CHARACTERISTICS AND ADVANTAGES OF GH EQUIPMENT

OUR COMMITMENT WITH THE QUALITY AND COMPETITIVENESS HAVE LED US TO OFFER THE STANDARD EOT CRANE WITH THE MOST FEATURES/CHARACTERISTICS AND THE MOST SAVING IN MAINTAINING COSTS FROM THE MARKET
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1. SINGLE GIRDER EOT CRANE

1.1. FEATURES AND ADVANTAGES

- Manufactured according to FEM-1001 and CMAA standard.
- Light, lower wheel loads transmitted to the bay structure.
- Box girder design
- Ideal when the clearance is small (distance from railway to ceiling)

2. DOUBLE GIRDER EOT CRANE

2.1. FEATURES AND ADVANTAGES

- Manufactured according to FEM-1001 and CMAA.
- Maximizes the crane lifting height due to flat hoist design.
- Box girder design.
- Improved load balance.
- Balanced load distribution along the crane structure.
- Easy access for maintenance.
- Allows 2 lifting movements on the same crab.
3. STRUCTURE

3.1. DESIGN AND MANUFACTURING

- GH own design and manufacturing.
- Manufactured according to FEM, EN and CMAA in specialized facilities developed with the expertise acquired over more than 50 years’ experience.
- Manufactured and welded by certified personnel following specific procedures.

3.2. CONTROL PROCESSES

- Tested by specialized technicians.
- Using state of the art dimensional control machines.
- Measurements carried out by laser tracker.
4. SURFACE TREATMENT

4.1. CLEANING BY SAND-BLASTING

- Surface cleaning following PTGH specific technical procedure.
- Suitable for outdoor services and special applications.

4.2. SURFACE TREATMENT

4.2.1. Indoors service

- RAL 1021 yellow color structure.
- RAL 5017 and 5015 blue color mechanisms and components.
- Painted in specific facilities according to GH-PTGH-01 method and following specific indoors painting scheme procedure.

4.2.2. Outdoors service

- RAL 1021 color yellow structure.
- RAL 5017 and 5015 blue color mechanisms and components.
- Painted in specific facilities according to GH-PTGH-01 method and following specific outdoors painting scheme procedure.
### 4.2.3. Marine service

- RAL 5017 blue color structure.
- RAL 5017 blue color mechanisms and components.
- Painted in specific facilities according to GH-PTGH-01 method and following specific painting scheme procedure suitable for marine environment.

### 5. LIFTING MECHANISMS

#### 5.1. MOTOR

- Squirrel cage cylindrical motor.
- Oversized widely.
- Two speeds. 1:6 Ratio
- Thermical protection using bimetal contact probes.
- GH DESIGN AND MANUFACTURING.
- F class insulation.
- Autoventilated
- IP55 protection.
- ED 60%.
5.2. BRAKE (TWO SPEEDS LIFTING, DOUBLE WINDING)

- Electromagnetic disc brake.
- GH DESIGN AND MANUFACTURING.
- Disc type, double brake disc lining.
- Lifting brake electromagnet including more than 5 springs, according to EN 14492-2 norm.
- Timer controlling slow-fast speed transition.
- Braking timer controlling fast-slow-stop transition.
- Minimum brake pad wear.

5.3. BRAKE (FREQUENCY INVERTER LIFTING)

- Electromagnetic disc brake.
- GH DESIGN AND MANUFACTURING.
- Disc type, double brake disc lining.
- Lifting brake electromagnet including more than 5 springs, according to EN 14492-2 norm.
- Braking timer.
- Minimum brake pad wear due to inverter control.
5.4. GEAR BOX

- Direct drive.
- Case hardened, helicoidal gears that ensure smooth movements.
- Gear in closed sump avoiding dirt
- Lubricated with semi fluid grease and/or ISO 220 oil as a minimum (40ºC).

