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# Traditional or new technology?

The last time we covered Rough Terrain cranes it was towards the end of 2008 when the construction equipment world (and cranes in particular) was basking in record sales and bulging order books. Just a few months later and the world was in the grips of a global crisis, sales had plummeted and orders few and far between. After two tough years Rough Terrain sales are on the up again which is good news for the crane sector as a whole as they tend to be a leading indicator for crane demand.

**With the North American market accounting for around 50 percent of worldwide RT crane sales (about 1,600 in 2008 but falling to near 500 last year), those that want to become significant 'players' in this market have to cater for North American tastes. But are these changing?**

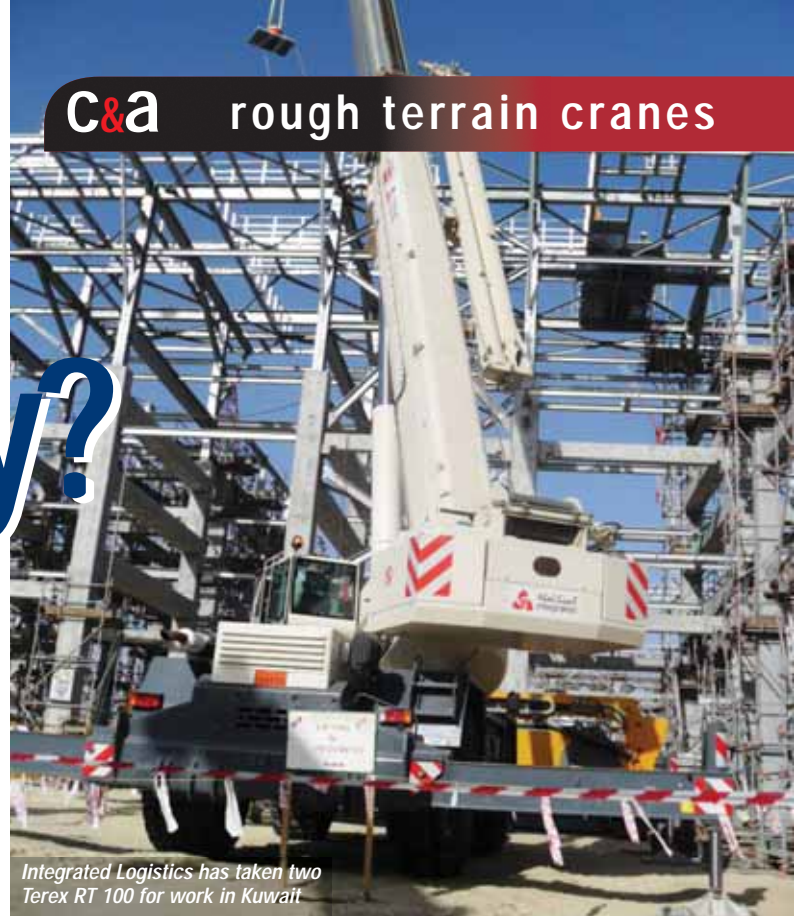
Historically, the RT has been a 'jack of all trades' crane, a simple, rugged and reliable site workhorse. The first telescopic boomed RTs were seen at the end of the 1940s and early 1950s and Austin Western is generally credited with producing the first commercially viable machine, the five tonne capacity 4x4 SP, more than 50 years ago in 1953. These early cranes were essentially pick & carry cranes that could cope with poor ground conditions.

A key early development was positioning the operators cab at the

front of the chassis rather than behind the boom as on most early industrial cranes.

These first RTs were used in a variety of construction projects from road building to refinery contracts replacing industrial and smaller mechanical crawler cranes. However even at this early stage with the RT becoming the chosen lift in North America, Europe was leaning towards cranes that were easier to transport.

The fact that most Europeans prefer to rent an operated crane for each lift rather than the North American way of renting the equipment without an operator for a longer period was a prime factor in Europeans generally preferring truck mounted and then All Terrain cranes, while America went for the RT. After North America, the Middle East is the next largest market, taking



*Integrated Logistics has taken two Terex RT 100 for work in Kuwait*

around 30 percent and although Europe is generally an RT desert, Italy is the one oasis, being the leading European RT user and base for manufacturers such as Locatelli and the home of European RT production for Terex and Grove.

