



ENTERPRISE

AFTER

MIDNIGHT

In the 2013 DreamWorks film *The Croods*, a prehistoric family only dares to venture out in the daytime; dusk sees them covering in a cave from all the nasty things that go bump in the night.

Man conquered fire and then built cities; it became the dawn of the night-time for mankind. It was a safer sort of dark that emerged in the cities, a seductive danger, a fun night-time culture of relaxation and revelry that took place after the serious work of the day was done.

In the modern era, working through the night is vital. Civilisation needs the oil, gas, electrons, containers and calories to flow 24/7. But it has a cost. The dangers of sleepy workers monitoring heavy equipment and vital machinery have been scrutinised and considered.

Now, world-beating operations across CK Hutchison's global enterprise not only compensate for those concerns but have turned the midnight hours into a time of peak performance, with operators sometimes turning in their best work after the sun goes down. Fire may have been the liberator from darkness, but now it is artificial intelligence, advanced physiological and psychological understanding, and other cutting-edge technologies that make us masters of the night.

Insightful leaders know how important our night-time operators are to economic success. They plan for night-time to not just extend the daytime, but to take advantage of the unique circumstances that arise when the sun goes down.

LONDON LIGHTS

UK Power Networks keeps the lights of central London bright for 165,000 homes and businesses. This includes the





City of London and the major entertainment districts of Covent Garden and 'Theatreland' that sit at the heart of London's globally renowned West End. It is a legendary centre of theatres, transport and shopping, and is the crown jewel among London districts. The City's broader night-time economy is worth over £26 billion and employs over 700,000 workers. It is so important to the city that the Mayor, Sadiq Khan, has appointed a special Night Czar, Amy Lamé.

A famous author, BBC Radio personality, entertainment entrepreneur and a former ceremonial Mayoress herself (Camden, 2010/2011), she was appointed in 2016 to, in her words, "... make sure that the capital works for everyone at night - whether you're working, running errands or enjoying your spare time. London's economy doesn't just stop at 6pm. The night-time economy plays a huge role in the capital's success - employing a third of the capital's workforce and contributing billions to the economy. In fact, the economy is growing faster at night than in the day."

While the glitz and glamour of live theatre and fancy restaurants are easy to see, she has time and respect for those making sure the electrons arrive so that electricity can make those businesses prosper. She visited some of the 100 staff from UK Power Networks who work after midnight - on their time: night-time.

She got to meet with Paul Smiles, the area manager for central London, and the engineers installing a new substation that supplies the iconic lights of Piccadilly Circus. He leads teams that conduct maintenance, install infrastructure and monitor performance all through the night.

"Our night teams focus on finding the exact locations of cable faults beneath the pavements of London, getting customers' power restored quickly and safely, repairing any damage to our equipment, and inspecting work on underground cabling - which across London as a whole totals 30,000 km and 17,000 substations. We also carry out checks ahead of major public events to ensure the lights remain on."

London is growing quickly, and maintaining UK Power Networks' ability to provide the most reliable and lowest-cost electricity in the UK is a challenge. The company is investing £1.5 billion from 2015 to 2023 in London's electricity network, including nine new substations.

The city - more specifically, the Night Czar - has taken note. She says, "The UK Power Networks' engineers are among the many hard-working people who keep London thriving at night. It was a privilege to see the infrastructure that keeps the capital's heart beating and meet the staff who help make London a truly 24-hour city."

MIDNIGHT FLOW

On the other side of the world, another 24/7/365 business is run by Dampier Bunbury Pipeline (DBP), part of the Australian Gas Infrastructure Group which is a member company of CK Infrastructure Holdings. It sends gas 1,600 km down the west coast of Australia from the northern extremities at Dampier, through Perth and down to Bunbury in the south. From Australians using gas to cook at home and electricity producers serving millions to industrial users in mines and factories, DBP has to consistently alter the flow of gas through the pipe to maintain consistent pressure and flow even as demand rises and falls at myriad points along its length.

