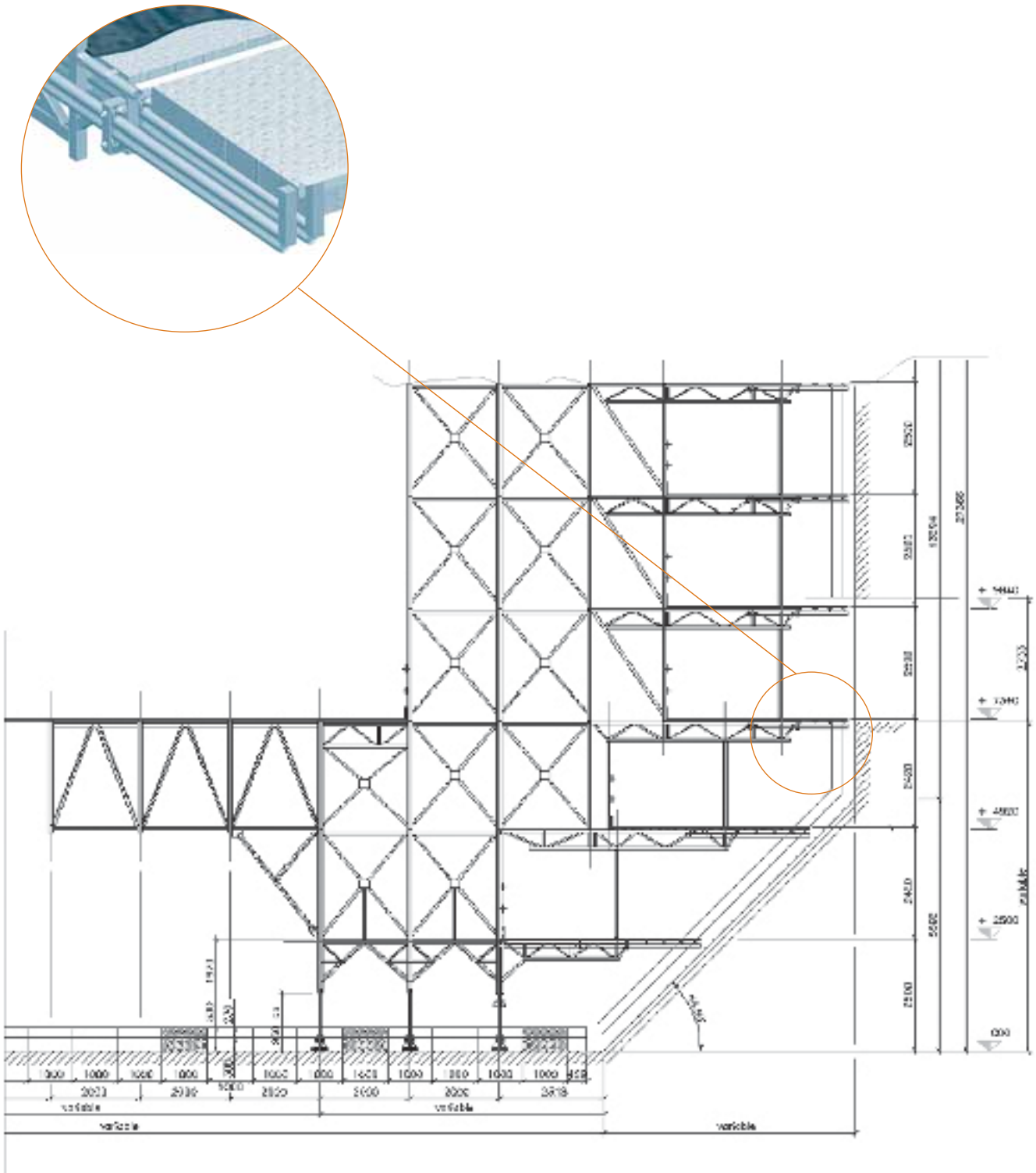
Manufacturing standards

制造标准

- C.N.R. - UNI - 10011/88
- C.N.R. - 10012/85
- C.N.R. - 10022/84
- C.N.R. - 10027/85

APPLICATION EXAMPLES

应用范例



Shipyard contracts

造船厂合同

FINCANTIERI (ITALY)

- Marcegaglia supplied Fincantieri shipyard (Italy) with the following structures, 2 amounting to 65,000 m^3 LNG vessels.

