

GH' NEWS



GH AND ROLLS-ROYCE
TOGETHER
WHAT A WORK!!

IN CO-OPERATION WITH ASTILLEROS CANARIOS

ROLLS-ROYCE CHOOSES GH FOR ITS INTERNATIONAL EXPANSION

Rolls-Royce, the British multinational company, has trusted GH cranes in co-operation with Astilleros Canarios (Astican) for the facilities of one of the biggest repair and maintenance shipyards for oil platforms and ships in general.

The industrial building is equipped with 7 EOT cranes which are now a reference within Rolls-Royce, a multinational tied to excellence and quality, which has been one of the most valued trademarks in the globalized world.

KNOWING THE PAST TO PROJECT THE FUTURE

Towards THE SMART crane

Some of our potential customers, when buying a crane, sometimes mention that, for them, cranes are just classic machines, useful for lifting and moving loads around and, as long as they can perform these duties, all cranes are basically the same.

However, those who are, like us, striving for the best in this sector, know that beginning in the last century and continuing in the current one, cranes have improved in a number of ways, and that while some manufactures apply these improvements in their manufacturing standards, others do not.

THE FIRST STEP WAS A CHANGE IN THE TECHNOLOGY OF OUR MATERIALS

In the first seven decades of the 20th century, the challenge was about developing materials technology. The aim was to reduce the size and weight of all the mechanisms involved in a crane, so as to make better use of the available space in industrial plants and to reduce the loads and efforts upon them.

Because of that, the material used for the structures changed, from A-37 or ST-37 steel (now S235JR) to A-44 or ST44 steel (now S275JR) as the main material in Europe.

In steel cables, the old WS 6x36 or WS 8x36 cables, with wires whose resistance was 1770N/mm² were discontinued in favor of cables with a higher number of wires and 1960N/mm² or 2160N/mm² resistance, to maintain flexibility. They are compact, so they have a higher breaking load for the same cable diameter and they resist abrasion better. Later on, plastic infiltration became widespread, and as a result cables are livelier and better protected against internal corrosion and wear.

In pulleys, the use of those made of structural steel, which up to them were only used in PROCO CRANES, expanded

and became universal, replacing die-cast pulleys, which are more fragile. Other novelties, such as the attempt to introduce plastic pulleys, were discarded after security problems with the cables arose.

Die-cast barrels from the beginning of the century were replaced by curved-plate barrels or tubes of S275 and S355 materials, with a considerably longer service life and with higher resistance to wear. In wire guides, plastic materials began to be used, as well as modular casting, to prevent cable damage.

As for hooks, materials like ASt41 or Ast52 were abandoned in favor of forged alloy steel 34C_rM_o4 and, more recently, 34C_rNiM_o6.

In reduction gearboxes, non-alloy steels like C45 or alloy steels like 34C_rM_o4 and 35C_rNiM_o7 were replaced by case-hardened steels 15C_rM_o5 (F-1550) or 15C_rNi6 (F-158), with better resistance to fatigue and wear. Similarly, closed reduction gearboxes became widespread, and open-air boxes are increasingly difficult to find.

In motors, we passed from conic single-winding motors to classic cylindrical-rotor, double-winding motors, so that a single motor can achieve reduced speed and nominal speed.

In brakes, asbestos has disappeared from the brake pads.

In translation wheels, toothed wheels have been replaced by drive-shaft wheels.

From the use of materials like C45, now modular casting has become almost universal, with the advantage of higher resistance EN-J51060 and EN-J51070, and better self-lubrication, for standard cranes.

In special cranes, forged materials have found their way, as has induction surface tempering.

It is only in the last twenty-five years of the 20th century that crane manufactures made widespread use of the electric, electronic, automatism and communication technologies.

End carriages (also in translation movements), cells against impacts, load limiters, radio controls and even motor control by variation gearboxes became common.

21ST CENTURY: A NEW INDUSTRIAL REVOLUTION

Here at GH, we thought it is very clear where the next step would be taken: in the field of communication technology.

We entered the 21st century with the still living results of the electronic and communication technologies, that brought about a new perspective to industrial development in the 21st century, which some call industry 4.0, others consider it a new Industrial Revolution, whereas for others it is the development of smart machines.

All technological advances follow their own development and none replaces any other.

The materials technologies advance, among others, with the development of additive manufacturing or 3-D printing, which consists of the manufacturing of solid, three dimensional objects by laying out a superposition of successive layers of material until the desired figure is built.

We also have innovations based on electric and electronic technologies, such as controls and sensors and communication with simpler, more easily accessible technologies.

