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# Finding new markets...

c&a

tower cranes

The repercussions of the economic meltdown and its effect on tower crane production and sales are still working their way through the system. With most manufacturers suffered a drop in demand of around 70 percent, it was a time to batten down the hatches, reorganise and prepare for better times. Over the past year or so there have been signs of improvements in the sector. Over the next few pages we take a look at the growth of the larger capacity self-erectors, profile Terex Tower Cranes and see how tower cranes are offering an interesting alternative to installing wind turbines.

All manufacturers are looking to emerging markets - India, Russia and South America - primarily because sales in the traditional markets of North America and Europe had almost dried up. In Europe France, Germany and perhaps Scandinavia have been the bright spots, while the UK has been one of the poorer performing countries - at least for top slewing tower cranes - possibly due to the market being dominated by a few sizeable rental fleets? It was no real surprise therefore that Belgium-based Arcomet - the Potain distributor in the UK - decided 'enough is enough' and closed its UK operations. As a result Potain will sell its top-slewing cranes direct through Manitowoc UK, while self-erectors are distributed by West Midlands-based Ladybird Crane Sales.

Terex Tower Cranes has made a few strategic manoeuvres, purchasing the 67 percent shareholding in luffing jib crane manufacturer Recom, that it did not already own. Recom already manufactured exclusively for Terex, but the change also includes Recom luffer production moving to Fontanafredda, home of Terex/Comedil cranes. At the same time

all self-erecting crane production will move from Fontanafredda, Italy to Montceau-Les-Mines, France. If the move to France goes to plan, 150 jobs will be created with the expansion of the Terex self-erecting range. First part of the jigsaw is the launch of the Eazy 90, its largest self-erecting tower crane to date (see page 28).

In spite of the recent sales doldrums, tower crane manufacturers have stepped up their R&D resulting in the launch of several new cranes. Late last year Spanish manufacturer Linden Comansa announced the world's largest flat top tower crane range, topped by a 64 tonne model.

### World's largest flat top

The new LC3000 range comprises two base models, the 30LC 1100 and 30LC 1400, with each model available in three variants with capacities of 32, 48 and 64 tonnes, maximum capacities at the 80 metre jib tip vary from 9.5 to 15 tonnes, depending on the model. These are not the first big flat-tops from Comansa, but as they are standard products lead times will be shorter and they are designed for easier transport and priced more competitively.

In fact Linden Comansa has been



Zoomlion Jost T320-16

prolific in launching new cranes, its latest, announced at the end of May, the 21 LC 660, completes its LC2100 series, with four versions with 18, 24, 36 and 48 tonne capacities.

### First Zoomlion Jost

The first product from Zoomlion's purchase of Bavarian-based Jost's flat-top tower crane designs last August, debuted at Intermat. Built in China, the 16 tonne capacity T320-16 is based on the Jost JT-Series but with a four tonne capacity increase. The CE compliant crane is said to be the first in a range of 12 to be released over the next few months. Quick connection points should make them easy to assemble - a 24 metre high crane with standard jib is said to be take 10 hours, including inspections. The first units have been sold to Soon Douglas, a subsidiary of Singapore's Tiong Woon and Streif Baulogistic in Germany, which will distribute them in Poland and Germany. The unit on display at Intermat is likely to be reworked to re-introduce some of the Jost features initially dropped in the transition.

### Liebherr 380 EC-B 16

Liebherr's latest flat top - the 380 tonne/metre 380 EC-B 16 Litronic - is the largest in the 15 model range.

The flagship crane - also available in 12 tonne format - has a maximum radius of 75 metres and can lift 3,400kg at the jib tip. Liebherr says that it can also be fitted with an IC or HC tower system - the 256 IC and 365 IC towers having cross-sections of 1.9 by 1.9 metres making them suitable for erection in lift shafts. With the IC tower system, a free standing under hook height of almost 70 metres is possible. The 380 EC-B 16 can be transported on five trucks with the heaviest component - the slewing ring and platform - weighing 7.4 tonnes.