Genova Shipyard (Italy)
Vessel n. 2: no. 4 structures supplied
no. 4 elevators supplied

Tank dimensions:
Tank 1 = 12.920 m^3
Tank 2 = 21.590 m^3
Tank 3 = 21.590 m^3
Tank 4 = 17.990 m^3

Structures supplied:
• no. 4 structures supplied (dismounted and mounted again in the second LNG vessel)
• no. 4 elevators type 600/26

Cabin dimensions:
width: 1000 mm
lenght: 1700 mm
height: 2100 mm
load carried: 600 kg
speed: 26 m/min

Rough quantities of materials supplied:
• Steel structure: 585 t
• Steel planks: 271 t
• Plywood: 170 t

- Marcegaglia向Fincantieri造船厂(意大利)提供以下结构，两个共计 65000m^3的液化天然气船。
热那亚造船厂（意大利）
• 船数量 2：配套了 4 舱结构
配套了 4 台升降机
舱尺寸：
1 舱 = 12.920 m^3
2 舱 = 21.590 m^3
3 舱 = 21.590 m^3
4 舱 = 17.990 m^3

提供的结构：
• 提供的 4 套结构（卸载并在第二艘液化天然气船中再次装船）
• 4 台升降机，型号 600/26

船舱尺寸：
宽度: 1000 mm
长度: 1700 mm
高度: 2100 mm
载重负荷: 600 kg
速度: 26 m/分钟

所提供原材料的大致数量：
• 钢结构：585 吨
• 钢跳板：271 吨
• 胶合板：170 吨

Shipyard contracts

造船厂合同

IZAR (SPAIN)

- Marcegaglia supplied Izar shipyard (Spain) Izar, Spagna, with the following 5 structures, amounting to 138,000 m3 LNG vessels.

Sestao (Bilbao, Spain)
- Vessel no. 319: no. 4 structures supplied
  no. 4 elevators supplied
- Vessel no. 321: no. 4 structures supplied
  no. 4 elevators supplied

Puerto Real Shipyard (Cadiz, Spain)
- Vessel n. 087: no. 4 structures supplied
  no. 2 extra structures supplied
  no. 4 elevators supplied
- Vessel n. 103: no. 4 structures supplied
  no. 4 elevators supplied
- Vessel n. 105: no. 3 structures supplied

Izar tank dimensions:
Tank 1 = 24.880 m^3, Tank 2 = 44.042 m^3
Tank 3 = 44.042 m^3, Tank 3 = 38.861 m^3

Structures supplied:
- n. 21 structures supplied (some of them have been dismounted and mounted again in other holds, including two structures supplied for other internalneeds of the shipyard)
- n. 16 elevators type 2000/29

Cabin dimensions:
width: 1500 mm, lenght: 3000 mm, height: 2100 mm, load carried: 2000 kg, speed: 29 m/min

Rough quantities of materials:
- Steel structure: 4.600 t (partially manufactured by the Shipyard)
- Steel planks: 2.300 t
- Plywood: 1.750 t

- Marcegaglia为Izar造船厂(西班牙)Izar, Spagna的 138,000 m^3液化天然气船供应了以下 5 套结构。

Sestao (毕尔巴鄂, 西班牙)
- 船号 319: 供应了 4 套结构
  4 套升降机
- 船号 321: 供应了 4 套结构
  4 套升降机

Puerto Real 造船厂 (Cadiz,西班牙)
- 船号 087: 供应了 4 套结构
  2 套外部结构
  4 套升降机
- 船号 103: 供应了 4 套结构
  4 套升降机
- 船号 105: 供应了 3 套结构

Izar 舱尺寸:
1 舱 = 24.880 m^3, 2 舱 = 44.042 m^3
3 舱 = 44.042 m^3, 3 舱 = 38.861 m^3

供应的结构:
- 所提供的 21 套结构(部分已经卸载并在其它船上重新装载，其中包括为造船厂其它内部需求提供的两套结构)
- 16 台升降机型号 2000/29

船舱尺寸:
宽度: 1500 mm, 长度: 3000 mm, 高度: 2100 mm, 载重负荷: 2000 kg, 速度: 29 m/分钟

原材料的大致数量:
- 钢结构: 4.600 吨 (部分由造船厂制造)
- 钢跳板: 2.300 吨
- 胶合板: 1.750 吨

Shipyard contracts

造船厂合同

HUDONG ZHONGHUA (SHANGHAI)

- Marcegaglia supplied Hudong Zhonghua shipyard (China) with the following 3 structures, amounting to 150,000 m^3 LNG vessels.