How is this affecting crane manufacturing, and how will it affect it in the future?

Some changes appear clear, and bring us closer to the concept of "the smart crane":

■ **Energetic efficiency.**

By using recently developed, high efficiency motors, we reduce energy loss considerably, and this supposes a significant reduction in costs as energy is economised during the machine's service life. Similarly, by using regenerative drives, the energy that comes from the braking process

is not dissipated as heat as used to be done, but recovered and put back in the system.

■ **Self-diagnosis**

As sensors and operation controls are developed, the machine will be able to diagnose itself.

The weighing cells will indicate the load being handled at a time and the number of overloads.

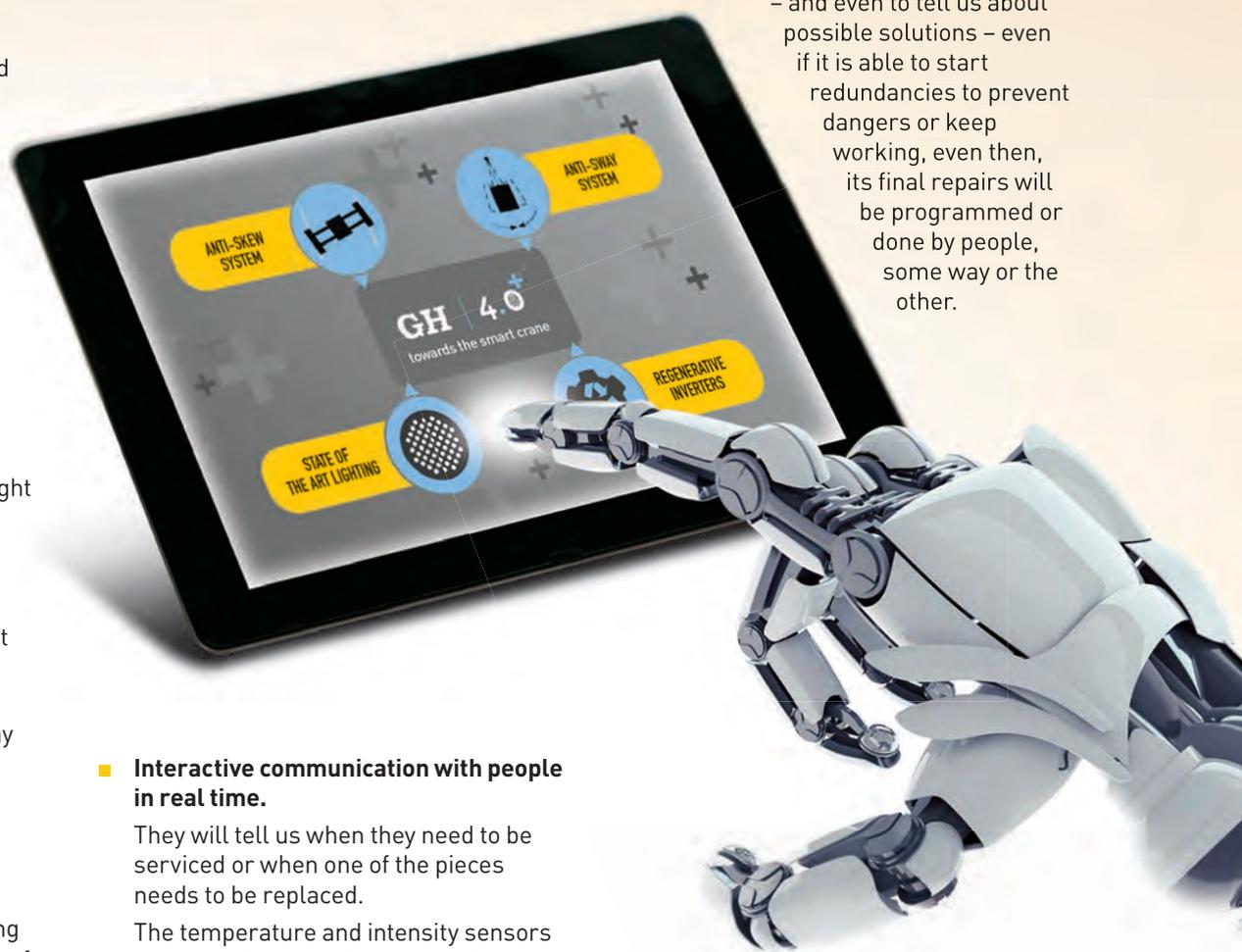
Together with the time- and cycle-counters, they will tell us if they are working within the parameters they were designed for or if those need to be changed.

programmed by humans, it will be able to self-diagnose and even to prevent manoeuvres that might be dangerous for the people around and for itself.

