

Case | Dubai, United Arab Emirates

Dubai buildings unlock up to 80% energy savings with simple pump swaps



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“We see buildings as these locked potentials of value. Energy, carbon and money savings are just sitting there, untapped. All we need to do is to open the valve,” says **Charles Blaschke**, CEO of Taka Solutions in Dubai.



The situation

Sometimes it takes something as simple and concrete as unhappy tenants to connect the dots between how to fix one’s own building and your government’s goals for improving buildings’ energy use.

The Dubai government aims to retrofit 30,000 of its buildings by 2030 to help reduce the city’s energy demand by 30%. It is one of several major initiatives for saving energy and water in the United Arab Emirates. Given the rapid pace at which technology is advancing, the city now has access to solutions that enable such drastic savings in the buildings. After Dubai’s major and fast growth over the past few decades, the need for those solutions has become more and more clear in recent years.

“This city was built very fast – but at the time there wasn’t a focus on quality design, quality construction, quality materials, operation and maintenance,” says Charles Blaschke, founder and CEO of Taka Solutions – an energy consulting company specialised in engineering,

technology and finance optimisation for commercial buildings based in Dubai.

“And these big, beautiful buildings are mostly glass. In the desert, we’re in an extreme climate. Dubai is sunny 364 days a year. Rain is almost zero. It always has a very intense sun with solar radiation hitting the buildings. Glass buildings consume a lot of energy. At the time, energy was cheap, so people didn’t focus on energy. They just wanted comfortable buildings. ‘Let’s put in a bigger AC system, a bigger pump system, to ensure that no matter what happens – fully occupied or not – let’s make sure it’s more than enough to keep the building cool.’ So all over Dubai, the pumps and AC systems are usually much bigger than they need to be. They’re not operating for maximum efficiency.”

Topic: Pump retrofits in commercial buildings
Location: Dubai, UAE
Customer: Taka Solutions and H&H Property Management and Development



“I’m really keen to say it was worth it,” says **Vasileios Vatisstas**, Portfolio Manager, H&H Property Management and Development, on the Grundfos Energy Check and Taka Solutions pump and chiller system upgrade at three buildings in Dubai.

Indigo Tower’s ‘jet engine’

Indigo Tower is one of those buildings constructed in the rush and with a way-too-large AC system. It is a typical, mid-sized building around ten years old in one of Dubai’s developments north of the city. It has eight stories of apartments. The pump room is on the roof – just over rooms 812, 813 and 805. The residents in those rooms particularly described the noise above their ceilings as “constant – like a jet engine.”

“People were trying to live and sleep there – it’s an apartment building. All they could hear was this loud, rattling noise that never went away,” says Charles Blaschke. “Because of the AC demands in this hot region, AC literally runs 24/7, 365 days a year. There wasn’t an hour of the year that they were comfortable and having issues with their experience in the building. There was a huge drive to solve this problem.”

Indigo Tower’s owner, H&H Property Management and Development, was also experiencing unusually high electricity costs at two of its other buildings, Green Tower

(commercial) and Falcon Tower (residential), in the Deira District of Dubai. Portfolio Manager Vasileios Vatisstas suspected it also had to do with the pumping and chilling systems. This was when his company got in touch with Taka Solutions.

Grundfos Energy Check

Taka Solutions worked with Grundfos to determine the problems around the existing HVAC (heating, ventilation and air conditioning) pumping systems. A Grundfos Energy Check determined that the buildings were equipped with oversized pumps, inefficient operation and poor balancing in their constant, primary chiller systems. The pumps ran at constant speed. The Delta-T (the temperature difference between the supply and return chilled water) was only 1 degree Celsius – which in a building’s chilling system means extreme inefficiency.

Thus, Grundfos recommended changing to close-coupled, end-suction pumps with variable frequency drives – intelligent NB-E pumps. These could provide the exact flow requirements to

the chillers without wastage and improve the Delta-T to five degrees Celsius. A simple, turnkey solution.