Energy producers are big customers with peaks and ebbs impacting the flow of gas needed. Policy in Australia has led to the widespread implementation of renewable energy and particularly the use of solar energy. While many residential homes generate their own electricity during the day, they take more off the grid when the sun goes down. DBP supplies the power generators that have to step up the electron flow to homes at dusk. It often has peak loads into the evening as solar power tapers off. The use of wind power is also in the mix but has variable output as and when the breeze blows, further complicating matters.





Without the Duty Controller team, gas delivery and downstream electricity supply could be imperilled for millions on Australia's Western frontier.

The Duty Controller (DC) is on the job as that demand rises. The engineer ensures compressors (compressing gas to a specified pressure in the pipe) are maintaining pressure at the proper levels so that flow rates are consistent. When demand comes off its peak, the pipe system goes into a recovery mode. Then the DC can maintain flow - or stop it completely so that maintenance teams can swing into action, knowing that the DC has created a predictable, stable environment inside the pipe so they can do their job. Two duty call officers - the Control Room Operations Superintendent and the Head of Control Room Operations - provide back-up.

They are in turn backed-up by the Dampier Bunbury Natural Gas Pipeline Mainline team at the most critical compressor station, Compressor Station 9, north of Perth, Western Australia's biggest city. Without the DC team, gas delivery and downstream electricity supply could be imperilled for millions on Australia's western frontier.

NIGHT-TIME ON THE DEEP BLUE SEA

Husky Energy Inc is another part of the CK Hutchison Group that has to burn the midnight oil to keep a 24-hour operation going. The margin for error when running a massive gas-producing operation in the middle of the ocean is zero. Whether in the North Atlantic or the South China Sea, safety is the top consideration for workers.

There are fewer people working at night and many considerations are taken into account regarding man's natural inclination to be less attentive - that is, sleepier - at night. Night-time production operators and control room operators carefully monitor equipment to ensure nothing is outside of its operating parameters. Night-time procedures are different in order to keep workers safe.

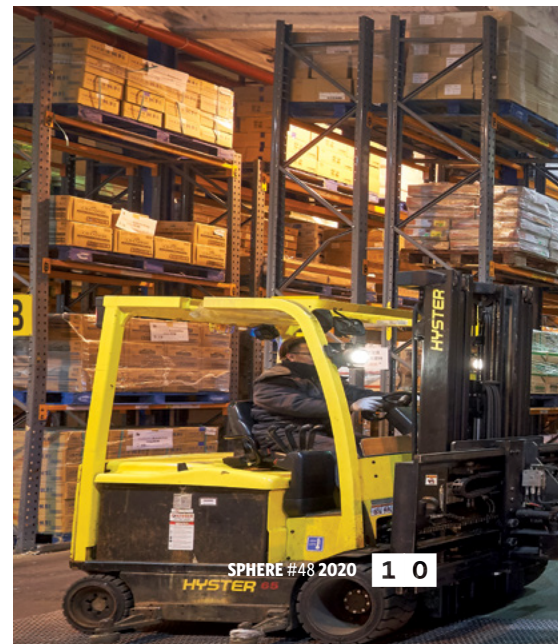
Based on studies on fatigue management, night-time activities see a reduced physical workload. Workers are encouraged to conduct 'walking around' type activities as motion keeps people sharp. Staff travel in pairs, using a buddy system to check each other's work and to watch each other for fatigue. They can call in a replacement if they feel too tired. They also have access to the Central Control Room at all times in case they need to call in an emergency.

Buddies are on slightly different schedules to ensure at least one member is 'adjusted' to the night shift. When a worker starts their night shift, their buddy will be seven days into the shift and therefore already accustomed to working at night.

Special projects can also be undertaken during the less busy period. As Anthony Underwood, Superintendent Deepwater Operations, explains, "Having worked at nights for over 20 years, I used to prefer



The buddy system compensates for late-night drowsiness at Husky Energy's offshore operations.



nights to days as I could have more time undisturbed to carry out specific projects.”

WE DO OUR BEST WORK AT NIGHT

Energy isn't the only type of business that needs to keep the goods flowing. People take for granted the fact that food in the modern world is fresh at the supermarket every morning. But for them to have a pleasant morning, armies of people work overnight so their fruits, yoghurts, baked breads and other goods are as fresh as they can be.