5.5. DRUM

- Manufactured using S355JR cold rolled steel.
- Oversized widely, according to FEM STD M6 working group related factor.
- GHB model sized according to FEM STD M5 working group.
- Direct drive gearbox-drum through splined shaft.
- Drum rolling on bearings lubricated for life (commercial parts).
- Grooving according DIN-15061 norm for 1 or 2 wire ropes exits and machined on CNC machining centers.
- Manufactured according Directive of machines 2006/42 CE, from subclause 4.1.2.4. to clause 4.2.3.
5.6. WIRE ROPE

- 8 exterior strands. More fulcrums increasing the stability in curvature changes.
- Compacted exterior strands. Larger metal sections. Reduced specific tension working. Longer life span.
- Safety factor ≥5, complying with Directive of Machines 2006/42/CE 4.1.2.4

5.7. SHEAVES

- Manufactured using cold rolled S275JR steel.
- No casting improving breach and wear resistance.
- Double bearing.
- Dimensioned following FEM9662.
- Machining following DIN-15061.

5.8. HOOK

- Material in compliance with DIN-15400.
- Design following DIN-15401 (single hook) and DIN-15402 (double hook).
- Robust design with cross brace and nut.
- Safety tab included according to Directive of Machines 2006/42/CE 4.1.2.6
5.9. ROPE GUIDE

5.9.1. Metal
- Robust design. Long-lasting.
- Manufactured in GGG-40 spheroidal graphite
- Covering 360° and embracing several wire rope layers.
- Easy assembly.

5.9.2. Polymer
- Special plastics with glass fiber additives.
- Material that supports strong tension, fatigue, and high temperatures. Special resistance to high pressure and friction due to its low hardness and friction coefficient.

5.10. LIMIT SWITCH
- Load movements within Directive of Machines 2006/42 CE 4.1.2.6 limits
- Ensures safety against collisions.
- Geared for an easy regulation and precise and safe operation.
- 3 positions: upper, upper safety, and downer limits.
- Protection against phase switch.
5.11. OVERLOAD ELECTRONIC DEVICE

- Overload control following Directive of Machines 2006/42/CE 4.1.2.
- Slack rope control (optional).
- Lifting device loading spectrum record.
- Lifting maneuver number and their total time record.
- Lifting maneuver by impulse record.
- Safety working period (SWP) control.
- Alarm activation for coming inspections (scheduled or based on total operation hours).
- Overloads’ record.
- Lifting motor over-temperature control input/connection.
- Control of starting and braking lifting movement towards movement smoothness, avoiding abrupt movements and increasing lifespan of motor, brakes and contactors.

5.12. MOTOR CONNECTORS

- Fast connection.
- Avoidance of any possible connection errors.
- Facilitates maintenance tasks and reparation.
5.13. FREQUENCY INVERTER IN LIFTING MOVEMENT

- Smooth start and brake operations.
- Starting up pick current reduction.
- Longer lifespan of different electric elements, mechanisms, motor, brake and gears ensured.
- Non-existent brake wear, due to electrical braking thanks to frequency inverter being activated afterwards the service brake.
- In case of 2 lifting at different speeds, synchronization is possible.

5.14. CLOSED LOOP CONTROL (ENCODER)

- The frequency inverter controls speed and motor turning direction.
- Safety against load slipping and braking blocks during lifting operations.

6. TYPES OF HOISTS

6.1. FIXED SUSPENDED HOIST

- Robust frame.
- Mechanical-welded structure construction and modular mechanism assembly on it.
- Specific suspended design.
6.2. FOOT MOUNTED HOIST

- Robust frame.
- Mechanical-welded structure construction and modular mechanism assembly on it.
- Specific foot mounted design.

6.3. SINGLE GIRDER HOIST

- Transmission thru shaft to wheel on opposite side of motor drive.
- Traction to wheels on both sides of the girder.
- Smooth start and stop movements
- Smooth response on adverse ambiance conditions (snow, ice, humidity).

