

OPPORTUNITY.

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ENSENADA

MANZANILLO

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CARDENAS

VERACRUZ

GATEWAY TO THE AMERICAS

16



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Terminal 4, Container Port Road South, Kwai Chung, Hong Kong

opportunity@hutchisonports.com

RESILIENCE, FLEXIBILITY AND A COMMITMENT TO THE ENVIRONMENT

As the year draws to a close, we can expect 2023 to bring no fewer challenges than we have faced in the past few years. Without a doubt container shipping will continue to keep global trade moving forward, despite the multiple headwinds facing the industry, such as geopolitical tensions, high energy costs, rising inflation, a decline in consumer confidence that may tip the scale on supply and demand, shifting locations of manufacturing sites and fast-changing trading patterns.

This year we have been able to maintain our commitment to strengthening our network and investing in growth markets.

In Saudi Arabia we celebrated the inauguration of the Port of Jazan City for Primary and Downstream Industries (JCPDI). We have been partners with the Saudi Arabian government for more than 22 years and we will be working closely together to make Hutchison Ports Jazan a success and contribute to the Saudi Vision 2030.

In Egypt, we also expanded our co-operation with the Egyptian Government by signing agreements to develop and operate new container terminals in Ain Sokhna Port and El Dekheila Port.

Another new automated container terminal is being developed in the Netherlands, it is located in Europahaven, where Hutchison Ports ECT Delta and Hutchison Ports Delta II terminals are located. It is expected to start the first phase of operation in 2027.

Besides business, we have not forgotten to remain focused on our sustainability development and ensure we maintain green momentum. Hutchison Ports Yantian participated in COP 27 which the local team leveraged the opportunity to share their sustainability efforts and experiences in addressing climate change and how the port is striving to build a leading international green, low-carbon port.

We are utilising renewable energy at BEST, our terminal in Barcelona, with the installation of solar panels on half a hectare of its buildings. It is estimated the power generated is equivalent to the yearly consumption of the terminal office building or 200 households.

The remaining phases of terminal construction in Thailand, Laemchabang, have been confirmed. The expansion of the smart terminal will include eco-friendly technology such as autonomous trucks, electric-powered tractors and automated equipment to reinforce its position as a leader in sustainable development.

All these actions are paving way for the group's net zero roadmap, please stay tuned for more updates in future editions.

I am confident that Hutchison Ports has the resilience and resources to face the challenges that lie ahead and ensure we can excel when trade growth returns.

As this is a World Cup year, it is important to remember that we are also on a global stage and have to perform to the best of our abilities in order to succeed. The best football teams have management, players, staff and supporters working together towards a common 'goal'. Our team has to embrace hard work, combined with moments of brilliance to ensure we can continue to score success.

Wishing you all happy holidays during the festive season and a healthy and prosperous Year of the Rabbit in 2023.

Eric Ip
Group Managing Director
Hutchison Ports

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MEXICO MOVING ON UP

Mexico covers an area of nearly two million km², and its capital city is Mexico City. When compared, Mexico is almost four times the size of Spain or nearly three times the size of the State of Texas in the United States (US).

With an estimated population of 126.4 million people (2022), Mexico is the third-most populous country in Latin America after Brazil and Argentina, and the most populous Spanish-speaking country in the world. Mexico is a country with a variety of ethnic groups, where Mexican Mestizo (people of mixed ancestry, mostly Amerindian and European) are the largest group, followed by predominantly Amerindians (Native Americans), Caucasian (people of European or Middle Eastern ancestries) and Afro-Mexicans.

Mexico belongs geographically to North America; however, the country's cultural heritage is in Latin America. According to some estimates, there are 18 million people living in the metropolitan area of Mexico City, which would make it the most populated city in the western hemisphere.



Hutchison Ports LCT.,

Another significant milestone on the road to Mexico's rich sports culture with its diversity of the population is the country that will jointly host the FIFA World Cup 2026 along with Canada and the United States (US). Among the sixteen cities in three North American countries, Guadalajara, Mexico City and Monterrey are the cities to host World Cup matches. This is the third time Mexico has been chosen to host the FIFA World Cup since 1970 and 1986.



GREEN POWERHOUSE PLAN

Mexico is ideally positioned to become a clean energy powerhouse given its world-class renewable energy resource potential and the low cost of renewable energy generation. Thanks to its favourable geographical conditions, the country enjoys around 300 days of sunlight each year, and with over 9,000 km of coastline, there is significant potential for growth across other renewable energy forms.



Rapid growth in renewable energy deployment in Mexico could generate high levels of investment, increase energy access, reduce costs to consumers, and—together with other actions—improve the reliability and resilience of Mexico's power system.

Mexico's energy transition law established a target for meeting at least 35 percent of its electricity generation from clean energy sources by 2024. In 2021, Mexico generated 86.3 Terawatt-hour (TWh) or 26.7 percent of its electricity from clean energy resources. By 2024, electricity demand is expected to grow 12.7 percent. (Source: PRODESEN 2021)



Clean energy generation in Mexico is also necessary to power the electrification of the transport sector, which would improve air quality. Mexico's large and diverse renewable energy resource base could support significant growth in clean generation capacity – all combined, enough to meet the country's electricity needs a hundred times over.