Another interesting development is Liebherr's 630 EC-H70 developed specially for wind turbine installations up to 140 metres high with nacelles up to 70 tonnes (see page 34).



Liebherr 380 EC-B

# A family affair...

The recent launch of the largest Terex self erecting tower crane - the Eazy 90 - preceded the news that the company is moving production of self-erectors from its spiritual home in Fontanafredda, Italy - the home of Comedil which has been building tower cranes since 1962 - to Montceau-Les-Mines in France. Cranes & Access was at the factory launch of the Eazy 90 and spoke with Terex Tower Cranes management, including managing director Martina Moritsch and her brother and sales director Simone Moritsch about the past, present and future of the company.

The move towards a single Terex cranes brand has meant the gradual demise of several famous crane brands, including Peiner and Ferro tower cranes and now Comedil, which was acquired from the Moritsch family in 1998. The first two were quickly absorbed by Comedil which continued to be run as a family business, keeping its strong brand identity. While the name has now changed to Terex Tower Cranes it still has the feel of a typical Italian 'family' company.

## History

Comedil's history stretches back 50 years to 1962 when Ferruccio Moritsch - Martina's father - and his brother started the company from scratch. It was their first venture into manufacturing and was totally at odds with anyone else in the family. Ferruccio's father worked in a bank.

"Before starting the company, my father travelled round the local area on his bike selling construction equipment," says Martina. "I don't know why but he always had a passion for tower cranes. The name Comedil was made up from the two Italian words for commercial and industry."

As expansion required more funds, outside investors were brought in, diluting Moritsch's share. When the construction downturn arrived in



Ferruccio (L) and Simone Moritsch in 2007

1983, he owned just 10 percent of Comedil and the other shareholders wanted out and production ceased. Still passionate about the products and determined to carry on, Moritsch found a partner in local drilling and piling equipment manufacturer Casagrande. Production began again in 1986 at the current facility in Fontanafredda having purchased the name and designs of the original company. Three other people were involved in this new company with Moritsch including his daughter Martina.



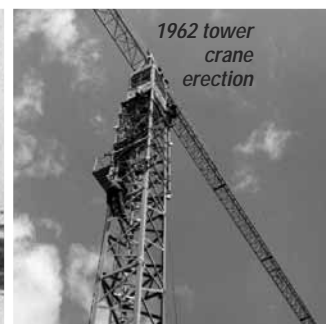
Martina Moritsch



A Terex CTL 202 working in Toronto Canada



An early Comedil G15 self erector



1962 tower crane erection



At the Italian facility, Ferruccio Moritsch and team with the CTT 561 flat top prototype

Unfortunately Moritsch passed away last July, but he will always be remembered as a tower crane pioneer. "He had the ideas and vision about which products to develop and learned about engineering even though he was not a qualified engineering," says Martina. "Even after he retired he was involved in the business as a consultant with Terex."

## Pioneering developments

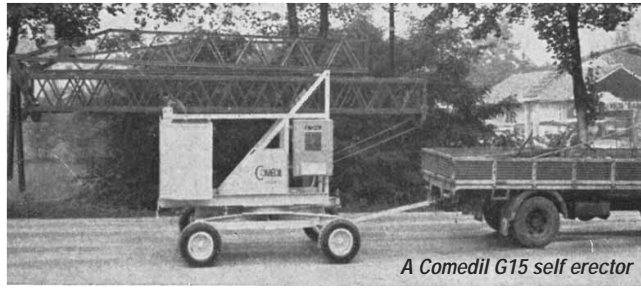
Moritsch was responsible for a number of significant developments and innovations most notably the first

telescopic self-erecting tower crane in 1968, the first luffing jib tower crane in 1988 and the first heavy duty 40 tonne capacity flat top tower crane in 2005.

In 2003 he founded Recom to develop and manufacture luffing jib tower cranes which from 2008 were distributed exclusively by Terex under the Comedil brand. Part of Recom (33 percent) was acquired by Terex in 2010 with the aim to acquire the entire business over time. The company is now managed by his eldest son Mariano.



