Record hoists

Pega hoists on the construction site of the world's tallest building – the Burj Dubai in the United Arab Emirates – are at the top of the man-made world. **Patrick Hill** reports on the world records they can claim, and on other hoist news.

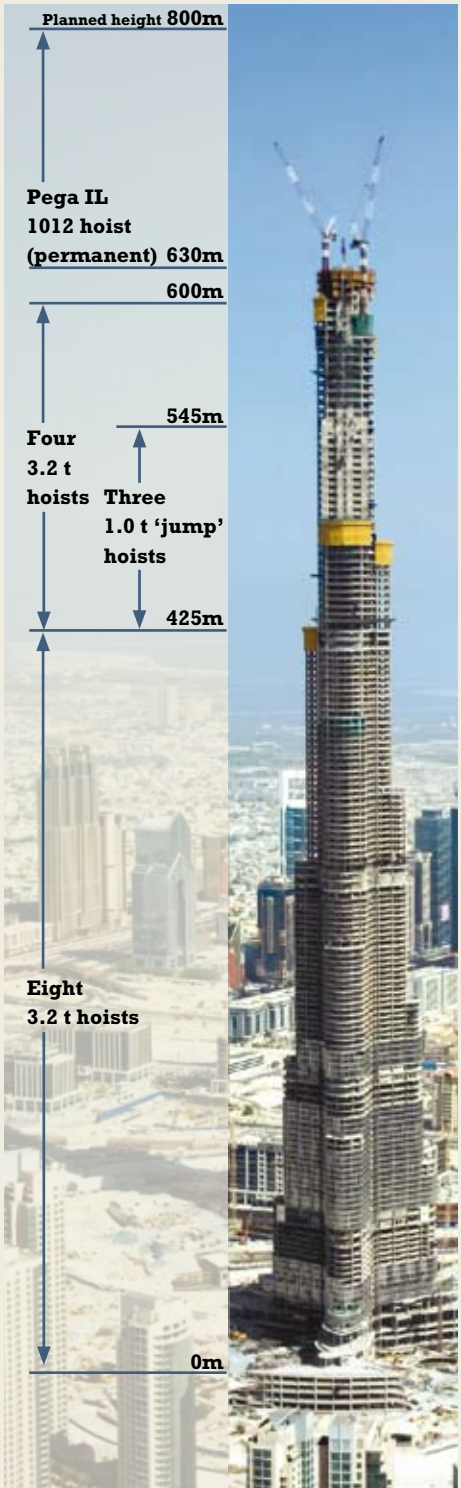
Sometimes the most obvious measures, such as height and speed, get the most attention. Pega Hoists already holds two world records for rack-and-pinion hoists – longest single run, at 425 m, and fastest non-counterweighted, at 100 m/min – as a result of its contract at the Burj Dubai. Next month it will add a third: the world's highest – a 625 m base station, rack-and-pinion, permanent hoist.

As significant as those performance measures undoubtedly are, in the economics-oriented world of project deadlines and budgets, it is not height or speed that is most important. When a contractor is under scrutiny for schedule performance, reliability is critical.

Pega can justifiably claim an accolade in that respect, too. Four of its 3240 BD VFC double-caged hoists have been climbing to 425 m with loads of 3.2 t at a speed of 100 m/min for 24 hours a day, seven days a week, for more than three years.

In total, that service has been more than 35000 hours, Pavel Policar, industrial and special projects director for Pega and the manager of Pega's Burj Dubai activities, tells *AI*. "No major breakdowns, all key original components." He says that the hoist traffic over the three years "…corresponds to over 20 years on any other site, for example, in the UK."

Pega project manager Pavel Policar, pictured at 625 m, on site to place the last, permanent hoist in November.



Bases for Pega's single-cage "jump" hoists projected from the tower structure.