6.4. LOW HEADROOM SINGLE GIRDER HOIST

- Designed to gain lifting height being suitable for low height installations.
- Transmission thru shaft to wheel on opposite side of motor drive.
- Traction to wheels on both sides of the girder.
- Smooth start and stop movements
- Smooth response on adverse ambiance conditions (snow, ice, humidity).
6.5. STANDARD DOUBLE GIRDER HOIST (TUBES)

- Load uniform distribution along the girders.
- Articulated frame.
- Longer lifespan of wheels and bearings.
- Transmission thru shaft to wheel on opposite side of motor drive.

6.6. DOUBLE GIRDER CRAB WITH END CARRIAGES

- Suitable for large span trolleys.
- Allows mounting long drums for large lifting heights.
- Allows mounting two hoists in the same crab.

7. LONG TRAVEL MECHANISM

7.1. MOTOR GEARBOX

7.1.1. Motor

- Short-circuit.
- Oversized widely. Powers delivered: 0.84; 1.54; 2.5; 5 & 7.5 KW.
- Speed adjustment by frequency inverter.
- F type insulation.
- Built-in fan for motor refrigeration and increasing its lifespan.
- Cylindrical rotor.
- ED 60%.
### 7.1.2. Brake

- Brake mounted on the motor.
- Electromagnetic disc brake.
- Oversized widely.
- No brake lining wear, as it only works as parking brake, once the motor is already stopped. Frequency inverter.

### 7.1.3. Gearbox

- Robust and compact, located outside for easy access.
- Straight and helicoidal toothed gears. High precision machining in case hardened steel assuring a silent and reliable work.
- Direct drive from shaft to gearbox, avoiding intermediate pieces predisposed to breakdowns.
- Gears lubricated in closed case oil bath and machined by high precision machinery.

### 7.2. SINGLE GIRDER WHEELS

- Transmission to wheel on opposite side of motor drive.
- Wheel traction on both sides of the girder.
7.3. STANDARD DOUBLE GIRDER HOIST WHEELS (TUBES)

- Manufactured in GGG-70 material.
- Machined in CNC centers.
- 2 wheel drive tracted by a sole cross travel motorgearbox.

7.4. HOIST WITH END CARRIAGES WHEELS

- Manufactured in GGG-70 material.
- Machined in CNC centers.
- Bearing on wheels supporting crane wheel load, whose shafts only work on torsion (not in flexion).

7.5. SAFETY ANTI-ROLL SYSTEM

- Safety against any wire rope breach due to fouling and “crossbow effect”
- Complying with Directive of Machines 2006/42. Chapters 4.1.2.1 y 4.1.2.2.

8. LONG TRAVEL MECHANISM

8.1. END CARRIAGE – TYPE OF STRUCTURE

- Tubular shaped machined structure.
- Front and top mounted connection plates, bolted.
- Easy maintenance.
- Optimal load distribution.
- Rubber buffers mounted at the extremes
of the end carriage.

- Adjustable buffers as an option.
- Designed buffer plates for anti-derailment.

### 8.2. MACHINING

- Precision machining on CNC machines, at once.

### 8.3. LONG TRAVEL MOTOR GEARBOX

- Long travel motor gearboxes are specially designed and manufactured by GH for the actuation of mechanisms used at materials handling.
- The special conception of GH motors guarantees gradual movements in acceleration and braking, as well as silent work.
- Motor-gearboxes oversized widely.

### 8.4. WHEELS (BEARING – WHEEL SUPPORTING SYSTEM)

- Largely oversized.
- Manufactured in GGG-70 material (self-lubricating).
- For special applications, F1252 material and induction hardening treatment available.
- Lower wheel wear in wheels channels.
8.5. MOTORS

- Power calculation considering the load on one side.
- Lower wheel flaps wear due to crossings. Bigger effect on large spans.
- Largely oversized.

