

# GULF POWER INFRASTRUCTURE: PLUGGING BLACK HOLES OF INEFFICIENCY

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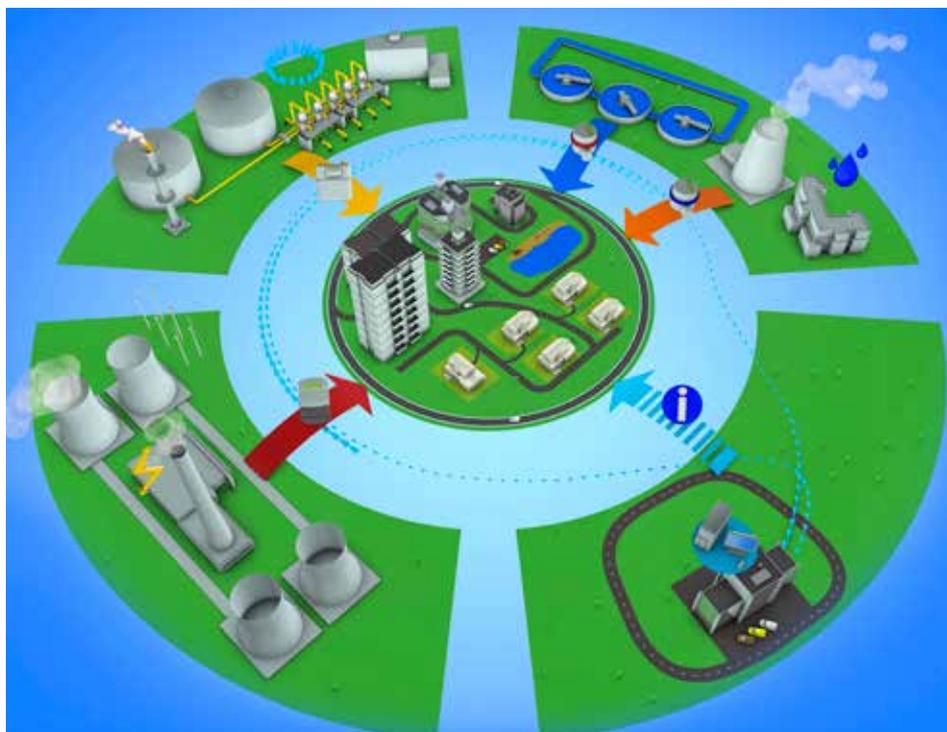
**I**n an industry beholden to high operational and maintenance bills, power operators understandably reel from conversations about integrating efficiency into existing and new infrastructure. But I believe that this short-termist approach at a time when the Gulf's demand forecasts are on an upward trajectory risks two results that we unanimously want to avoid – costly mistakes and hampered supply.

The Gulf Cooperation Council's (GCC) power capacity needs to expand at an average annual pace of 8% between 2016 and 2020 to meet demand, according to Saudi Arabia-based Apicorp. Accordingly, Saudi Arabia is expected to invest US\$133 billion in electricity projects over the coming decade. The Kingdom's peak electricity is forecast to hit 90,000 megawatts (MW) in 2022, from the installed capacity rates of around 70,000 MW in the first quarter of 2016 – nearly a 30% increase. Qatar will need to spend US\$9 billion between 2016 to 2020 to add another 5,200 MW of capacity, while Kuwait is eyeing 9,000 MW in additional new capacity by 2020 from current levels of around 14,000 MW.

These big-ticket investments will pay off in the long-term if the industry irons out the wrinkles of inefficiency now. Doing it sooner rather than later is better and cheaper than backtracking to fix bottlenecks in the 2020s and beyond. Establishing an integrated one-stop shop of solutions to support power plants and distribution networks in the Middle East is gold dust in today's competitive global environment. But quantity is not everything; it is paramount that operators strive to be increasingly efficient.

Updating infrastructure with 24/7 monitoring of plant equipment and maintenance recommendations will curb unplanned downtime – a threat that worries every operator. Digital solutions form the modern-day core of an integrated approach, as predictive analytics, cloud-based computing and automatic sensors can pinpoint and resolve issues before they occur.

There is huge scope to unlock a treasure chest of data-driven efficiencies; just 2% of data in the power markets is currently



analysed and applied to improve operations. Yet there are more than 3,100 sensors and actuators generating data in a single gas turbine power plant. This illustrates the huge data potential that can be leveraged to sharpen efficiency. Industry will only feel the full benefit of better data management if most stakeholders are involved. Patchwork applications delivers patchwork results.

GCC operators need to harness this information and transform their knowledge into power, as per their bids to transition from hydrocarbon-centric to knowledge-based economies over the coming two decades. Digital efficiencies can contribute to saving GE's customers up to US\$1 billion in operational and maintenance costs over the coming decade. These savings will only become more valuable as power demand soars.

Establishing new benchmarks of operational and environmental efficiency is essential to ensure operations are continually strengthened in the Gulf and beyond. In partnership with EDF, GE's combined-cycle power plant in Bouchain, France set a World Record due to its staggeringly high efficiency rate of 62.22%. The plant can reach full power in less than 30 minutes and creates

55% less CO2 emissions than a standard thermal power plant, which gives operators the ability to respond almost immediately to fluctuations in power demand while protecting the environment.

GE applied its Digital Power Plant to the Bouchain plant, which includes using real-time data to improve operations and predictive insights for reliability. With a capacity of 605 MW, the plant can generate the equivalent power needed to supply 680,000 homes and the tip of the propeller blade clocks a speed of 1,931 kph – 1.5 times the speed of sound.

One size cannot fit all; the industry is too large and complex. Instead, we must focus on a holistic mix of solutions – power generation technology, digital transformation and enhanced maintenance – that enables us to set new world records at a much faster rate. This is how we accelerate the evolution of our industry and guarantee that manageable expenditures, energy security and environmental goals are met. With no pause button for the Gulf's blooming appetite, power investors and operators must track the yellow brick road laid by efficiency to arrive at a destination of robust balance sheets and seamless output. ■