Hudong Zhonghua Shipyard (Shanghai, China)
- Vessel n. 1: no. 4 structures supplied
  no. 4 elevators supplied
- Vessel n. 2: no. 4 structures supplied
  no. 4 elevators supplied
- Vessel n. 3: no. 4 elevators supplied and designed

Hudong Zhonghua tank dimensions:
Tank 1 = 27.994 m^3
Tank 2 = 45.885 m^3
Tank 3 = 45.885 m^3
Tank 3 = 44.086 m^3

Structures supplied:
- no. 8 structures supplied
- no. 12 elevators type 1500/32

Cabin dimensions:
width: 1500 mm
lenght: 3000 mm
height: 2100 mm
load carried: 1500 kg
speed: 32 m/min

Rough quantities of materials supplied:
- Steel structure: 1.870 t
(partially manufactured by the Shipyard)
- Steel planks: 930 t
- Plywood: 650 t

- Marcegaglia为沪东中华造船厂(中国)提供以下 3 套结构, 总计达 150,000 m^3 液化天然气船。

沪东中华造船厂
(上海,中国)
- 船 号 1: 供应了 4 套结构
  供应了 4 台升降机
- 船 号 2: 供应了 4 套结构
  供应了 4 台升降机
- 船 号 3: 供应及设计的 4 台升降机

沪东中华船舱尺寸:
1 舱 = 27.994 m^3
2 舱 = 45.885 m^3
3 舱= 45.885 m^3
4 舱= 44.086 m^3

供应的结构:
- 供应的 8 套结构
- 12 台升降机， 型号 1500/32

船舱尺寸:
宽度: 1500 mm
长度: 3000 mm
高度: 2100 mm
载重负荷: 1500 kg
速度: 32 m/分钟

所提供原材料的大致数量:
- 钢结构: 1.870 吨
  (部分由造船厂制造)
- 钢跳板: 930 吨
- 胶合板: 650 吨

Ladder towers for ships under construction

在建的船只梯塔

Ladder towers in carpentry allow the quick and safe access to the decks of ships under construction and can be combined with building yard elevators, placed on the short sides of the tower. The ladder tower can vary in size as a function of the shipyard requirements.

通过梯塔可以迅速安全地到达在建船只的甲板，而且还可以与造船厂升降机结合在一起，升降机置于塔的顶端。梯塔可以根据造船厂功能的需求而在尺寸方面不尽相同。

DIMENSIONS

尺寸

Overall floor dimensions of the ladder tower 梯塔的整体板尺寸	**Typical section dimensions** 典型的部分尺寸	**Overall height** 整体高度
4,00 x 6,00 m	2,50 x 6,00 m	up to 50 m without anchoring