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8.6. FREQUENCY INVERTER IN LONG TRAVEL

- Speed and movement precision control.
- Crane acceleration and braking control.
- Smoothness, avoiding dangerous swinging.
- Motor protection, increasing its lifespan.
- Mechanisms lifespan increase.
9. CONTROL GEAR

9.1. ELECTRIC CABINET

- Design according to following standards:
  - FEM
  - EN 60204/32 and Directive of Machines 2006/42/CE
  - LV regulation
- High quality well known commercial electrics for protection, power and maneuver components
- Largely oversized.
- Cabinet distribution by functional blocks.
- Matching wiring diagram for easy maintenance.
- Outdoor cabinets protected against adverse weather conditions.
- Easy access for maintenance.
9.2. MAIN SWITCHES

9.2.1. Cabinet Switch

- Mandatory for maintenance, reparation or emergency stops, complying with EN60204-32 5.3.6 and REBT 4.1
- Mandatory when there’s more than one crane on the same raceway, with same power supply
- Opening the cabinet resets the main switch. This switch is linkable in the power off position.

9.2.2. Power Switch

- Mandatory complying with Directive of Machines 1.6.3.
- Complying with EN 60204-32.

9.3. COMMERCIAL ELECTRIC ACCESSORIES

- Design complying with
  - FEM standard
  - EN 60204/32 and Directive of machines
  - LV regulation
- Commercial protection, power and maneuver well known electrical components.
- Largely oversized
- Cabinet distribution by functional blocks
- Matching cabling with electrical scheme for easy maintenance works.
9.4. CABINET CONNECTORS

- Fast connection
- Avoidance of any possible connection errors.
- Facilitates maintenance tasks and reparation.

9.5. ELECTRIC DRIVE

- Speed control and accuracy of translational operations.
- Hoist acceleration and parking control.
- Smooth movements in order to avoid dangerous swings.
- Motor protection, increasing its working life
- Increases mechanism's working life.

9.6 EARTHING SYSTEM

- Avoids electric hazard shock by keeping the exposed conductive surfaces between the trolley and the beam channeling them out of the crane to the earth complying to Machine Directive 95/63/CE clause 1.16
10. COMMUNICATION CONTROL

10.1. MOVEABLE PENDANT

- Allows the operator to move away of the load.
- Wired control signal (safe communication)
- Emergency stop wired according to EN 60204-32 sub clause 9.2.5.4.1.

10.2. RADIO REMOTE CONTROL

- Safe material handling assurance.
- Allowance of operation away from the load.
- Redundancy in case of failure as pendant is available too.
- Equiped with mandatory light signal complying with EN15011 standard clause 5.7.4.
### 10.3. FIXED CABIN

- Located in the side or the center of the beams.
- High working area visibility.
- Comfortable steering position.
- Ergonomical seat.
- Air conditioning.

### 10.4. CRAB UNITED CABIN

- Robust tightened hanging from the trolley
- Improves visibility and maneuver reach.
- Comfortable steering position.
- Ergonomical seat.
- Air conditioning.

### 10.5. MOBILE CABIN

- Mobile to increase the visibility and maneuver reach.
- Comfortable steering position.
- Ergonomical seat.
- Air conditioning.
11. CRAB TYPE OPTIONS

11.1. SINGLE GIRDER SLEWING HOIST
- Suitable for curved thread raceway at single girder solutions.
- Double motor drive to ensure traction.
- Double articulation (reduced required turning radius).

11.2. LATERAL GIRDER RUNNING CRAB
- Special designed to obtain an optimized reach at one side of the building.

11.3. DOUBLE GIRDER TURNING CRAB WITH ONE HOIST AND 2 HOOKS
- Load handling with two hooks allowance.
- 300° turning able crab with buffers allowing a smooth and safe material handling.
- Higher load stability ensured
- Specially conceived to handle long length loads.
11.4. DOUBLE GIRDER TURNING CRAB WITH TWO HOIST

- Load handling with two hooks allowance.
- 300° turning able crab with buffers allowing a smooth and safe material handling.
- Higher load stability ensured
- Specially conceived to handle long length loads.
- Bigger distance between hooks can be reached than the previous option.