As the RTs became more popular and gained better reach and capacity they began to be used for steel erection and concrete placing, two high-level activities that were not particularly suited to the restricted visibility of the cab-down design. The obvious solution was to mount a truck-type superstructure on a rough terrain chassis which first occurred in the mid 1960s. Since then it has been more a case of evolution rather than major breakthrough developments, so that the machines we know today are not dissimilar to 25 and even 35 year old models. Capacities have steadily increased and users have got used to larger models so that 60 and 80 tonnes cranes are now quite widespread. On larger models main boom lengths have grown with up to 60 metres offered on the larger cranes.

The growth of RTs in markets such as the Middle East and Africa is primarily attributed to US contractors working on construction and petrochemical contracts around the world and taking their preferred equipment with them. The market leader (excluding Japan) is probably still Grove, which has led the market since the late 1960's, followed by -

in no specific order - Link Belt, Terex and Tadano. Only Liebherr, among the major manufacturers, does not participate in this sector. Several Chinese crane companies, including Sany and Zoomlion are also now knocking at the door and looking a slice of the action.

## **Oldest new name in the business**

Last month's Conexpo was an interesting show for Rough Terrain cranes. Being a 'North American' product and on home soil, the show had all the major players - Grove, Link Belt, Terex and Tadano - along with the Chinese contenders, as well as Minnesota-based Badger Equipment and carry deck crane producer Broderson which both showed cab down models.

Badger is the oldest 'new' name in the business with a history dating back to the originator of the swing cab RT (Sargent) in the mid to late 1960s and Warner & Swasey. Now part of Manitex International the company showed its 30 ton, cab down CD4430 which is aimed at the refinery, bridge and petrochemical markets. The three model range has capacities of 20, 25 and 30 tons and features a distinctive, forward mounted two door cab. The company says that it is working on a four section (rather than the current three section) boom in order to reduce the overall length from 11.2 to 9.1 metres. It will also produce a road rail version.



*Now part of Manitex International Badger used Conexpo to show its 30 ton, cab down CD4430 aimed at the refinery, bridge and petrochemical markets*



## rough terrain cranes C&a

*Largest capacity RT currently in production – the Grove RT9150E*

crane on a compact and durable chassis.

Certainly using the GMK boom - which features Grove's Twin-Lock pinning technology - results in a lighter, longer and in terms of capacity, a stronger boom. Maximum radius with main boom is 56 metres at which it can lift 1,700kg. A hydraulically offsettable bi-fold 11 to 18 metres swing away extension takes the tip height to 81.4 metres.

The RT9150 is not a small crane at 3.8 metres wide and weighing the best part of 90 tonnes, so transportation is, as with any big RT, an issue. To simplify things it

has removable front and rear outrigger boxes and counterweight.

Grove has also launched the RT765E-2 a new 65 ton replacement for its popular 60 ton RT760E "We have strengthened the boom and outriggers, increased the capacity from 60 tons (55 tonnes) to 65 tons (60 tonnes) but kept the same four-section, 33 metre full-power boom," said Neil Hollingshead,

### World's biggest RT

The biggest RT news at the show was the launch of Grove's 150 ton RT9150E – the largest capacity RT currently in production. The new model combines, in essence, the GMK 5130-2 All Terrain crane superstructure with the RT9130E Rough Terrain chassis. Grove says that the combination gives a high capacity, long boom (60 metres)



*Tadano launched two new large 'American style' RTs, the 75 ton GR-750XL-2 and the 100 ton GR-1000XL-2 at Conexpo*

Manitowoc's product director for AT and RT cranes. "The RT760 was very popular and one of Grove's best cranes so we didn't want to change it that much. Overall the load chart of the new crane has increased by just over 10 percent."

The hydraulic single-axis controls which have proved popular with operators have been retained. Outriggers can be set up fully retracted, half extended and fully extended and an optional counterweight removal system can reduce transport weight to 35.5 tonnes.

Although the basic design of the RT has remained the same for several decades, operator cabs have steadily improved. Both new Grove RTs feature a new generation cab that

offers better visibility and comfort. The "full vision" design has more glass and on the RT9150E can tilt up to 20 degrees, for improved operator comfort and visibility. Inside the RT9150E cab, operators have Grove's EKS5 load moment indicator and ECOS electronic controls. As well as managing and monitoring the crane's major functions, ECOS also gives feedback on a variety of conditions, including fuel level, low brake pressure, hydraulic and transmission oil temperature and engine stop.

### New Dash 2 Tadano

Tadano has launched two new large 'American style' RTs, the 75 ton GR-750XL-2 and the 100 ton GR-1000XL-2 which become its two largest models in its five RT crane

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*A typical application for a Grove RT700E*

line-up which now extends from 15 to 100 tons. The new Dash 2 range features a new management system called 'Hello-Net' that uses telematics technology to allow the owner, maintenance engineers and manufacturer to gain remote access to data and location.