“When we saw that the pumps in these three buildings – Indigo, Green and Falcon – were wasting energy, were vibrating, were causing noise issues, weren’t reliable and had savings potential, we saw this as a real winner and equipment to replace,” says Taka Solutions’ Charles Blaschke.

And then Taka Solutions offered to replace the old pumps... for free.

“It’s a fact that many people from our team were sceptical about this,” says H&H’s Vasileios Vatisstas on the performance-based contract. But it did not take long to understand how it worked. The energy savings would pay for the pump upgrade.



Indigo Tower, Dubailand, Dubai

Vasileios Vatisas of H&H (left) and Indigo Tower's Facility Manager learn how to monitor the Grundfos NBE pumps via a smartphone Grundfos GO app from a Grundfos Service technician (right).



“I’m keen to say it was worth it. We changed to state-of-the-art equipment and achieved energy savings of 50-80%.”

Vasileios Vatisas, Portfolio Manager
H&H Property Management and Development

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The solution

“The idea is really simple,” he says of the performance-based contract. “Taka Solutions has return on investment based on the savings that those buildings will perform. It’s a win-win situation, because we get new, state-of-the-art equipment. We extend the lifespan of our assets. We can provide a better environment to our residents, which is really important for us in H&H. And Taka Solutions gets its money back from the energy savings over some years – depending on the agreement we have.”

Immediate results

H&H saw results almost immediately. At Indigo Tower, the pumps previously used 36 kW every hour. After the upgrade, they used between 7-10 kW/h. Now two years in operation, they use 81% less electricity than previously. In addition, pump efficiency is not only better, but also the efficiency

of the whole HVAC system. Actual payback time on the investment is just eight months.

“With everything we do, we’re only paid from the savings we generate,” says Charles Blaschke. “We have to ensure that a project is designed for the long term. Working with quality partners and equipment suppliers like Grundfos across our projects is key, because it gives us peace of mind. We know we can trust them. We know what they put in is right. It’s going to be the right optimised solution. Not just today, but also tomorrow.”



Falcon Tower, Deira, Dubai



Green Tower's new HVAC pumps are using 57% less electricity for keeping the office building cool than previously after the building retrofit.



Green Tower, Deira, Dubai

The outcome

The numbers on the other two building retrofits in 2018 tell similar stories. Falcon Tower cut its pumps' electricity consumption by 46% and Green Tower cut its use by 57%. Overall, the buildings cut their total energy savings – including that from chillers, ventilation and lights – between 20-25%.

"I'm really keen to say that it was worth it," says Vasileios Vatisstas. He adds that not only was it worth it for his company, but the

residents in all three buildings are experiencing more comfort. And the eighth storey rooms below the pumps at Indigo Tower? All is now quiet – no more complaints.

The potential for similar retrofits in Dubai is enormous. "It is important to focus attention on the massive contribution that retrofitting old and inefficient pumps will make to meeting Dubai's 2030 vision of a 30% reduction in water and energy consumption," says

Charles Blaschke. He adds that pump retrofits also contribute toward the UN's Sustainable Development Goals SDG6 and 13 – water and climate.

"It starts with one building. One building at a time," he says. "We see these buildings as locked potentials of value. Energy savings, carbon savings, money savings – they are all sitting in these buildings almost untouched and untapped." He says the "pay as you save" business model, allowing building

owners to retrofit their HVAC systems at no capital cost, is the incentive to unlock the long-term value in their buildings.

"All we need to do is get to them and almost open the valve," he says. "It's not hopes and dreams or something that's not feasible. It's right there, and it's very simple to achieve."

Grundfos supplied

A Grundfos Energy Check was the basis for all three pump retrofit

projects with Taka Solutions at Indigo, Green and Falcon towers in Dubai. Read more about [Grundfos Energy Check and Performance Contracts](#).

For the three pump retrofit projects in this story, Grundfos supplied intelligent NBE pumps. [Read more about how to optimise chilled water systems in commercial buildings here.](#)

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Grundfos Holding A/S
Poul Due Jensens Vej 7
DK-8850 Bjerringbro
Tel: +45 87 50 14 00
www.grundfos.com

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