12. STRUCTURE AND MECHANICAL OPTIONS

12.1. MOTOR PROTECTION ROOFS

- Protects the mechanism against adverse weather conditions.

12.2. TROLLEY PROTECTING ROOF

- Protects lifting equipments' translation mechanism against adverse weather conditions.
### 12.3. ELECTRICAL OUTLET PLATFORM

- Electrical outlet maintenance platform
- Access

### 12.4. ACCESS PLATFORM FOR DOUBLE GIRDER STANDARD HOIST

- Access platform for maintenance and reparation of trolleys equipment ensuring operators’ security

### 12.5. ACCESS PLATFORM FOR DOUBLE GIRDER CRAB WITH END CARRIAGES

- Access platform for maintenance and reparation of trolleys equipment ensuring operators’ security

### 12.6. PLATFORM ACCESS DOOR

- Platform Access door including a safety system that stops the crane when open.
12.7. SPRING WINDER

- Electrical spring winder

12.8. SIGNS AND SENSE INDICATORS

- Pictograms pointing coherently movement directions according to the remote control or pendant.
- Machine marking complying with 2006-42 1.7.3 Security Directive

12.9. EQUIPMENT LABELLING

- Equipment marked according to Machinery Directive chapter 1.7.3
- Pictograms pointing coherently directions according to the controls.

12.10. LOCKING DEVICES

- Security locking devices for outdoor cranes complying with 25/63 CE 3.2 norm and 2006/42 CE chapter 1.31
12.11. HOOK WITH LOCK
- Manual hook lock to avoid its rotation

12.12. SINGLE GIRDER DIVIDED CRANES
- Robust screw tightened union designed.
- Plays important role in suitability for transportation

12.13 DOUBLE GIRDER DIVIDED CRANES
- Robust screw tightened union designed.
- Plays important role in suitability for transportation

13. ELECTRICAL OPTIONS

13.1. ANTI COLLISION CELL
- Safety measurement for cranes in the same raceway.
- Detection and full stop. Up to 14 m reach.
- Detection and slow speed approach when both cranes are close enough.
- According to 95/63 CE clause 3.2 standard and Directive of Machines 2006/42 CE clause 4.1.2.
### 13.2. WEIGHING INCLUDING DISPLAY

- Visualization of the load handled by the crane.

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### 13.3. WEIGHT SHEAVE

- Weight display on the hook showing the load handled by the crane.

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### 13.4. SUMMING LOAD DEVICE

- Load control in two or more hooks to avoid exceeding crane’s SWL.

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### 13.5. FULL STOP LOAD DETECTOR

- Object detector by infrared optic system.
- Protection against mutual interferences.
- Robust plastic housing.
- Adjustable timer.
- Complying with 95/63CE 3.2 and 2006/42 CE Directive 4.1.2.6 Chapter.
13.6. EMERGENCY BUTTON

- Emergency button guaranteed by wired cable.
- Complying with 95/63CE 3.2 and 2006/42 CE Directive 4.1.2.6 Chapter.

13.7. ZONE LIMITATION INCLUDING SHUNT FOR APPROACHING MANEUVER

- Infrared optical sensor area detector
- Protection against mutual interferences
- Robust plastic housing.
- Adjustable timer
- Complying with 95/63CE 3.2 and 2006/42 CE Directive 4.1.2.6 Chapter

13.8. RADIO REMOTE CONTROL

- Safe material handling assurance.
- Allowance of operation away from the load.
- Redundancy in case of failure as pendant is available too.
- Equipped with mandatory light signal complying with EN15011 standard clause 5.7.4.
13.9. OUTDOOR SPOTLIGHT PROJECTORS

- 500 W Quartz Iodine projector in trolley
- 500 W Quartz Iodine projector under the beam.
- 400 W Halide in the trolley.
- 400 W Halide in the beam.