Reliabilty measures

Pega met the project's reliability challenge with daily, weekly, and monthly maintenance programmes, developed in conjunction with site operator and BD joint venture member Arabetc. Pega also positioned a "special" stock of spares and consumables on site and elsewhere in Dubai. The Czech company also praised "superb" personal relations with Mr Reyad Awwad, Arabtec's plant manager and other key project personnel. "We all were on the job 24/7, just as were the machines, and there was no problem that we could not overtake fast and smoothly," says Mr Policar.

At the height of construction, Pega had 15 hoists on the tower (see diagram). In addition to four double-caged hoists rising from ground level, two other double-caged hoists of the same type, based at 425 m, lifted to 600 m (floor 160). Three smaller, single-cage "jump"

The Pega hoists provided access to the entire Burj Dubai, racking up 35000 service hours.

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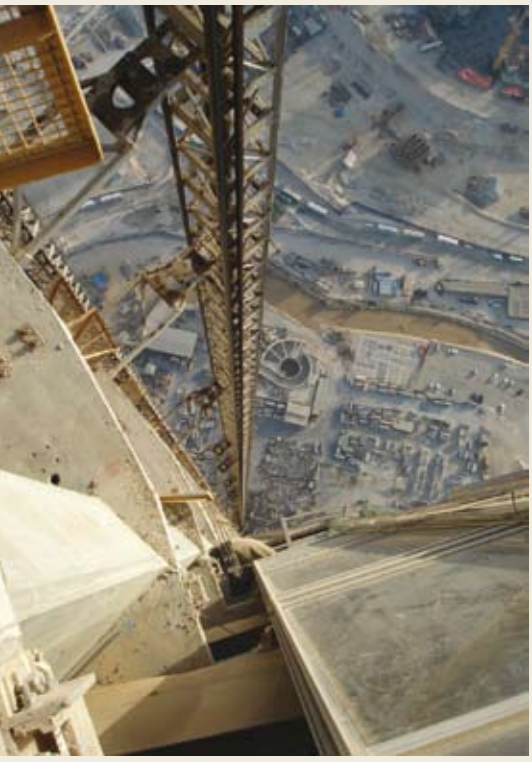
The top of the Burj Dubai is ready for its steel spiral top and Pega's permanent hoist.

Pega's world-record 425 m, non-stop ride.



hoists, also mounted initially at the 425 m level and shifted higher as needed, travelled 80 -120 m to handle the most intense inter-floor traffic. The last one is still there at the top.

As you can imagine, optimising the flow of materials and workers (at peak more than 8000) up and down the 600 m of the structure served by the hoists was critical. Pega helped design and optimise the traffic scheme as part of its contract.

The last hoist at the base of the tower came down in October, and two other hoists will remain on the tower for a few months. Now is the "end game" of Pega's involvement. Soon it will install the permanent Pega IL 1012 model hoist to service the radio transmitters, GSM amplifiers, antennas, and other gear going into the steel spiral that will crown the 800 m iconic landmark.

Part of Mr Policar's mission in November was placing that 1 t capacity hoist to the highest-ever position on earth – over 650 m. Its installation awaits placement of the spiral itself, whose weight will compress the supporting structure by 30 mm.

Mr Policar compares Pega's work at the Burj Dubai to climbing Mount Everest: "There is only one Mount Everest and for anyone there is always the first time. To get to the top of Mount Everest, one has to be modest enough and objective. For two years we performed pre-bidding technology checks, calculations, etc., just to be sure that we were up to the project.

"Getting the project was only some 20% of the effort. The real achievement is to successfully complete the mission and to feel the weight of reputation on site. Obviously, even if you are very good in climbing, Mount Everest teaches you a lot and pushes you miles ahead."

Project highlights

Mr Policar said his biggest surprise during the project was how intense the vertical traffic really was - and how well over the three years the machines coped.

Perhaps the machines are the genuine stars of the project and with the job completed, where are they? Pega said the machines are being serviced and will soon hit another project - this time "only" 400 m high. **AI**

Fast hoists speed London construction

Two high-speed Alimak Scando 2837 passenger hoists and an Alimak 4000 kg-capacity 'Mammoth' Alimak transport hoist are speeding the construction of the 147 m Strata Tower in London, UK.

