

Ferris Wheels Collection



SARTORI

AMUSEMENT RIDES

Rides manufacturers since 1957

Ferris Wheels



Park
Model



On trailer



Portable

Sartori Rides Wheels are designed and manufactured in different sizes and models.

The portable version fits all on one semitrailer, which means a faster setup and dismantling, and no extra costs for transport.

They are unique in their design and decoration. The manufacturing is according to European Standards, using high-quality materials and certified procedures. Cabins are comfortable, if necessary they are fully equipped with air conditioning and a heating system, wheelchair friendly.

Sartori Wheels are not only amusement rides but touristic attractions.

Where Fun takes Shape



PROJECT

The structural and dynamic calculations are based on the standards EN 13814 for temporary structures. Among others, the FEM (Finite Element Method) program and the computer wind simulation test are used for the design of the Ferris Wheel. Wind and weight calculations will be performed in accordance with EN 13814.

The Ferris Wheel is completely designed, calculated and built according to EN 13814 standards. Upon request, the standards will be adapted to meet local standards and requirements.

PARAMETERS

- In operation:

The wind pressure q in the project (up to 20 m / sec) is 0.245 kN / m².

The general strength on the design area of the structure is $0.045 \times 1 \times 0.75 \times 2 = 0.368$ kN / m².

- Not in operation:

The wind pressure q in the project (up to 68 m / sec) is 0.245 kN / m².

The general force on the design area of the structure is $3 \times 1 \times 0.75 \times 2 = 4.5$ kN / m².

STRUCTURE

It is composed by:

- Columns
- Support Ring
- Main Axle
- Cabins
- Spokes

SUPPORT SHAFTS

The base of the building is made up of supports, made from circular tubes. By placing water tanks at the end of the supports, it is possible to connect the support trees up to here. These trees are assembled in a way called "A-structure" facing each other. The A-structures will be connected to the main axle of the wheel at the highest point of the A-structure by means of a special hub due to particular needs of the positions of the support shafts.

STORAGE/COATING SYSTEM

Support poles, spokes, ring parts and main axle are sandblasted SA 2.5, grounded twice and painted once with a last coat of paint. Storage will take place via a guarantee certificate from the paint supplier. The support poles, spokes, ring parts and main axle have a:

First state:	70 µm
Intermediate state:	70 µm
Upper layer:	40 µm

ICG subjects will have an extra top layer, specially designed for extreme environmental conditions:

First state:	80 µm
Intermediate state:	40 µm
Upper layer:	50 µm

Painting frequency: every 5 - 10 years (according to the maintenance frequency).

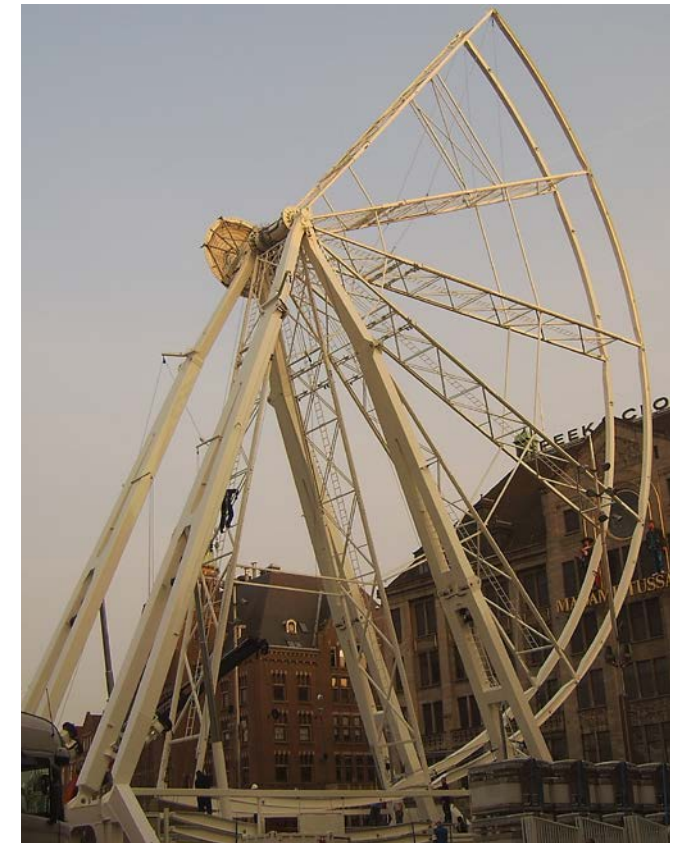
To confirm the frequency of this painting, please review the below.