MATERIAL

原材料

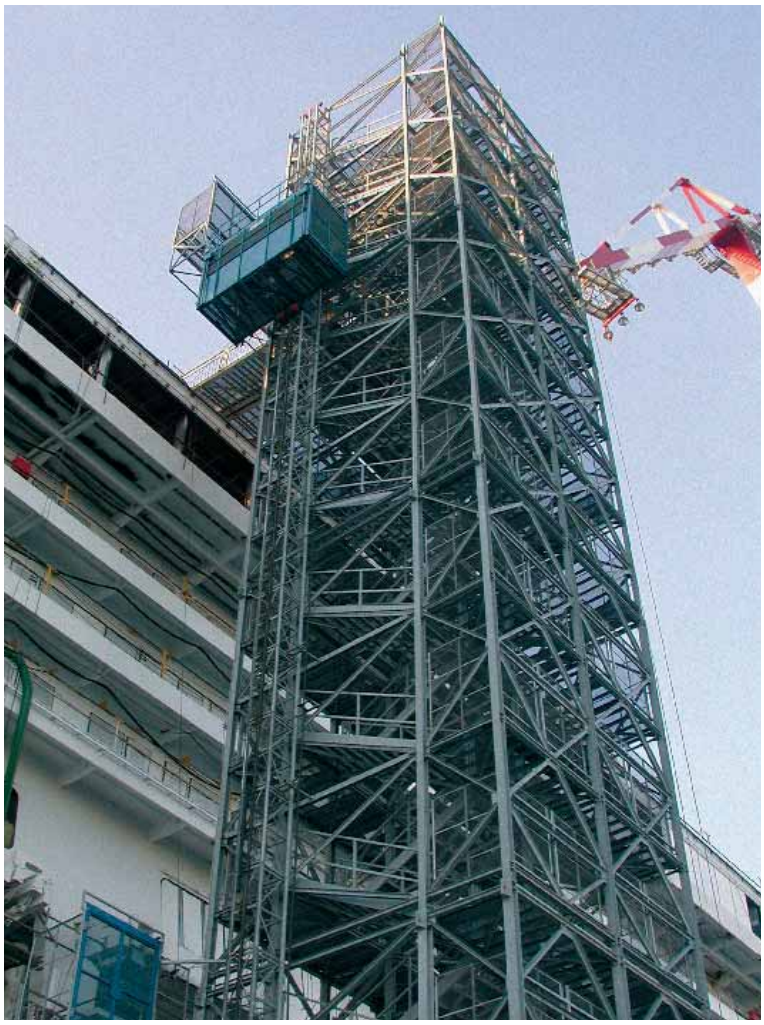
- Hot dip galvanized steel S235JR

- 热浸镀锌钢材 S235JR

Manufacturing standards

制造标准

- D.M. 9 gennaio 1996
- D.M. 16 gennaio 1996
- Circolare 4 luglio 1996
- C.N.R. - 10027/85
- CNR UNI 10011
- Legge n. 1086 del 5 novembre 1971



FEATURES

特点

- Gangplanks attached to the tower: no. 2 (depending on the shipyard's requests);
- Gangplank dimensions: 1.50 x 11.00 m;
- Disembarkation deck on ship: <= 8.00 m (depending on the shipyard's requests);
- Elevators integral with the tower: no. 2;
- Type of elevator: PD1000/36 (depending on the shipyard's requests);
- Elevator capacity: 1000 daN (12 people);
- Elevator speed: 36 m/min;
- Elevator car internal dimensions: 1.50 x 3.00 m. - H=2.10 m.

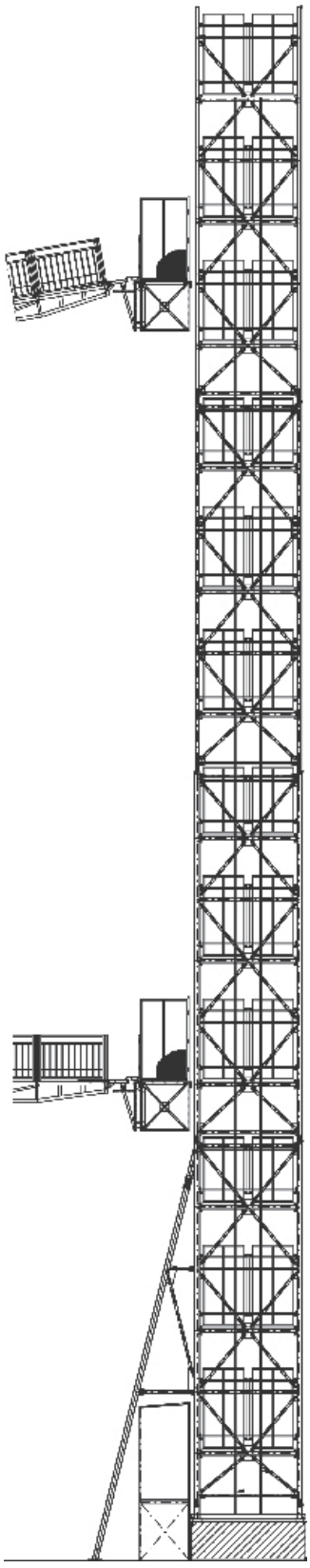
Towers can come in different sizes, for example:
• Tower with single flight ladder;
• Tower with net flight width of 1.20 m;
• Double tower consisting of two adjacent towers sharing the inside uprights;
• Towers of varying dimensions and height, anchored to the ship's shell.
Towers have been designed in compliance with existing standards and regulations as regards accidental loads of wind, snow, earthquakes, and for an overload of 400 daN/m^2 evenly distributed on all ramps and on all gangplanks and disembarkation decks.