In Hong Kong, PARKnSHOP operates over 260 stores serving 7.3 million people in one of the world's most densely packed urban areas. Goods are constantly flowing in by ship, by lorry and into Chek Lap Kok International Airport by jumbo jet so that the demanding Hong Kong foodies can have the freshest possible food and provisions.

While some products, like ice cream, never hit the warehouse, almost everything else flows through a select group of distribution centres to then go to hundreds of stores. At Sheung Shui, an industrial neighbourhood, a dedicated team of 50 people work with advanced technology to ensure the right goods go to the right place every day.

Fresh fruits from Japan or Latin America, freshly baked breads from local baking operations and fresh vegetables from China are all processed after midnight. An elite group of focused staff, who often prefer the quieter night-time work, move among

the goods to be shipped, almost silent to each other – but they hear voices in their heads.

The voice is a technology known as voice picking. A combination of wireless, speech recognition and synthesis technology is used to give staff precise instructions about where to go, what to get, and where to take it. Once staff have trained the computer system by reciting a standard script, they can hit the floor with their choice of male or female voice telling them where to go. Once they arrive at the destination, they confirm arrival and are told what to get and where to take it.



UK Power Networks energises the music, lights and excitement for London's citizens of the night.



“The UK Power Networks’ engineers are among the many hard-working people who keep London thriving at night.”

Amy Lamé
The Night Czar of London



The efficiency shows in worker performance. The old system involved reading cramped charts off paper and staff would often take up to two weeks to hit a normal level of performance. The new headset system not only frees workers' hands and eyes for action, but sees new staff ramp up to top performance within three days. Workers can, in some cases, move twice as fast.

It also brings a higher degree of peace of mind for workers. If a 'picker' is uncertain whether they are in the right place or have the right items, they can ask the computer whether they are in the right place or have loaded the right goods. Also, recruitment is easier as less-skilled workers feel it is less stressful to have a voice system giving them instructions, rather than having to

Voice-picking technology and dedicated night owls keep the stores stocked in the day.



learn a paper-based system with no means of checking in case of error. And speaking to something (if not someone), makes the experience more engaging during the long night hours.

The pickers make sure pallets of goods arrive loaded and ready to hit the lorries which then spread out and bring Hong Kong shoppers the food and consumer goods they need first thing in the morning. Without the midnight workers, their bread would be less tasty and their vegetables a little less crispy.

KEEPING CONSUMERS SAFE

Another night-time operation in the fresh food distribution centre is the round-the-clock laboratory testing of Chinese leafy vegetables for pesticide residues. The unique Farm Check programme delivers the inspection, training, accreditation, auditing and traceability of all leafy vegetable farms in the Mainland that supply PARKnSHOP stores. A sample is taken for every type of leafy vegetable from each farm. A rapid ‘Immobilised Enzyme’ pesticide screening test is performed on site on each and every sample throughout the night, no exceptions.

Before the sun rises, these samples race up to the PARKnSHOP Food Safety Laboratories in Sheung Shui to face highly rigorous scrutiny using advanced analytical instrumentation. In the very unlikely event that any pesticide residues are found that are not permitted or exceed the Hong Kong legal limits, immediate action is taken by removing all affected product from stores.

Thanks to the unique ‘Farmtrak’ traceability system, PARKnSHOP can quickly trace the source farm responsible via the barcode labels on each basket and then move to suspend the supply from the farm concerned.

Later, the PARKnSHOP quality assurance agricultural scientists visit the farm concerned to investigate the findings and instigate corrective action, which may include permanently ending supply from that farm.

Modern civilisation needs the oil, gas, electrons, containers and calories to flow 24/7.

“NIGHT-TIME IS THE BEST TIME”

“Night-time is the best time!” So says Anat Machima, Senior Operations Manager of Hutchison Ports Thailand at Laem Chabang. He has the numbers to back this up.

This port has implemented more remote-control and artificial intelligence technology

than almost any other container terminal in the world. Its operation uses a wide range of technological solutions. In many cases, the nocturnal port outperforms the daytime operations.

Part of the reason things work better at night is that fewer lorries are on site. While Mr Machima says they encourage more lorries to come at night for pick up and drop off, factories aren’t willing to extend their hours to match port hours. If they properly implemented technology like that at Hutchison Ports Thailand and saw the benefits, they would probably be more open to it.