TOWARDS THE SMART CRANE?

So far, everything is in the market and we have tried to incorporate these innovations in our productive processes. In GH, we try to standardise them and to integrate them in our machine as far as possible.

However, even if the machine is able to detect problems and self-diagnose – and even to tell us about possible solutions – even if it is able to start redundancies to prevent dangers or keep working, even then, its final repairs will be programmed or done by people, some way or the other.



■ **Interactive communication with people in real time.**

They will tell us when they need to be serviced or when one of the pieces needs to be replaced.

The temperature and intensity sensors will indicate if something is not OK. It will even be designed to adopt solutions if redundancies have been pre-programmed.

The machine will be able to communicate with the operator or with technical assistance via radio, via smartphone or via GPRS.

We will even have the chance to act on it remotely, or diagnose and set up solutions for its optimal performance.

■ **Communicate with other machines.**

■ **Receive the answer of the technical assistance operator.**

Some will define the smart crane as a crane that is able to detect a problem and solve it.

Anyway, it is obvious that a machine by itself lacks intelligence. But it is also true that, with the help of some sensors

That is, then, the next question: how it communicates with us, with the operator, with technical assistance, or even with other cranes and how people communicate with it.

Here is where communication technology steps in.

We can have the information decentralized or even centralized within the crane itself, via modbus, wifi or radio, and from the crane's control center we can access all the information with a USB port, computer, via radio to the radio control's display or via wifi to a smartphone or via telephone to a smartphone or to the central office of its authorized assistance service.

Only knowing our past can we project our-and that's what we're doing at GH.



GH in the world

Some recent facilities



The world has no limits for GH!!





10. PERU



11. SPAIN



11. SPAIN



11. SPAIN



14. ECUADOR



11. SPAIN



16. POLAND



16. POLAND



18. NORWAY



19. DENMARK



20. FRANCE



21. PORTUGAL



22. DUBAI



23. SAUDI ARABIA



24. GHANA



25. LIBERIA



26. EGYPT



26. EGYPT



28. SOUTH AFRICA



29. AUSTRALIA



30. HONG KONG



31. IRAQ

PRESENT IN A SECTOR WHERE FIRST-CLASS CUSTOMERS HAVE VALUED OUR SOLUTIONS

GH IS ALL BUSINESS in the steel industry

GH is one of the main references in the world in the lifting sector, with its wide array of products in EOT cranes, industrial and maritime gantries, transfer carts and other products. Its versatility, flexibility and the know-how gathered during almost 60 years allow the company to offer varied and complex solutions to the needs of any customer in all the main markets of the world.

GH is one of a handful of integral manufacturers (it produces all of its pieces and components) that has such a wide array of hoists and open winches to comply with the requirements of such a demanding sector as steel industry is.

GH's implementation with factories (USA, Brazil, Mexico, Spain, France, Poland, India and Thailand) and service centers in the most important markets in the world (present in more than 60 countries) make our customer service almost universal and guaranteed for our customers.

But our business profile has tended to be perceived as an efficient, technologically highly advanced manufacturer in standard solutions (that is, cranes that need no special design or engineering to be built). Nothing farther from reality.



GH has offered these customers technologically highly advanced solutions that have lived up to the expectations of the most demanding customer.

Our engineering department and our productive capacity, coupled with our ability to manufacture the components in their entirety (by manufacturing our

Granes with redundancies in the critical components of the kinematic chains: motors, reduction gearboxes, etc, and control gear, frequency inverters...

Some recent references and their developments

An important recent reference is the delivery of a casthouse crane for Antillana de Acero, Cuba, a heavy service A8 M8 casthouse crane, with mechanic and electric redundancy in all the movements and with two carts at two heights to enable casting on both ends.

Another one is Tenaris Algoma, with latest generation solutions in antiswinging and anti-crossing systems, automated operations and regenerative inverters, in co-operation with Siemens.

THEY TRUST US



own reduction gearboxes, planetary gears... together with our flexibility to integrate commercial components at our customer's request) have finally convinced our customers that GH is all business in this extremely demanding sector.

Cranes with redundancies in the critical components of the kinematic chains: motors, reduction gearboxes, etc, and control gear, frequency inverters... so as to guarantee the maximum availability of the machine in some processes of the steel industry, where a stopped crane could suppose big losses in production.