An Eco mode system controls maximum engine speed which Tadano says improves fuel consumption by 30 percent and this is coupled with a new positive control system which uses a revised hydraulic circuit layout further reducing fuel consumption. All fuel savings are constantly monitored and displayed on the new AML (Automatic Load moment Limiter) screen in the cab.

Tadano's latest AML detects almost every boom movement, angle, elevation and pressure as well as the

extended length of each outrigger, displaying the crane operating conditions (such as moment ratio, boom length, boom angle, load radius, slew position, actual load, total rated load, outrigger position, jib length, jib offset angle and main hydraulic pressure) to ensure safe operation.

Both of the new Dash 2 machines have a new rounded profile, high tensile steel boom which, it is said, reduces weight while improving boom strength. And depending on the work being carried out, two telescoping modes are available. Both also feature a new superstructure, improved cab and controls and new chassis frame which is both lighter and more rigid. The Mitsubishi powered GR-1000XL boasts a maximum travel speed of 22mph. Tadano says that the sale of

these cranes will be limited to North America and has been particularly successful taking 65 orders for the GR-1000XL and 40 for the GR-750.

### Terex upgraded

Although Terex's 100 ton (90 tonne) Terex RT 100 – one of the first RT's to boast an All Terrain boom - has been around for about 18 months, an updated version has been launched featuring a 53 metre boom and maximum tip height with extensions of 68 metres. Conveniently equipped with a new self-removing counterweight, the RT 100 is the second largest RT in the 15 model Terex range which extends from 27 tonnes to the 118 tonne RT130.

### Taking the Pulse with Link Belt

Another big North American brand - Link-Belt - has a sizeable seven model 30 to 130 tons range.



*Link-Belt RTC 8090.*

Link-Belt's big news this year is its new Pulse total crane operating system which it is installing in all cranes including its RT models. The Pulse system is an intuitive, easy-to-use crane operating system that has been designed completely in-house. Far more than just an RCL, the system includes an extended mode controller, self-diagnostic capabilities and continuous monitoring of multiple crane functions and conditions.



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**Chinese invasion?**

Possibly the biggest news in the RT market is the arrival of Chinese manufacturers such as Zoomlion and Sany, both of whom attended Conexpo. Sany had one of the largest stands at the show and with new 'globally designed' products and North American personnel. The company has been operating in the region for around four years (see article on page 30) but the time and effort it has invested in new models, staff and product support recently has certainly got the other manufacturers sitting up and taking note.

Sany currently has three RTs in its range – the 40 ton SRC840 and two 60 toners - the SRC860 and the long boom SRC860XL. The company makes extensive use of US component companies such as

Braden winches, Cummins engines and Dana powershift transmissions. Watch out for larger capacity cranes – the company says that it currently has an 80 ton machine on the drawing board and is planning a 120/125 ton model.

Zoomlion has spent the past 12 months refining the products it announced in early 2010, its range now extends to four RT cranes from 35 to 100 tonnes. Designed specifically for western markets they are distributed worldwide by Houston, Texas-based Global Machinery & Equipment. As with Sany it uses premium name components and claims a significant price advantage over North American producers. But will this be enough to tempt and change the buying habits of traditional US Rough Terrain crane buyers? Time will tell.



*Zoomlion RT60 and RT80*

**Double shift Link-Belt**

Dallas, Oregon-based JW Fowler used its 120 tonne three axle Link-Belt RTC-80130 Series II Rough Terrain crane to work two, 10 hour shifts for five months on the Balch Consolidation Conduit sewer project in Portland, Oregon. The RT handled boring equipment, helped with headwall construction and lifted a 22.2 tonne, four metre diameter manhole base into an 11 metre shaft. Thanks to the RTC-80130's ability easily to remove its own counterweight, it was light enough to be able to drive the streets of Portland to other shaft sites, quickly reinstall its counterweight and be ready for the next lift.



*The RTC-8130 worked two, 10 hour shifts for five months in Oregon.*

**Two RT 100s for Kuwait**

**Terex Cranes has delivered two 90 tonne RT 100 Rough Terrain cranes to Integrated Logistics in Kuwait. Both cranes will be used for maintenance tasks in the petro-chemical and gas refinery sector.**

The two cranes include standard air conditioned cabs and share a 15 metre swingaway boom extension between them. "Being able to share a single main boom extension for both machines was a cost-effective solution that our company appreciated," said Saleh Al Huwaidi, chief executive of Integrated Logistics. "Also, offering higher capacities than other cranes of similar size, the RT 100 is an ideal solution for the wide range of pick & carry jobs that we do. The ability to manoeuvre safely in areas where other cranes cannot go is a strong advantage for our customers."

