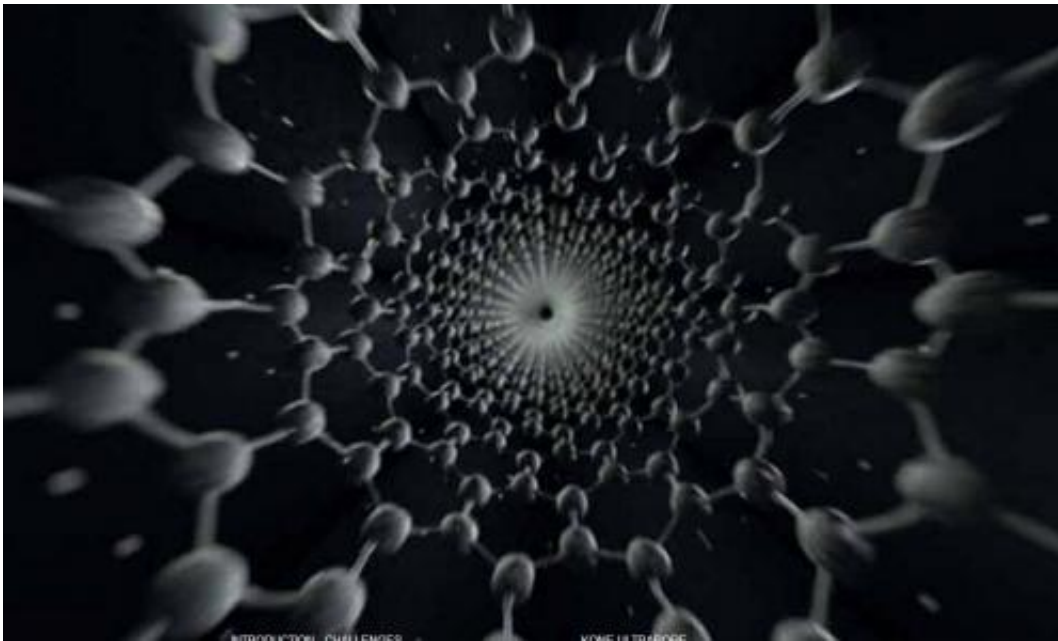


UltraRope announced to one-stop zoom up tall buildings

June 12 2013, by Nancy Owano



(Phys.org) —Elevator tech has hit a wall, or at least the wrong floor of the person's destination, with limitations that are unable to accommodate the world's tallest buildings. As buildings rise, logistical demands rise with them. The weight of steel cable does not make it easy for elevators to zoom straight to the top. Instead, they reach a limit and that is it. For example, people going up in a 828-metre-high tower, such as in Dubai, need to switch lifts once they have reached the top mark in one elevator, going over for another. Elevators today are also subject to severe strains

such as building sway, potentially knocking them out of service under especially poor weather conditions.

"There comes a point when existing solutions can be taken no further. Current elevator technology has taken us as far as it can and refinement simply isn't enough," the elevator company KONE of Espoo, Finland, asserted. Its newly announced hoisting technology solution is something called UltraRope. The announcement was made in London this month as an international conference on tall buildings got under way. Increasingly, tall buildings are growing taller. Nearly 600 buildings of 200 meters or more are under construction or planned over the next few years. Three buildings in the world top the 500-meter mark, and 20 more such buildings are planned.

The new system means elevators can zoom up to the top of a very high skyscraper in a single run, for heights of up to 1000 meters, which is twice as high as what is possible with today's technology, according to KONE.

As for materials, UltraRope has a carbon fiber core with high friction coating. The carbon fiber core lasts longer than conventional steel ropes, said KONE. UltraRope is highly resistant to wear and abrasion and, unlike steel, the structure does not densify and stretch.

Elevator energy consumption in high-rise buildings can be cut significantly. UltraRope cuts [energy consumption](#) by 15 percent for a 500 meter elevator. "The drop in rope weight means a dramatic reduction in elevator moving masses - the weight of everything that moves when an elevator travels up or down, including the hoisting ropes, compensating ropes, counterweight, elevator car, and passenger load," according to KONE. UltraRope is also less vulnerable to building sway in high winds.

UltraRope was tested in real elevators and simulation laboratories in Finland. KONE noted that its Tytyri R&D facility is the world's tallest [elevator](#) testing laboratory, built over 300 meters underground adjacent to a limestone mine. Properties such as tensile strength, bending lifetime, and material aging were among the qualities measured.

More information: download.kone.com/ultrarope/index.htm

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