Technical information on the coating system.

GENERAL DESCRIPTION

Polyurethane coating with good water resistance and colour stability. Suitable for painting of polyeste nacelles, tanks etc.

Water resistance and short contact with organic and inorganic acids and alkalisers Application as chemical resistance, resistant coating with polyurethane - or pre-treated epoxy steel and galvanized steel.



PRODUTC INFORMATION

Coating type: Two acrylic coating components with aliphatic isocyanate

Final polishing: RAL colours

Mass density: ~ 1.2 kg / L (mixed product)

Solid contents: ~ 50% of the volume (mixed product)

VOC: ~ 450 gr / L (volatile organic compound)

Recommended film thickness: 40 micrometers d.f.t. per layer
80 micrometers w.f.t. per layer (undiluted)

Theoretical distribution speed: At 40 micrometers d.f.t. 12.5 m² / L

Practical distribution speed: It depends on various factors such as the shape of the object, profile of the surface, method of application, application of circumstance and experience.

Some of the guiding principles are: Brush / rollers 85-90% of the theoretical distribution speed.
Treatment 50-70% of the theoretical distribution speed.

Flash point ISO 1523: Base 23 ° C
Hardener 30 ° C
2V1
Thinner JJ 22 42 ° C
Heat resistance 120 ° C



APPLICATION INSTRUCTIONS

Mixing percentage: Volume: Base - Hardener 2V189: 11

Weight: Base - Hardener 2V1 90:10

Mixing Instructions: Base and hardener should be mixed and applied at a temperature above 10° C. At lower temperatures an extra thinner is required, which gives a slight resistance to failure and which delays hardening.

Feed-in time: At 20 ° C not necessary
At 10 ° C at least 10 minutes

Melting time after mixing: 20 liter packaging: about 16 hours at 10 ° C
 about 6 hours at 20 ° C
 about 4 hours at 30 ° C

Application conditions: During application and storage, the temperature should be above 5 ° C, to obtain maximum resistance against chemical mechanical factors.

The surface should remain dry and the surface temperature should be at least 3 ° C above the condensation temperature.

During application and hardening in small and closed spaces, it is necessary to continuously refresh the air to remove the solvent vapors, this for conservation, health and safety.



SURFACE CONDITIONS

They can be applied primarily Polyfinish SF-Duplex, Monopox SF-HB or Monopox ZF universal, this depends on the manufacturer's advice.

REPAIR & MAINTENANCE

Clean the surface thoroughly with a suitable cleaning preparation or with a water vapor based cleaning. Remove salts and other impurities using high pressure running water jets. Remove rust with abrasive jet (water) Sa 2 ½ or mechanically remove it up to St. 2-3. Apply the recommended painting system on the clean surface.

Removing the rust mechanically or by hand gives a lower quality than cleaning with an abrasive jet (water) and will result in less protection than the applied painting system.

DESCRIPTION OF SAFETY

Transport classification:

	ADR / VLG	IMCO	UN
Base	∅	3.31c	3.31c
Hardener 2V1	3.3	3.3	3.3
Thinner JJ 22	1263	1263	1263

Labeling according to EC principles:

Symbol Xn: harmful

R38: if inhaled or in contact with skin

It Contains: xylene

S23: irritating to the skin

R10: Flammable

S38: do not breathe gas / fume / vapor / spray

R20 / 21: harmful if inhaled or in contact with skin

P93: in case of insufficient ventilation, wear the equipment for adequate breathing. Contains isocyanates, read the manufacturer's directives

Ventilation Rules:

	MAC	10% LEL	MAC = Maximum acceptable concentration LEL = Minimum explosion limit See also the safety information data
Polyfinish ZA	1510 m3 / L	66 m3 / L	
Thinner JJ 22	1745 m3 / L	108 m3 / L	



CONTROL SYSTEM

TRANSMISSION DESCRIPTION & CONTROL SYSTEM

A PLC digitally controls the fully automatic transmission and the loading system.