For all this, GH can offer the sector the most advanced and demanding solutions to the most active customers, as can be seen in the references we attach to this article. Moreover, the trust that this sector's customers have on us allows us to affirm that we want to be all business by using our experience and innovation to help our customers.

DANIELI deal pays off

Recently, some months ago we reached an agreement with Danieli to provide them with 80 hoists for their light cranes, which are used in the great projects taken up by the world's most important steel companies.

Danieli is one of the best-known companies in the world supplying rolling mills and big technological cranes for the demanding manufacturing processes in the world's steel mills.

These hoists that GH will provide have been specially and exclusively designed for them, but they have all our technology and components, which are exclusively GH. Danieli has decided on GH because of the high performance of our hoists and because of the high competitiveness of our equipment.



Danieli a company so committed to excellence and technological thoroughness and a worldwide reference, continues to trust us. In this case, the deal with DANIELI reinforces the old saying that says "only the best will make us the best"

“ Danieli is one of the best-known companies in the world supplying rolling mills and big technological cranes. ”

THE WIND OF CHANGE IN GH CRANES

NEWS FROM POLAND

GH Cranes & Components' branch in Poland celebrates 20 years of existence this year. Emphasizing the global character of the company, it has changed the name to GH Cranes.

The factory in Poland constantly develops its business activity in Eastern Europe. The next country under its responsibility is the Czech Republic, where GH Cranes has successfully started its operation, gaining first orders within first two months.

For the Polish sales team, it is also the year of achieving the record value of sales.

Guided by the philosophy 'Think global, make local', GH Cranes strives for perfection in providing its customers not only with the product but primarily with the constant development of customers' business.



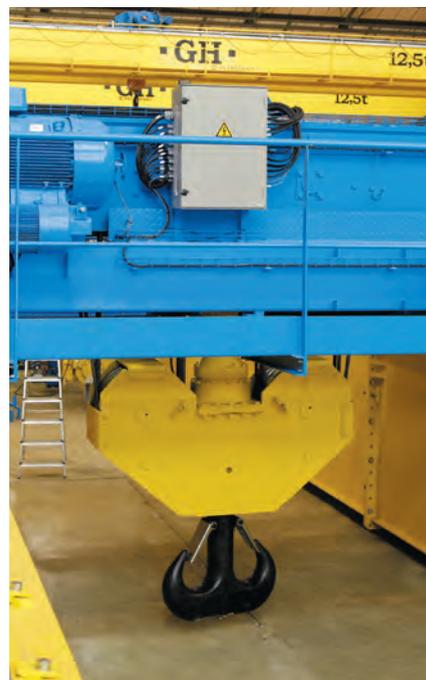
AFRICA AND MIDDLE EAST

FOR A COMBINED CYCLE PLANT IN EGYPT

GH GETS ITS BIGGEST EVER ORDER IN THE EXTERNAL MARKET

The project consists of providing equipment for a 4800 MW plant in Egypt. Our customer is ORASCOM, the main building company in that country, with which we have a long trajectory of co-operation, with GH providing important deliveries in the past. This project is an important step forward for GH and a reaffirmation for our international projection. The requirements, made both by the Egyptian company and by its European partner, position us in the best situation to address these challenges in the future.

To finance this important infrastructure in the African country, ORASCOM has temporarily merged with SIEMENS. Funding will be provided by the an Italian organism supporting development of African countries. The order consists of twenty cranes, eight of which are open winch, and the amount is \$ 6.3 million. The African continent is GH's next expansion challenge and Egypt is one of the ports of entry to this important market in the future.



45 EOT CRANES AND ONE GANTRY FOR THE AEROSPACE INDUSTRY

IMPORTANT ORDER IN SAUDI ARABIA

We recently received one of the biggest kit orders ever received by GH in the international stage. In this project, which GH has managed coupled with our distributor in that country, ETIHAD Cranes & lifting Solutions, forty-five kits for EOT cranes and one kit for a gantry will be delivered. Some of the EOT cranes have two lifting speeds, so the number of hoists is 71 units. The project comes in the midst of this Arab country's commitment towards diversification, and it consists of the building of a plant for the auxiliary maintenance of reaction jets in a facility within the complex King Abdul Aziz International.

The investment this delivery is part of has a total funding of \$125 million. It began in January 2013 and its finishing is scheduled for May 2016. The final customer is Saudi Aerospace Engineering industries

and the contracting company is Freyssinet Saudi Arabia. For GH, this order reaffirms our business strategy in all the Arab countries, and specially in the Arabian peninsula and its emirates.