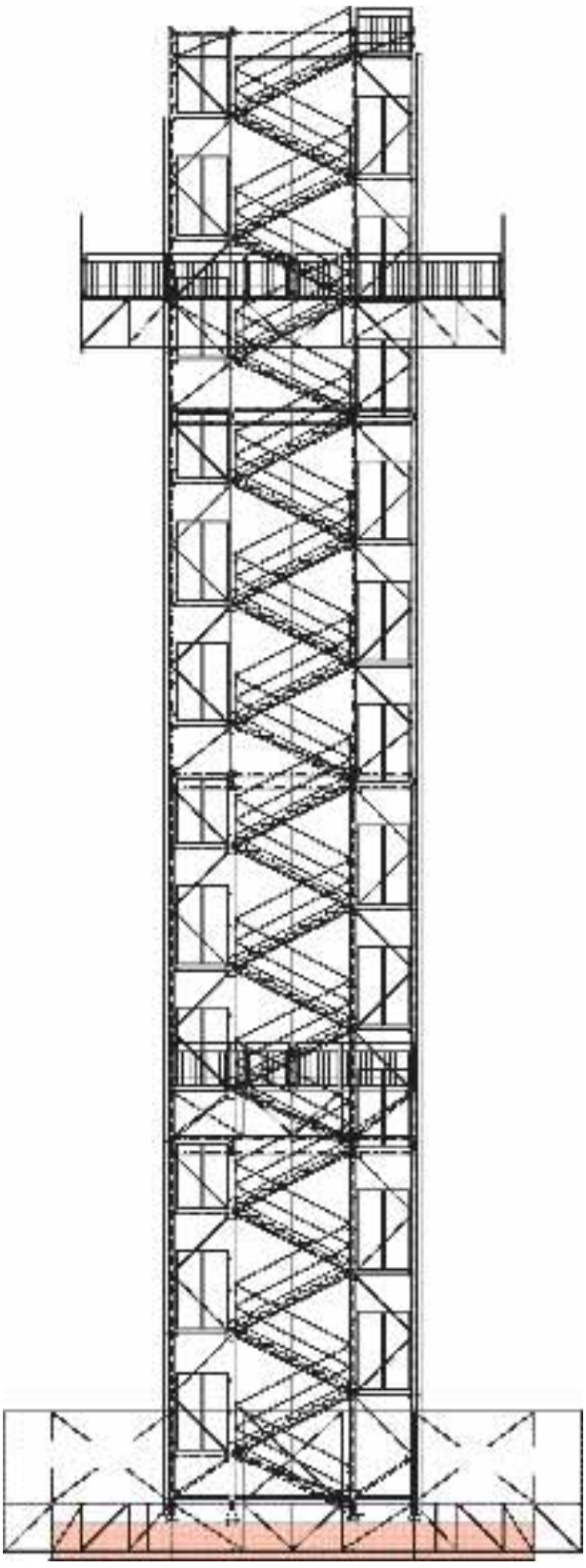
- 塔上所附的跳板数量：2(依据造船厂的需求);
- 跳板尺寸: 1.50 x 11.00 m;
- 登船甲板: <= 8.00 m (依据造船厂的需求);
- 与塔结为一体的升降机:数量 2;
- 升降机型号: PD1000/36 (依据造船厂的需求);
- 升降机功率: 1000 daN (12 人);
- 升降机速度: 36 m/分钟;
- 升降机舱内部尺寸: 1.50 x 3.00 m. – 高度 =2.10 m.