This system is connected to the PC with a touch screen colour screen, which is also able to connect to the Internet and E-mail for an online backup service (optional).

The software is designed and developed specifically to support the entire Ferris Wheel for every technical aspect. The control system is supplied with a power indicator, a fault indicator, and a logbook. The full control system is already available for a central information system on central maintenance.

The Ferris Wheel rotates thanks to self-cooling direct current (DC) motors, which are controlled by a PLC and a converter (Pn = 23.5 kW, IP 23 with SEW pinion). The chosen transmission system is a friction transmission system made up of individual motor units that use rubber tires. This way of operating the wheel allows perfect synchronization. In order to ensure the adequate friction of this system, the outer rim of the wheel will be covered with a special material.

The adequate standard power supply required for the transmission system is 380/415 V, 50 / 60Hz. The control system has an evacuation mode with battery power system, in case of power failure. This battery system ensures that the wheel can be locked and unlocked safely by handling the safety locks, which are constantly at a voltage of 24 Volt.

Passengers will descend safely, and will not have to wait for the power to be restored, even when 24-volt safety locks cannot be used.

ENGINES:

With the use of three-phase alternating current technology, we proceed with the use of static frequency converters with brake resistors. This avoids problems with network supplies and network reactions.

In addition, there is the possibility of also completing the action of the motors at the generator level. However, consumption is increased through:

- Supply of brake blades and resistors
- Wiring of protected lines for a better performance of the motor lines
- Adaptation of the change in consumption of the three-phase alternating current circuit diagram

TECHNICAL DETAIL:

Operating voltage

of the electrical equipment:

400V +/- 10%, 3 ~ / N / PE, 50 Hz

Control voltage:

230V AC / 24 V DC

Standard:

VDE / DIN / IEC

Control unit ambient temperature:

Max. 30 ° C

SPEED:

Movement:

Circular

Maximum speed:

1.5 rpm - 4 m / s

Maximum acceleration:

0.087 m / s²

Maximum deceleration:

- 0.087 m / s²

LIGHTING

LED:

- Each feet contains 12 individual lights. Different colours are available such as red, green, yellow, blue etc
- Possibility to integrate the system of circuit lights that run with lively movements and or projections of figures.
- The lighting effect is powered by LED technology which offers:

- Ultra long bulb life
- Minimum maintenance
- Low heat emission
- Low energy consumption

TECHNICAL DETAIL:

Voltage:

110/120 V

Lights/LED:

150-300 mcd

Energy consumption:

1.0watt / ft

Replacement parts:

2.5ft/76cm

Leds per ft:

12

UV resistance:

Yes

CSA approval:

Yes

Ce Approval:

Yes

CABINS

GENERAL DETAILS

- The capacity is 8 people per subject;
- Each subject is composed of an operator safety light above the doors to confirm the closing status with the appropriate locking system of the carousel control system;
- Painting in one of the UV resistant colors inside and out;
- Gray painted windows with polycarbonate polish;
- Progressive numeration;
- Supply of all symbols, writings and systems required (numbering, no smoking, maximum effective weight, etc.);
- Two selected cars will be designed and intended for people with disabilities, with access through doors with a maximum opening of 780-800 mm on each side of the subject;
- Ramps with small steps for a simple and safe entrance (optional);
- Standard door opening 600 mm;
- Mechanical forced ventilation through grates in the floor (no power needed).

GENERAL DETAILS

Mechanical doors on one side (manually) with redundant mechanical locking devices (optional: door on both sides).

Intelligent wireless communication (optional)

Each subject can be supplied with a voice system (microphone, two speakers), a panel with buttons (as seen in the elevators) for operator call and double intercommunication, an individual PC unit and a radio broadcast which includes a pair of antennas. The antenna is integrated into the floor of each subject.