13.10. CABINET LIGHTING

- Lighting on the electrical control panel.
- Eases maintenance in dark areas.

13.11. MONOPHASE PLUG

- Plug installed in the panel appropriate for maintenance work (220V)

13.12. HORN

- Compulsory according to 15011 norm chapter 5.7.5. To ensure the control of the load when the operator is away from it.
13.13. TIME COUNTER

- Electronic hour counter, for safe working period and work maintenance.

13.14. ANEMOMETER WITH ACOUSTIC AND VISUAL ALARM

- Anemometer to measure the air speed on outdoor cranes.
- Acoustic and visual notice of control system activation.

13.15. ACOUSTIC BUZZER

- Acoustic motion buzzer

13.16. FLASHING LIGHTS

- Motion flashing light
### 13.17. CONTACT THERMIC PROBES
- Contact thermic probes protection as an option to prevent motor overheating.

### 13.18. PTC THERMIC PROBES
- PTC thermic probes protection as an option to prevent motor overheating.

### 13.19. HEATER CABLES
- Avoids condensation in wed zones and prevents loss of insulation.

### 13.20. TROLLEY GROUND BRUSH
- For residual electrical current in the raceway avoiding damaging on other components such as wheels and bearings.
- Complying with Machine Directive 95/63/CE Chapter. 1.16

### 13.21. CRANE GROUND BRUSH
- For residual electrical current in the raceway avoiding damaging on other components such as wheels and bearings.
- Complying with Directive of Machines 95/63/CE Chapter. 1.16
13.22. CROSS TRAVELLING INVERTER CONTROLLED DRIVE

- Speed Control and movement accuracy
- Crane acceleration and braking control
- Smooth movements avoiding dangerous swinging.
- Protects the motor, increasing its working life
- Increases working life of the mechanism.

13.23. LONG TRAVELLING TROLLEY INVERTER CONTROLLED DRIVE

- Speed Control and movement accuracy
- Crane acceleration and braking control
- Smooth movements avoiding dangerous swinging.
- Protects the motor, increasing its working life
- Increases working life of the mechanism.

13.24. TURNING INVERTER CONTROLLED DRIVE

- Speed Control and movement accuracy
- Crane acceleration and braking control
- Smooth movements avoiding dangerous swinging.
- Protects the motor, increasing its working life
- Increases working life of the mechanism.
13.25. COLLECTORS

- Feeding collectors for enclosed type power lines.
- Feeding collector for isolated type power lines.

13.26. ANTICOLLISION CELL FOR AN EXISTING CRANE

- Infrared optical sensor area detector
- Protection against mutual interferences
- Robust plastic housing.
- Adjustable timer
- Complying with 95/63CE 3.2 and 2006/42 CE Directive 4.1.2.6 Chapter

13.27. FLASHING LIGHT

- Turning flashing light
13.28. VAHLE LINE

- Enclosed type power line.
14. MANUFACTURING SITES

Industrias Electromecánicas GH, S.A. is a family owned business group (nowadays known as GH Cranes & Components), founded more than 50 years ago in Beasain, Gipuzkoa.

GH main business scope is manufacturing hoists, cranes, kits and its components covering a wide range of products such as Gantry Cranes, Semi Gantry Cranes, JIB Cranes among others including other lifting equipment.

GH main manufacturing facilities are located in Spain - Beasain (Gipuzkoa), Alisasua and Bakaikoa (Navarra)- and other it counts with manufacturing, sales, distribution and maintenance sites in more than 50 countries.

GH has more than 300 employees in Spain and more than 600 worldwide with a weekly production capacity of 50 standard cranes, 1 special crane, 2 gantry cranes , 40 kits, 0,5 travelifts, covering both standard and tailor made solutions.