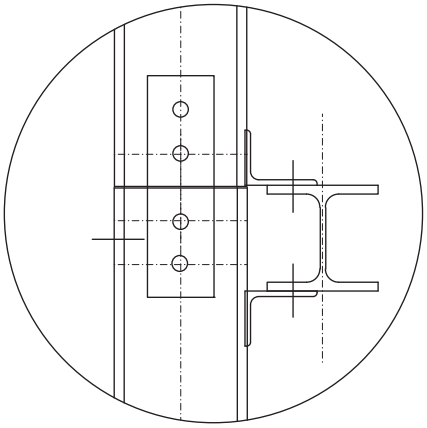
根据塔尺寸不同可分为：
• 单梯段梯塔;
• 梯段净宽度 1.20 m;
• 由两个共用内部支撑的相邻的塔构成的双塔;
• 固定在船壳板上的不同尺寸和高度的塔。
塔的设计依据现有规格规定，同时也考虑到风、雪、地震等意外负荷，以及以 400 daN/m^2 的载荷密度平均分布在所有梯升以及所有跳板和登陆甲板上的过载荷。

SINGLE LADDER TOWER, PORTO MARGHERA (ITALY)

单梯塔，Porto Marghera (意大利)

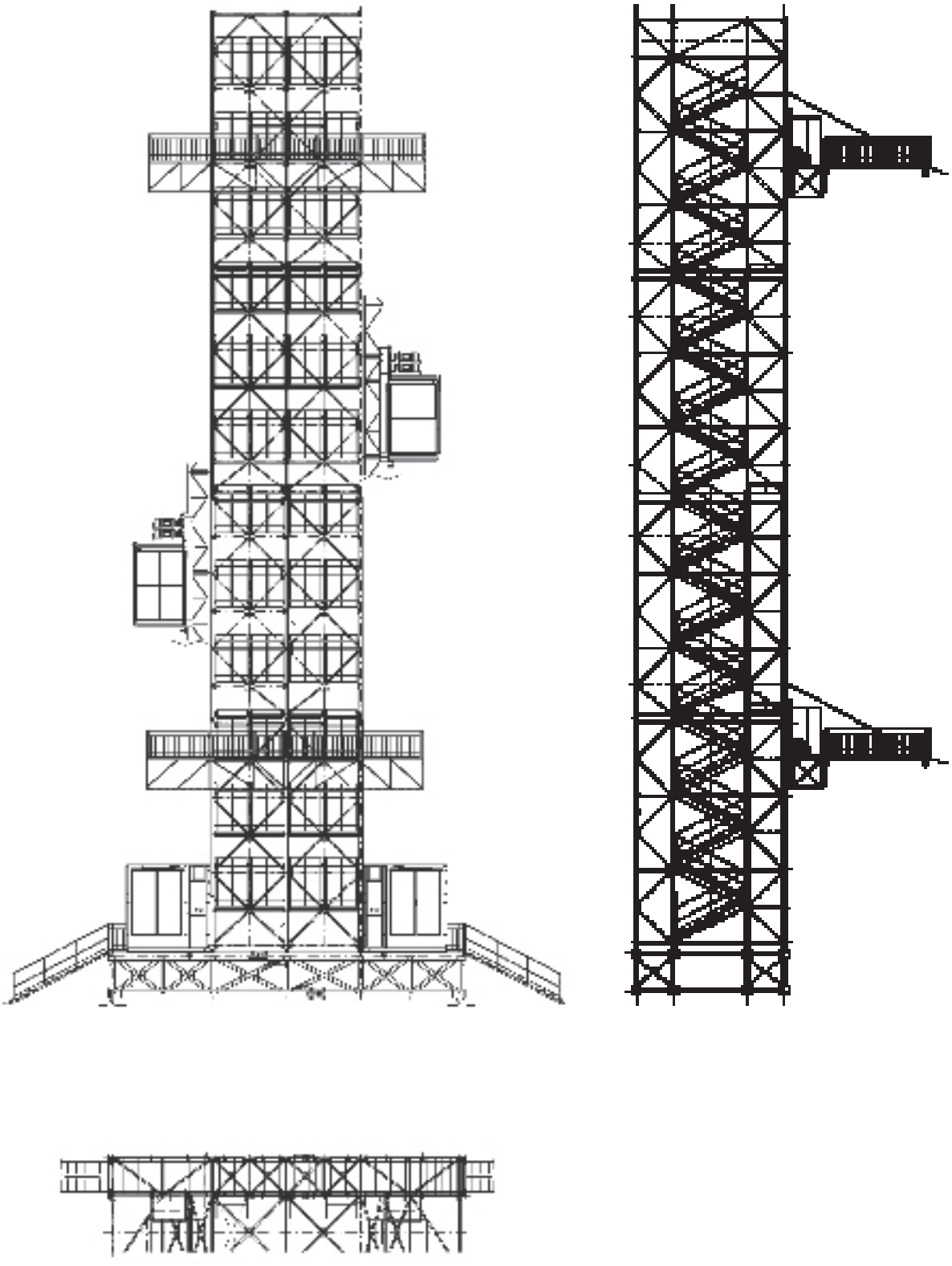






DUAL LADDER TOWER, SESTRI (ITALY)

双梯塔, Sestri (意大利)



Service gangways on the ship's shell

船壳板上的工作舷梯

Gangways can vary in shape and dimensions, depending on the shipyard's needs.

依据造船厂的需求不同舷梯可能在形状和尺寸上有所不同。

FEATURES

特点

- Modularity of 1.80 m bays;
- An ordinary scaffold can be assembled above, up to a height of approx. 10 m;
- An ordinary scaffold can be hung beneath, up to approx. 10 m in height;
- Possible quick assembly on carpentry brackets attached to the ship's shell;
- Possibility of connection to tube-coupler towers.

The accidental load that can be applied on the working floor is 300 daN/m^2.

- 标准的 1.80 m 底板;
- 可以在上面装配普通的脚手架, 高度可以达 到约 10 m;
- 可以在下面悬挂普通的脚手架，高度可以达约 10 m;
- 可以实现在船壳板上所附的木质托架上的快速装配;
- 可与塔上的管型联结相连接。