All functions are controlled by a central PC unit in the operator's cabin, where the other pair antenna is installed. The central unit is connected via Ethernet to the Simatic PLC and to the visualization system, which allows for example to see the individual temperature of each subject, the AC unit whether in use or not, any specific booth that calls the booth of the operator, doors not properly closed on each subject, etc.

The systems provide music and voice programmed by radio transmitter with the possibility for the passenger to choose between 4 different languages.

INSTALLATION

It depends on local conditions; the installation time will be approximately 7 working days.

Internal General Description

- Lifiable benches;
- Resistant checkered floor strip
- Ceiling finished with a soundproofing plastic (to prevent condensation);
- Each person with a ceiling with soundproofing plastic must be in a non-combustible material;
- Each subject will be supplied with internal LED lights inside the car including passenger access switch. (optional)

Internal General Description

- Windows that reflect light, painted blue or grey
- Aerodynamic shape
- Each subject can be supplied with an externally mounted access step
- External LED lighting (optional)
- Water and wind resistant construction
- Colour: to be agreed with the buyer

Heating / Cooling / Ventilation (optional)

- Heating / AC unit

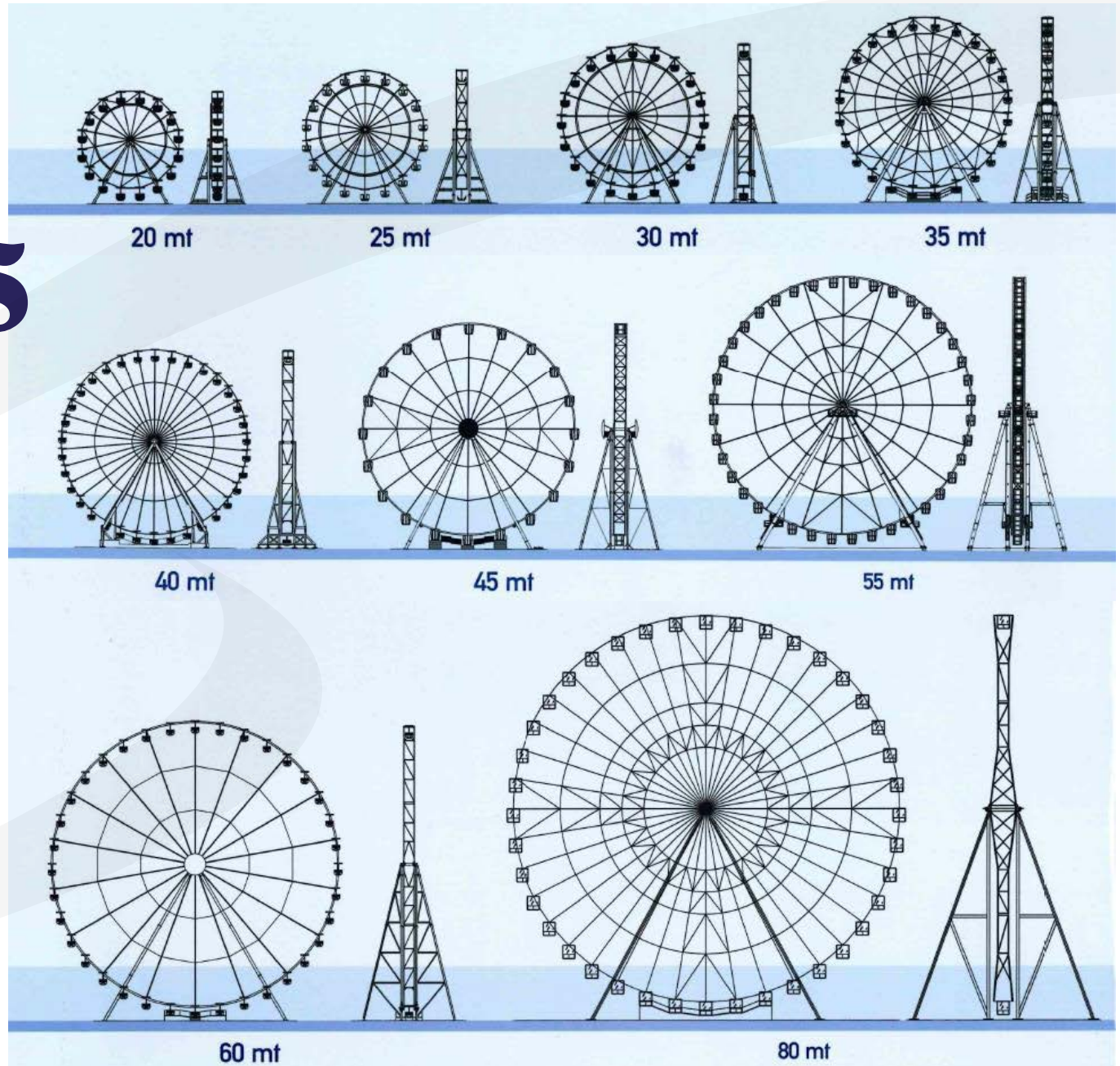
TESTING

The test will be performed by the Sartori Rides.

A qualified engineer will provide instructions and explanations on maintenance and operator staff and the wheel systems will be checked by one of our staff (maximum 7 working days).

The engineers will hold theoretical seminars before the buyer's employees start working with the carousel.

Ferris Wheels for every size you need



Ferris Wheels

20/25 mt