*A hammerhead working in Hong Kong in the 1970's*



*A Comedil G15 self erector*



**Chinese cranes**

"The price of Chinese tower cranes is very competitive. Although there are hundreds of Chinese manufacturers, most only produce for the home market. Some, such as Yongmao and Zoomlion are exporting and finding local sales and support structures outside China, although selling a low cost item into Europe is difficult, particularly with the new European EN14439 legislation."

"The only benefit of the economic crisis from our point of view is that users have now realised that the residual value of Chinese tower cranes - which used to sell well in the Middle East - is almost zero," says Simone. "If the Chinese want to enter the European market they will need to improve their quality and fully comply with legislation. Markets such as the Far East, USA and South America are also wanting to follow the European legislation so Chinese crane quality and prices will have to increase."

**More legislation needed**

"In my opinion, there is not enough legislation in the tower crane business," adds Martina. "Licenses are needed for the crane and operators and the different phases from erecting to climbing a tower. In Singapore there is a law banning the use of tower cranes more than 15 years old. I think that like cars there should be maintenance inspections at regular intervals - say five, 10 and 15 years - at locations controlled by legislation so that non-certified cranes cannot be used - France is starting to look at this. It is very important to change the mindset so that people look after their cranes and have them checked regularly."



*Transporting tower cranes in the early days*

"The first cranes we produced were classic hammerheads but my father already had ideas of a crane without the tie bars - the flat top - even though the market was sceptical," remembers Martina. "Swedish company Linden Comansa were the originators of the flat top, but it was Ferruccio's vision and belief that the flat top would be the future for rental companies that drove him to produce the first range of flat top cranes."

Comedil did well selling cranes in parts of Europe and in the Far East but realised that it needed to expand sales globally, so in 1996 it started to look for a large construction equipment partner - more for marketing and distribution than financial input. After discussions with several major companies Comedil was purchased by Terex. The deal included a three year clause requiring the Moritsch family to remain in the business because of its specialist nature. The 'family' had by this time grown to four, Ferruccio and his three children - Martina and her two brothers Mariano and Simone.

"In the early days Terex was based on growth through acquisitions and keeping the companies and brands intact. So for the first two or three years nothing really changed in the running of the company," says Martina. "Yes we had monthly reports and accounts etc but we were free to operate as we saw fit. From 1999 to 2008 the company grew at a staggering rate, but the

global crisis hit the tower crane market the hardest of all. Industry figures suggest a 70 percent reduction in 2009/10. The situation forced us into a crisis management phase, being more flexible, changing management and following market needs."

"Even before we were acquired by Terex we viewed ourselves as an international company with the Far East being our main market. After the acquisition we started to sell cranes into other regions, including North America. Although the domestic market has always been good - it has also been tough, primarily because there were around 16 other tower crane manufacturers - we have had an international mind-set, as have all the manufacturing companies in the north east of Italy."

Terex Tower Cranes now has a comprehensive range of products including flattops, hammerheads, luffers and self-erectors. When Terex bought German-based Peiner it also included its hammerhead designs. The names have long gone but each has added to the DNA of the business.

The new Eazy 90 is the first of a new range that is currently being developed.

**Expansion moves production**

The expansion of the tower crane division, along with significant plans for the future of the business, resulted in the move of self-erecting

tower crane production to France, freeing Fontanafredda to increase production of the other cranes. The French facility, originally the PPM factory, currently manufactures telescopic truck cranes, reach stackers, 40 to 60 tonne All Terrains and military cranes. The plant will be expanded to accommodate the full range of self-erectors over the next four years.

**What next?**

Product development has been an integral part of Comedil's success over the years, so what next?

"New products will follow new markets," says Martina. "Historically Comedil products were aimed at the residential sector, which typically absorbed about 70 percent of our production - much of it through rental companies. However the market has now changed and includes large infrastructure projects such as dams and nuclear plants. To be successful we need to follow this trend with different types of cranes with larger capacities. This is where we are focussing our efforts."