The Terex RT 100 was one of the first of the new long boom Rough Terrains that match the more sophisticated booms from All Terrain cranes with a compact RT chassis.

Its six-section 53 metre main boom has a maximum tip height of 55.8 metres and two synchronised telescoping modes.

Integrated Logistics, part of Integrated Holding, specialises in heavy lift cargo handling, heavy lift erection, and the transportation of over dimensioned cargo. It also provides customs clearance services and supplies a wide range of construction and lifting equipment to support major projects in the region.

The company's equipment fleet currently exceeds 2,000 units, including 300 cranes ranging from 25 to 1,600 tonnes capacity - a Terex CC8800-1.



*Integrated Logistics Co. KCSC has taken delivery of two 90 tonne capacity Terex RT 100 Rough Terrain cranes in Kuwait to work on maintenance tasks in the petro-chemical and gas refinery sector.*

**20 RTs on the Panama Canal**

Italian crane manufacturer Locatelli has supplied 20 Rough Terrain cranes - 12, 30 tonne GRIL 8300T and eight, 60 tonne GRIL 8300T over the past 12 months to the consortium working on the widening of the Panama Canal, one of the largest and most important construction projects in the region.

The 'Grupo Unido por el Canal' – a combination of Impregilo, Sacyr Vallehermoso of Spain, Somague from Portugal, Jan de Nul from Belgium and Panama's Constructora Urbana – are building a new system of locks as part the plans to widen the Panama Canal. Work on the project - which will involve approximately 8,000 workers - is due for completion by the end of 2014, the centenary year of the opening of the Canal.

The new series of locks - one on the Atlantic side, the other on the Pacific - will allow increased levels of commercial traffic on the canal including the larger capacity Post Panamax vessels that it is currently unable to accommodate.

*Locatelli has supplied 20 RTs to the contract widening the Panama Canal*



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Grove cranes  
range in capacity  
**from 8t to 450t**  
**(8.5 USt to 550 USt)**



# The start of something big?

Over the last three years Sany has made enormous strides from being a Chinese manufacturer selling Chinese products around the globe, into a manufacturer with more global potential. By employing experienced, European and North American staff and designing for the worldwide market, the company is becoming a force to be reckoned with. Its first North American-designed product was a Rough Terrain crane. Mark Darwin had a chance to find out more from Sany's product manager of cranes Rick Hunter at Conexpo in Las Vegas.

When Rick Hunter joined Sany almost three years ago he was the only North American on its payroll. At that time the company did not have a Rough Terrain in its crane line-up or any experience of the sector. Hunter, having spent 10 years with Link Belt, therefore played a pivotal role in the development of its first RT released in 2009. He toured the USA with a team of Sany engineers talking to customers and carrying out competitive research. The result was the first Sany RT - a 60 ton unit - designed primarily for the world's biggest market - North America. Three years on and Sany has three models in its RT range - the 40 ton SRC840, the 60 ton SRC860 and seen for the first time at Conexpo, a long boom 60 ton SRC860XL. Hunter says that these latest cranes are already fourth generation machines, following constant development and improvement over the period.

"The RT cranes have a North American design but are true global machines," says Hunter. And as if to illustrate the point he reels off



Rick Hunter

orders for 10 units to South Africa, two in Brazil, and five to the Middle East.

"Even though Sany produces around 5,000 cranes a year, the RT market in China is tiny and therefore it did not have such a crane. So the current product range has been designed from the ground up for a world market. Once the prototype was built we spent a few months of internal testing before hiring US-based All Test & Inspections for ANSI testing. After some styling improvements and a few more



Sany launched two new RTs at Conexpo

minor changes, which helped save some weight and improved the machine's we were ready to go and so this Conexpo is the true launch of Sany in the Americas."

The latest model, the SRC860XL - features a 140ft main boom which Sany claims is 24ft longer than its closest competitor, a quick check showed that in fact while the equivalent Link Belt offers 115ft and the Grove and Terex RT760 110 and 111ft respectively, the Terex RC60 offers 131ft and the Tadano GR55EX offers 139ft of main boom.

Hunter says that there is currently an 80 ton machine on the drawing board and this will be followed by a 120 or 125 ton and a 150 ton machine in the future.