Park Model



On trailer



Portable

Base Size: ~ 18.8 x 8.5 mt - 61.6 x 27.8 ft

Height: ~ 20-25 mt - 65.6-82 ft

Speed: ~ 1.3 r.p.m.

Vehicles: 14 - 16

Loading: 2 gondolas at a time

Seats/Vehicle: 4 seats/each

Seats capacity: 56 - 64 seats

Th. Capacity: ~ 1120-1300 passengers/h

Lighting: ~ 6 kW (std. package)

Moving Power: ~ 50 kW

Trasmission: Drive by friction

Emerg. procedure: Auto

Wind resistance: According te EN Std.

Drive system: Full PLC System



Ferris Wheels

30/35 mt



Park Model



On trailer



Portable

Base Size: ~ 17 x 11 mt - 55.7 x 36 ft

Height: ~ 30-35 mt - 98.4-114.8 ft

Speed: ~ 1.1 r.p.m.

Vehicles: 21

Loading: 3 gondolas at a time

Seats/Vehicle: 6 seats/each

Seats capacity: 126 seats

Th. Capacity: ~ 600 passengers/h

Lighting: ~ 6 kW (std. package)

Moving Power: ~ 52 kW

Trasmission: Drive by friction

Emerg. procedure: Auto

Wind resistance: According te EN Std.

Drive system: Full PLC System



Ferris Wheels

40/45 mt



Park Model



On trailer



Portable

Base Size: ~ 23 x 18 mt - 75.4x 59 ft

Height: ~ 40-45 mt - 131.2-147.6 ft

Speed: 0.1/1 r.p.m.

Vehicles: 27

Loading: 3 gondolas at a time

Seats/Vehicle: 6 seats/each

Seats capacity: 162 seats

Th. Capacity: ~ 750 passengers/h

Lighting: ~ 15-20 kW (std. package)

Moving Power: ~ 52 kW

Trasmission: Drive by friction

Emerg. procedure: Auto

Wind resistance: According te EN Std.

Drive system: Full PLC System



Ferris Wheels

50/60 mt



Park
Model

Base Size:	~ 26 x 17 mt - 85.3x 55.7 ft
Height:	~ 50-60 mt - 164-196.8 ft
Speed:	Adjustable
Vehicles:	36
Loading:	3 gondolas at a time
Seats/Vehicle:	6 seats/each
Seats capacity:	216 seats
Th. Capacity:	~ 1250 passengers/h
Lighting:	~ 20 kW (std. package)
Moving Power:	~ 64 kW
Trasmission:	Drive by friction
Emerg. procedure:	Auto
Wind resistance:	According te EN Std.
Drive system:	Full PLC System