"The direction for new product development comes from within the team. Terex Tower Cranes is run by Martina and Steve Filipov, president of emerging markets and marketing" says Simone. "Filipov knows the products and customer base, between us we have the knowledge and experience to grow the business. We also need to expand our application engineering which goes hand in hand with research and development. An example of this was a cooling tower in Russia, its shape did not allow us to anchor the crane in the normal way, so we had to create another solution. There are lots of products we are working on to solve particular customer problems. Application engineering will be very important in the future."



*Terex cranes recently working in Milan*

# Battle of the six tonners



Liebherr 81 K

The launch of the Eazy 90 - Terex's largest self-erector - is the first in a new range of cranes from Terex. The move follows the other major crane manufacturers - Potain and Liebherr - into this six tonne capacity, telescopic tower crane sector that is growing in importance because of its versatility, particularly for residential, commercial and infrastructure projects. We take a look at the new Eazy 90 and compare it with its major rivals the Potain Igo 85A and Liebherr 81 K.

The specifications of these three cranes are very similar. They all have a maximum capacity of six tonnes, a maximum jib length of 45 metres and a jib tip capacity of 1,400kg. They all have lattice, telescoping towers and transport road speeds of 25 and 80kph. Either each manufacturer has had one eye on its competition at the design stage or users are sending a very clear message as to their requirements for a self-erector of this size.

## Liebherr 81 K

Launched at Bauma 2010, the Liebherr 81 K was a replacement for the very popular 71 K which sold more than 1,000 units, but with improved performance and many new technical features. The 81 K has vastly improved load characteristics and can lift 1,400kg - 25 percent more - at the jib tip. It is the only crane in its class to work exclusively with two fall reeving - both the Terex and Potain can work in double and four fall mode. Liebherr says that since all the loads can be lifted on two falls, the time consuming process of re-reeving is

eliminated. One feature of the 81 K is that it has variable hoist speeds ranging from 70 metres a minute with loads of up to 400kg down to 12 metres a minute of its maximum six tonne capacity.

In transport mode, the 81 K is very similar to the 71 K although of the three cranes being compared it is the longest - 200mm more than the Igo 85A and very nearly two metres longer than the Eazy 90. The 81 K has a slewing radius of 2.75 metres and as its the tower climbing sections are only 2.4 metres long (rather than the Eazy 90 and Igo 85A's three metres) they can be carried across the width of a standard truck.

The 81 K uses a single continuous rope to erect the tower, telescope and jib. The erecting process is supported by semi-automatic, quick-connection locking between the tower and the slewing platform and by jib guying rods. Separate hoisting and erecting winches simplify set up. During crane operation, complete status information is shown on the new graphic display.

With 11 variable hook heights, the 81 K is an extremely adaptable crane. The standard hook height is 26 metres, is extended by inserting additional tower sections up to 40 metres with horizontal jib, while a 30 degree luffing angle adds further height variations. A 45 degree jib angle is available to clear obstructions.

The tower section inserts are fully compatible with the 71 K and older sections can also be used on the new crane without restrictions.

Liebherr says that the 81 K uses driveline and control-system technology previously found only on top-slewing cranes. All drive assemblies are continuously variable, using the frequency control principle. The push button-selection of the fine positioning mode reduces rope speed to 25 percent allowing heavy loads to be positioned accurately without applying the hoist gear brake.

## Potain Igo T85A

In 2010 Manitowoc upgraded the performance of the Potain Igo T 85 improving the crane's reach, capacity and ease of operation. The jib tip capacity was increased by 150kg to 1,400kg at 45 metres radius working with two-fall reeving.

A year after the first Igo T 85As were delivered, Manitowoc polled a cross-section of users in Germany - its most popular market - to gather feedback on the practicalities of using the new crane. Operators were asked to evaluate the crane on eight criteria, including accuracy, overall productivity, comfort and

intuitiveness of operation. They scored the crane on a scale of 1 to 10 for each of these areas, and according to Manitowoc the crane received an average score of 8.15 out of 10.

The highest scoring categories were 'confidence' i.e. the operators felt safe and confident while operating, and 'flexibility' where the operators liked the ability to adjust the crane's configuration. Although the feedback was largely positive, there were suggestions for improvements.