"Sany was successful selling products over the past few years mainly because the competition had extended supply/capacity issues," says Hunter. "Now we have machines that can compete on specification and performance. The new SRC860XL will match the equivalent Tadano, it has the longest boom and can outpick any 60/65 ton machine and we have a 10-15 percent price advantage through efficient manufacturing in China."

"Sany is viewed as a premium product in China because of its extensive use of western components such as Rexroth hydraulics, Parker

Sany has supplied seven RTs to the United Arab Emirates working in the government oil fields



pumps, Husko and Eaton hydraulics, Dana and Axletech axles and transmissions. We look for global partners that have commitments in China or are willing to step up and grow their business to supply parts and service to Sany customers all over the world. As you can see through the high profile advertising at Conexpo, we are putting a face to Sany so that people can get to know the company. We have hired Brian Kershaw, ex-Manitowoc as service manager for cranes, John

An SRC550H outside the Sany factory





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Lanning ex-Manitowoc and Link Belt to head up the design of the new global crawler cranes. Sany recognised the need for international talent and is committed to the globalisation of the company."

Over the past four years the RT market has changed. When Sany started developing the new 60 ton crane that sector accounted for between 30-40 percent of sales. However this has almost halved as volumes fell and as 80 ton capacity machines have become more popular.

"Everyone wants more capacity and longer reach and this can be seen with the introduction of a 150 ton RT at this show. Over the next few years we will also increase our range to 150 tons."

Historically, the RT crane has been a relatively basic, tough, pick & carry type crane. With the American market dominating world sales, with most units going to the rental companies, so machines have to be simple to use and 'bullet-proof' in terms of reliability.

"We are seeing RTs getting more and more sophisticated," said Hunter. "But we find that being easy to operate is a must. Anyone could operate one of our machines after just a 10 minute tutorial - they are that simple to drive. The cab touch screen is easy to read and goes through a simple set-up process, asking which hook block you are running and parts of line etc. The

screen has two different modes - travel and lift - and it incorporates all the essential gauges and information within the display. The dash is neat and clean, unlike some competitors that have banks of switches. Sany designs and produces its own load moment indicator so costs can be kept down and each can be exactly tailored to the product."

"We also have two boom presses that allow us to design and produce a range of boom designs using higher strength steels. We found the Chinese steels were not of a high enough quality for us, so we now import high quality, high strength steel from Sweden - the same as our principle competitors. For all the important components we use the top of the line manufacturers so that customers can be confident and comfortable with the products."

But by using these top components, isn't it difficult to maintain the price differential?

"Yes it is getting more difficult, however Sany's lean manufacturing and process controls provide lower manufacturing costs, allowing more to be invested into components. The RTs are currently built in China but the intention is to start building products in America by June of this year -excavators and concrete pumps- with RT cranes coming on line possibly by the end of this year, depending how successful we are at this show. There is always a constant pressure on costs

particularly when using better quality components and we are currently going through a cost analysis to see which products should be built in the USA, Europe or China."

"Sany America had a two year start over Sany Europe in Germany. We were in the process of finding the right people when the economy hit the skids and we put the factory plans on hold. More focus and effort then went into the German operation which should mean that by the next Bauma in 2013 will be really exciting. Three years ago we had two Chinese designed crawler products - 150 and 250 ton machines - now we have five global designed cranes and three RTs. The German engineers

*The Middle East is the second largest market for RTs*



*At work on a contract in China*



are currently working on a European All Terrain crane."

As mentioned earlier, North America is by far and away the largest market for RTs. In 2008 more than 1,600 were sold although in 2009/10 this has apparently plummeted to around 500 units but is slowly starting to pick up again. Sany's entrance is therefore timely and should help the company achieve its ambitious 'Top five construction equipment manufacturer' plans.

Founded just 22 years ago it is the largest heavy equipment manufacturer in China and already among the Top 10 manufacturers in the world, employing more than

30,000 worldwide. For the last decade it has achieved an annual growth rate of 50 percent which it maintained through 2008 and 2009 in spite of the global economic recession and achieved \$3 billion in sales revenues. Many subsidiaries have been added with Sany America - formed in 2006 - headquartered in Peachtree City, Georgia, and Sany Europe in Cologne.

The difference from being a Chinese manufacturer selling products around the world to being a true global equipment manufacturer is huge. However looking at its latest products and investment plans, it looks well on the way to succeeding in its aims.

*The company is currently working on an 80 ton RT with plans for machines up to 150 tons*



*The cab of the new SRC860XL*