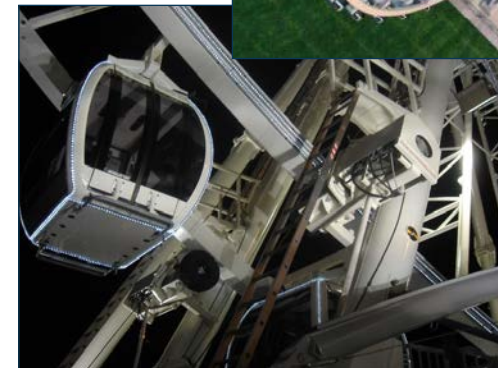
Ferris Wheels

80 mt



Park
Model

Base Size:	~ 40 x 27 mt -131.2x 88.5 ft
Height:	~ 80 mt - 262.4 ft
Speed:	Adjustable
Vehicles:	40
Loading:	3 gondolas at a time
Seats/Vehicle:	8 seats/each
Seats capacity:	320 seats
Th. Capacity:	~ 1280 passengers/h
Lighting:	~ 25 kW (std. package)
Moving Power:	~ 80 kW
Trasmission:	Drive by friction
Emerg. procedure:	Auto
Wind resistance:	According te EN Std.
Drive system:	Continuous rotation

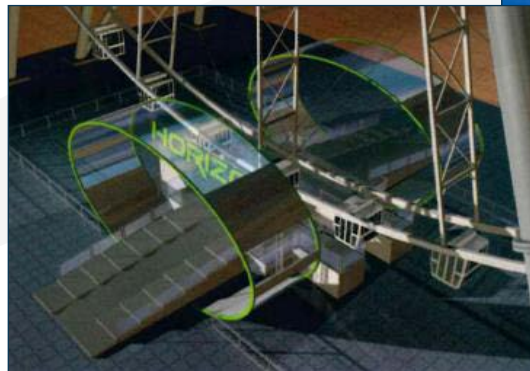


Ferris Wheels

100 mt



Park
Model



Base Size: ~ 45 x 30 mt - 147.6x 98.4 ft

Height: ~ 100 mt - 328 ft

Speed: Adjustable

Vehicles: 50

Loading: 3 gondolas at a time

Seats/Vehicle: 8 seats/each

Seats capacity: 400 seats

Th. Capacity: ~ 1200 passengers/h

Lighting: ~ 30 kW (std. package)

Moving Power: ~ 100 kW

Trasmission: Drive by friction

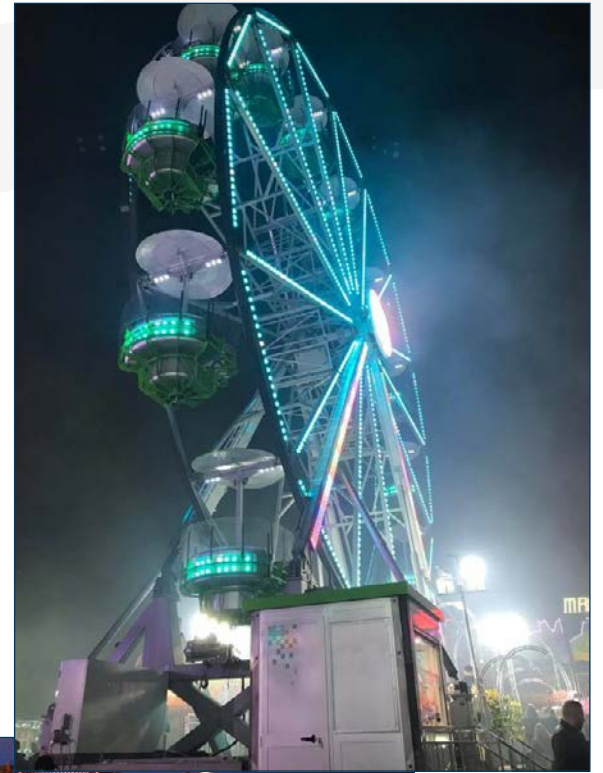
Emerg. procedure: Auto

Wind resistance: According te EN Std.

Drive system: Continuous rotation



Lighting



Gondolas





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