In-situ technology also makes visiting lorry drivers better at their job. Green- and red-light arrows are easier for lorry drivers to see and follow at night. An auto-gantry can detect if lorries are not parked properly and tell them to adjust their position. Omnipresent cameras provide a visual record of all activity should it be needed for review later on.

The new cranes can also detect if a lorry driver hasn’t properly released a container from their chassis. In the old days, faulty release could damage the lorry and the crane. Now, the auto-gantry knows there is a problem and gingerly puts the container down before an accident occurs. Even better, with no people needed on the ground, there is no chance for a container to hit a person working down below, a risk in former days (and still so in less-sophisticated ports elsewhere).

Remote-control crane operators often prefer night-time work too. While they use the same remote-control technology during the day, the use of extensive and consistent lighting means they can see more at night. While the light changes over the course of the day, changing the view from the cameras, the night-time light is consistent; there are no shadows and no errant reflections. CCTV resolution has improved dramatically, providing a superior view to the naked eye. Formerly, daytime crane operators had blind spots, trying to see containers and their landing spots from 40 to 50 metres away. Now remote-control operators are right in the action. This reduces the risk of accidents. Furthermore, scanners provide a warning of something (a container or lorry) headed in the wrong direction or coming too close to something it shouldn’t, just like a car that beeps when you back up too close to a wall.



Testing before tasting in the wee hours keeps Hong Kong’s breakfast tables free from contamination.



Lighting and camera technology deployed by Hutchison Ports Thailand creates a night-time working environment that allows for maximum performance around the clock.

For those working on the ground, they often prefer the night shift, according to Mr Machima.

For one thing, it is cooler – an important consideration in the tropics. Less traffic means a more relaxed pace – including a 3am exercise wake-up session.

Housekeeping happens at night, meaning the grounds look their best first thing in the morning due to the work of the night shift.

And while there may be concerns about focus, again technology helps. Radio frequency identification (RFID) technology means the remote-control and automated cranes can find and move the right container, every time. Those on the ground can focus on those moments when they need to check things not part of the Laem Chabang system. One example would be containers coming in on lorries.

The technology has dramatically improved safety. Comparing traditional Quay Cranes

(QC) and Rubber Tyred Gantry Cranes (RTGC) to their remote control (RC) cousins, the difference is stark. In 2018, traditional QCs and RTGCs had 23 and 20 incidents, respectively. The RC versions had 2 (RC QC) and 0 (RC RTGC) accidents, respectively.

Ports also track the speed performance of major ships as a benchmark. At Hutchison Ports Thailand, the night shift is a winner. The *Hong Kong Express*, a ship owned by Hapag-Lloyd, saw a record-breaking turnaround on 4 August 2019. Between 3am and 4am, 217 containers handled by five RC QCs were discharged using remote-control technology and the average crane operating rate during this period of time was 43 moves per hour. Likewise, the handling of *ONE AQUILA* resulted in a similar record for containers moved. On 17 June 2019, between 1am and 2am, 151 containers handled by four RC QCs were discharged and the average crane operating rate was nearly 33 moves per hour.

Those burning the candle at both ends are the unsung heroes of the night.

Mr Machima is a huge proponent of using technology at night to compensate for our natural tendency to want to sleep. With a little vigorous exercise and smart use of tech, he and his colleagues are demonstrating that they can maximise efficiency and minimise accidents, showing the world that the way forward is the great work that is done at night. For many, night-time isn't a tough time – it's the best time.

Mr Machima says it again – with gusto: “Work like Batman! Night-time is the best!”

Those burning the candle at both ends are the unsung heroes of the night. The work done in the dark hours ensures that the creatures of the daytime awake to find the world refreshed, orderly and ready for action. Otherwise, half of every day would be spent recovering from the day before. Progress would move at half speed.

CK Hutchison's night shift puts the port in order, the veg in the supermarkets, the gas in the pipes and the electric juice in the great city of London. It isn't exactly easy, but if you know how to do it right, mankind really can be at its best during the night. □



Modern stevedores don't get their hands dirty, but they get the job done all night long using remote-control tech.