"All the real world feedback - both positive and negative - is critical in the product design process," says Vincent Milan, senior product manager for self-erecting cranes. "We tested the first Igo T 85 A cranes in a variety of applications - from residential construction to bridge building - and in each



Potain Igo 85A

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# LIEBHERR

The Group

Make and model	Terex Eazy 90	Liebherr 81K	Potain Igo 85A
Maximum capacity	6 tonnes	6 tonnes	6 tonnes
Maximum jib length	45m	45m	45m
Jib tip capacity	1,400kg	1,400kg	1,400kg
Max radius for max load fully extended jib	13.5m	13.3m	12.7m
Max under hook height horizontal jib	34.5m	40.4m	38.0m
Max under hook height with raised jib	49.5m @ 25 degrees	55m @ 30degrees	51m @ 30 degrees
Load with fully raised jib	1,400kg	1,400kg	1,400kg
Work with folded jib?	Yes	No	Yes
Hoisting winch	18.5KW	15KW	15KW
Invertor	Yes	Yes	Yes
Working with 2/4 falls	2 & 4	2	2 & 4
Base support	4.7 x 4.7m	4.5 x 4.5m	4.5 x 4.5m
Type of tower	Lattice	Lattice	Lattice
Number x size of climbing elements	3 x 3m	6 x 2.4m	6 x 3m
Cabin	No	Yes	Yes
Crane height at max height	38.5m	45.6m	41.5m
Transport speed on road	25 & 80kph	25 & 80kph	25 & 80kph
Counterweight max	37,100kg	40,000kg	37,400kg
Hoist speed max with load	67 m/min	70m/min	65 m/min
<b>Transport dimensions</b>			
Overall length	13.86m	15.85m	15.65m
Overall width	2.50m	2.60m	2.50m
Overall height	3.96m	3.95m	3.70m

situation the operators gave the crane consistently high scores, but were very honest in all areas. We will use this information as we continue to refine the crane for future deliveries."

"Improvements to the Igo T 85 A include a new slewing mechanism, which has proved successful on our range of top-slewing tower cranes, helping operators improve accuracy, especially when placing loads. This system allows speeds to be adjusted to suit different operations or driver preferences. For example, some delicate positioning might require a slow speed, while duty cycle work might require faster operations."

An increase in hook height of three metres - achieved by allowing another lattice section to be added - is also part of the redesign. The crane now has a maximum hook height of 38 metres with horizontal jib, or 51 metres when luffed to its 30 degree maximum angle. It means that with the jib horizontal, the crane can offer hook heights from 20 metres to 38 metres. In Europe, the additional height has already opened up more projects for roofing and renovation companies.

"There was no single factor that prompted the changes to this crane," says Milan. "However when we realised there was an opportunity to enhance the Igo T 85 and offer customers a competitive advantage we set about implementing the changes. It's a

process we've undertaken with dozens of cranes down the years, and something customers always appreciate as it shows an understanding of their needs."

### Terex Eazy 90

The Eazy 90 unveiled at Intermat is the largest in the range of 11 Terex self-erectors with capacities from one to six tonnes and jib lengths from 16 to 45 metres. It is easily distinguished by its name - the first Terex tower crane with a name not a number - new graphics and colour.

A semi-automatic and synchronised hydraulic system gives a single operator total control over setting up the crane. Should the procedure not be completed in the proper sequence, an electronic controller will automatically inform the user and limit the erection.

The Eazy 90 can work with short, luffed and folded jibs - unlike the Liebherr - and the telescopic tower, together with three additional three metre long tower sections can be configured for 15 under hook heights ranging from 14.5 to 46 metres designed to cope with most job site requirements. A modular jib allows a 37 metre radius and folding jibs can be configured to either 30 metres or 42 metres. Jib angle settings are horizontal, 15 degrees and 25 degrees.