The three hoists, on site since September and rented from Universal Builders Supply Ltd (UBS) in Huntington, Cambridgeshire, travel on masts attached to a single, specially built aluminium tower, which is tied to the 43-storey building.

This tower, which is also supplied by UBS for the 60-week rental period, reduces the space required for the hoists. It also cuts the number of ties to the building, minimising the number of cladding panels that need to be left off during construction.

According to contractor Brookfield Construction, the 90 m/min, twin-cage passenger hoists travel to the top of the tower in just over 90 seconds. That compares to over 6 minutes using conventional hoists.

Matthew Hewitt, Brookfield's project manager, said, "At peak times, we have to get 400 men to working height, so the reduction in travel time for one return trip alone is equivalent to a saving in excess of £1000 per day. Add to this the time to get materials to height during the working day, and the savings during the two-year life cycle of this project will be substantial."

Managing director Tony Faulkner of UBS said, "The UBS towers are also far quicker to install and remove, so there are major savings at the start and the end of the project. The time and cost savings which the UBS system provides are even more critical with the financial constraints facing the construction industry in the current economic climate."

The double-masted Mammoth hoist carries up to 4000 kg of materials at 40 m/min and has a 4.2 x 3 m cage. "The Strata Tower is an innovative construction and incorporates unusual materials that cannot be accommodated in standard size hoists", said Mr Hewitt. "The Mammoth hoist is a real advantage for us as it means we can hoist all the large panels and non-standard materials to the levels they are needed."

The Strata Tower complex comprises two residential buildings with 408 apartments. The complex will house three wind turbines to generate power for the complex, and energy costs are expected to be 40% less than the UK housing average.

An aluminium tower supports the three hoists on the Strata Tower job site in London.

Geda has prototyped a 300 kg capacity extension to its 500 kg range, calling the new, smaller platformed model the 300 Z/ZP (above). It will lift at 12 m/min to 50 m and uses the same 1 or 2 m aluminium mast sections of the range. Also, the German company established its US subsidiary, Geda USA, in June 2008 in Houston, Texas. Geda's Johan Siler, owner and managing director, told *AI* the company is initially targeting restoration applications. He said the Unimast line, which will soon offer capacities from 300 kg to 1.5 t using a common mast, offers advantages for rental companies and particularly suits the 50 – 100 m heights most commonly found in renovation work.

Camac will increase the versatility of its 250 kg capacity, 15 m/min lift speed Smart hoist with the introduction of a third basket for bigger scaffolding in January. Smart, which the Spanish company said is the first rack-and-pinion hoist for scaffolding, installs both inside and outside scaffolding to height up to 45 m. Accessories include a carrier for lifting scaffolding components and an automatic, powered reel for Smart's power cable. It allows easy removal, said the company, for increased security when the system is not in use.

GETTING DOWN IN ST PETERSBURG

This BV 400 hoist from Stros in the Czech Republic hangs down from its base, not rising up. General contractor STIS (OOO Strujnyje Technologii i Stroji-telstvo) in St Petersburg, Russia is using the 400 kg capacity machine on a project to build a network of utility tunnels and shafts under the city.

STIS, which specialises in mining work, will add additional mast sections as the shaft grows to its planned depth of 95 m. The hoist, which was installed in September, travels at 19 m/min on a rectangular (650 mm x 200 mm) mast. Stros told *AI* that its ability to certify the machine was an important equipment selection factor. The company also supplied similar equipment for a similar project several years ago in Prague.

Its Russian distributor, OOO STROS, installed the hoist and provides service and spares. Warranty and service capabilities were decisive factors in choosing the equipment for this project, commissioned by the city, which extends to the end of 2010.

This Stros BV 400 hoist has 400 kg of lift capacity.