可承受工作平台上的意外负荷为 300 daN/m^2。

MATERIAL

原材料

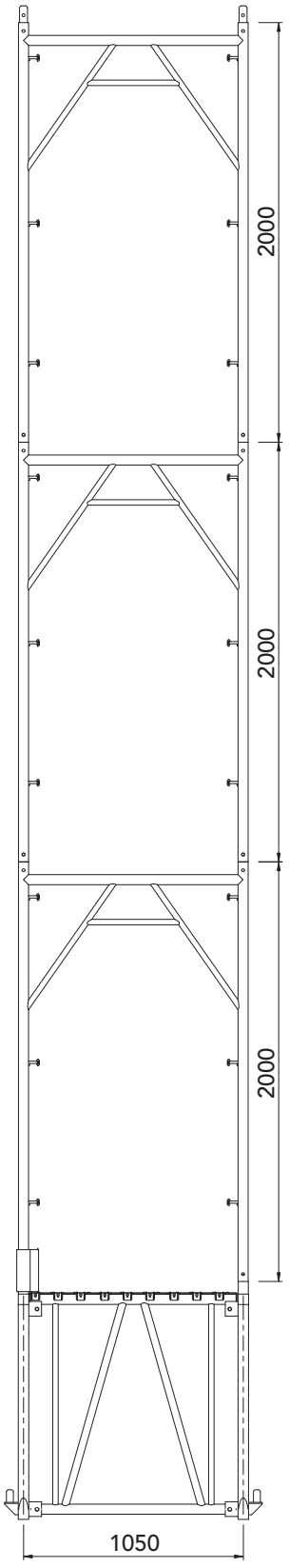
- Hot dip galvanized steel S235JR

热浸镀锌钢材 S235JR

Manufacturing standards

制造标准

- D.M. 9 gennaio 1996
- D.M. 16 gennaio 1996
- Circolare 4 luglio 1996
- CNR UNI 10011
- Legge n. 1086 del 5 novembre 