Additional tower sections are added at ground level negating any assembly or working at height. In climbing mode the ECU system is enabled which is programmed to

keep the jib horizontal. Maximum jib tip capacity is 1.4 tonnes at 45 metres but this can be increased to 1.45 tonnes if reeved with two falls. It can also take its maximum capacity of six tonnes out to 15.26 metres when working with a 30 metre jib. Ballasting the crane can be performed using a service derrick if required.

"Transport is one of the key factors for self-erectors and the Eazy 90 has three different axles," says product marketing manager Angelo Cosmo. "Job site axles allow the crane to move easily on site and optimise erection time. Road axles for 25 km per hour and 80 km per hour are also available to meet different regulations, although the cranes can also be transported on a semi-trailer. The front and rear job site axles can be connected together to simplify movement."

The ECU control system allows safe control of the crane with movements monitored and the status displayed on an LCD screen on the crane or on the remote control which has automatic channel search to avoid signal interference. Five different hoist speeds are available. All the load charts are stored in the software which can be configured in five different languages. The system can also be set for each crane operator with changeable trolley and slewing speeds. Other features include a wind speed indicator, a zoning system and information about the loads, heights, alarm history and



Terex Eazy 90 can work with a folded jib



The Eazy 90 has three, 3 metre climbing sections

troubleshooting. Jib maintenance or changing the jib configuration can be carried out by lowering the jib to ground level.

### Summary

As can be seen from the comparison these three self-erectors are very evenly matched. One area where the Eazy 90 currently loses out is that it does not have a cab, however we are told that this is being worked on. Liebherr recently launched the smaller 65 K with a maximum capacity of 4,500kg which has all the features of the 81 K. It also offers the larger eight tonne capacity 120 K.1. Potain also has a smaller Igo T70 and larger Igo T 130 with similar capacities. Terex is already working on expanding its range so watch out for a smaller Eazy 70 (?) and larger Eazy 140 (?) in the future. This is obviously one sector of the tower crane market that all three major manufacturers see doing well over the next few years.

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# Liebherr launches Wind Tower crane

Liebherr has developed a special tower crane for isolated wind turbine installations. The 630 EC-H70 aimed at 'low wind' areas where single turbines with very high hub heights are typical. As a result few paved roads are provided and the turbines are often erected in forested areas, making it difficult and expensive to bring in and rig large mobile cranes.

The crane, which has a maximum capacity of 70 tonnes, uses the same foundation as the wind turbine, employing a reusable foundation frame. The maximum free standing height is 93.1 metres, however for the higher turbines Liebherr has devised an innovative brace that ties the crane's tower to the turbine tower, allowing it to climb up to 150 metres.

Developed in conjunction with Max Bögl Wind, the new crane had its first outing earlier this year on a site in Bischberg in northern Bavaria, erecting one of a new generation of hybrid towers with 140 metre hub heights.

The entire crane was delivered by 21 standard truck loads and then a mobile crane unloaded and helped assemble the tower crane to an initial height of 50 metres. From then on the crane climbed the rest of the way, first to 93.1 metres, lifting the first turbine tower sections into place to a height of 82 metres.

At this point the crane self-installed a brace to the tower and then climbed rapidly at 5.8 metres a jump to its full 151 metres. The final turbine tower section was then lifted into place. Next step was the nacelle weighing 70 tonnes which was lifted to its 140 metre height at a rate of eight metres a minute, so within half an hour it was lifted and placed into position.

The extra-long blades - placed individually - were lifted at the maximum line speed of 37 metres a minute. The contractors said that positioning the blades into the hub was also much easier given the fine trolley adjustment and having the crane operator in the elevated cab. The capacity at the crane's 30.9 metre jib tip is 10,700kg.

Stefan Bögl, managing director of the Max Bögl Wind said: "I was very impressed by the efficiency of the assembly on our first outing with the 630 EC-H 70. Even with considerable wind speeds the heaviest loads were lifted in the shortest possible time to be positioned precisely."



A mobile crane unloaded the parts and assembled the crane at its initial height of 50 metres

The top tower section is lifted into place



Up goes the 70 tonne nacelle



Now the last blade



The precision micro trolley controls and proximity of the operator to the job helped simplify and speed up the blade connection work