1971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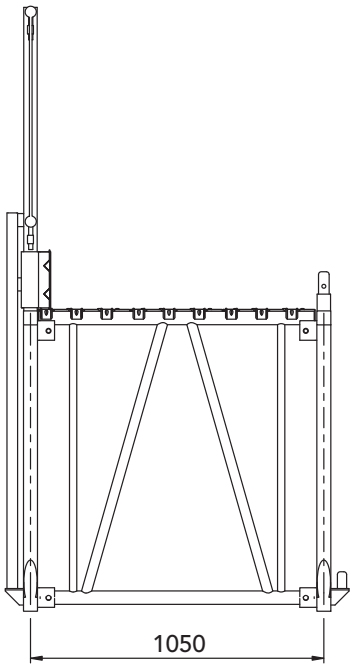
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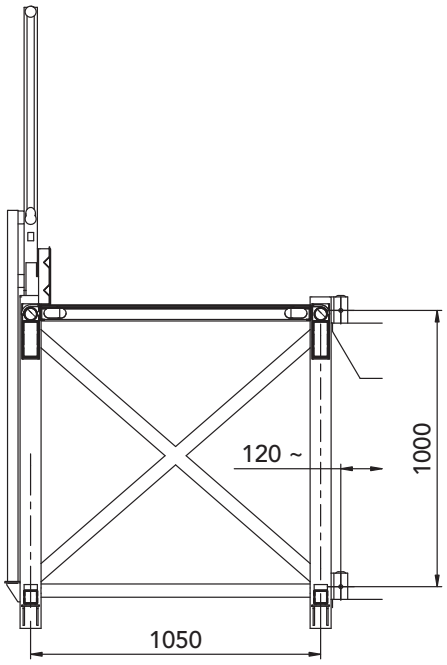
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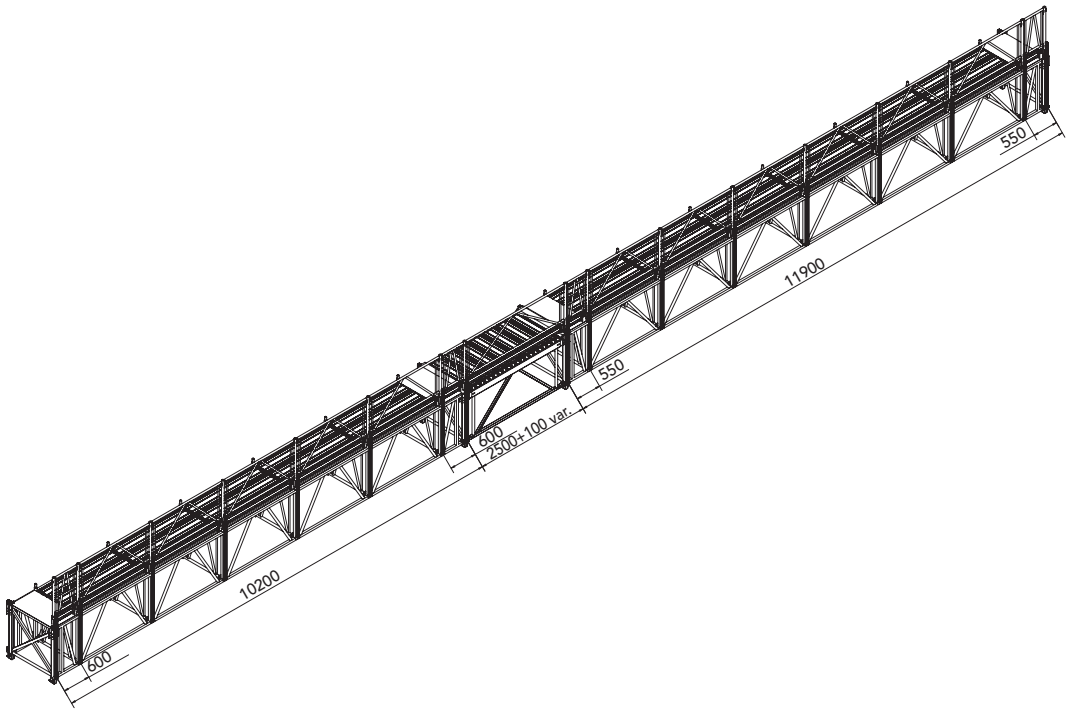
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