It is expected that Mexico's renewable energy industry to play an important role in the decarbonisation of the economy and to support the electrification of rural areas as well as the country's transport system.

MEXICO'S REMARKABLE ECONOMIC RISE

Mexico's rise to become one of the world's leading economies is a remarkable feat, currently the 16th largest economy, the country has overcome global headwinds including COVID-19 linked supply chain disruptions, inflation, and geopolitical instability.



This year Mexico's economy is expected to achieve moderate levels of growth and beyond, driven by strong export demand as the trading recovers after the pandemic.

The US is the country's second largest leading trading partner and two-way trade in goods and services between the US and Mexico totalled US\$725.7 billion in 2021, according to statistics published by the US Government's International Trade Administration.

As a logistics hub in the Latin America, Mexico is one of the most important trade countries in the region. Mexico has built several logistics hubs which link North America with Central and South America, strategically located between these large trading regions, the country has invested in its infrastructure to become both a conduit for trade, but also to a thriving domestic manufacturing sector.

The Mexican logistics network is made up of 117 seaports, 393,471 kilometres of highways, 27,000 kilometres of rail lines, 76 airports, 46 customs points and 66 intermodal terminals, according to TECMA, a leading Mexico-based supply chain company.



MEXICO'S MAIN LOGISTICS HUBS

During the last twenty years Mexico has signed twelve Free Trade Agreements with 46 different countries, and as a result the number of logistics hubs has expanded to many states.

The states that are benefiting from industrial and manufacturing growth are Tijuana, Baja California, Ciudad Juárez, and Chihuahua as the states of Guanajuato and Monterrey have established themselves as the most prominent cities that attract the attention of foreign investors.

CONNECTING COASTS ACROSS THE ISTHMUS

As part of the National Development Plan, in 2019, the Mexican Government initiated the Isthmus of Tehuantepec Development Plan. The planned Interoceanic Corridor of the Isthmus of Tehuantepec (CIIT) will include a rail link train and the opening of ten industrial parks and a gas pipeline in the area that includes the states of Oaxaca and Veracruz.

As part of this project, the Government seeks to modernise the Isthmus of Tehuantepec railway; expand cargo handling and storage capacity in the ports of Coatzacoalcos, Veracruz and Salina Cruz, Oaxaca; expand the highway from two to four lanes; improve the Minatitlán and Ixtepec airports; establish a fibre optic telecommunications connection and cellular-data connectivity; and build a gas pipeline for commercial and private use.

Along the route between the two oceans, ten development centres will be created to nearshoring investment from the private sector. As part of this programme, the 76 municipalities of Oaxaca and Veracruz involved will reduce their value added tax (VAT) and income tax rates, in addition to offering oil at reduced prices. (refer to map on page 6.)

NAFTA AND BEYOND

Today, Mexico has many free trade agreements, the first began in 1990 when negotiations were underway between the US, Canada and Mexico. In late 1993, the North American Free Trade Agreement (NAFTA) was signed.

It was the largest free-trade agreement in the world, since then, there have been massive increases in exports in industries such as agriculture, vehicles, and natural resources.

The United States-Mexico-Canada Agreement (USMCA) which replaced NAFTA in 2020, offers an improved economic integration between the three countries with a zero-tariff environment for most agricultural products and has lowered many barriers to trade.

With a US\$1.29 trillion GDP in 2021, Mexico is the second largest in Latin America, and remains an upper-middle-income member of the G20 and The Organization for Economic Cooperation and Development (OECD) with a per capita GDP of US\$9,926, according to data.worldbank.org.



Over the last twenty years, the US and Mexican supply chains have become increasingly integrated, and practice production sharing.

US-MEXICO TO IMPROVE CROSS BORDER CUSTOMS CLEARANCE

The governments of Mexico and the US are investing to modernise the border infrastructure through technology which will improve the customs system via twenty key infrastructure projects. The combined investment amounts

to US\$4.2 billion, of which US\$700 million has already been approved for spending.

The border between the two countries is among the busiest in the world and both have different technology which is not connected to both sides of the border. The plans are to increase production capacity in many areas including medical equipment, pharmaceuticals, semiconductors and electromobility, according to a story in *Mexico Business News*.

NATIONAL PORT INVESTMENT PLAN

As part of a national port integration strategy, the Mexican government is implementing a port infrastructure investment and development plan, which with US\$1.24 billion in resources during the next two years. The Government restructuring plan for ports was completed in 2021 and coordination of Mexico's sixteen Port Authorities (ASIPONAs), are now operating under the Ministry of the Navy.

The plan is to integrate planning and infrastructure development of Mexico's ports authorities under one umbrella to better utilise resources.

MEXICO SERVING THE WORLD THROUGH ITS PORT SECTOR

Mexico is ideally located to accommodate cargo moving from all regions of the world and Hutchison Ports investments during the last two decades have helped play a key role in the country's rise as a leading regional and global shipping logistics hub.

Hutchison Ports investment in Mexico's port sector began in 2001 when the Group developed and operated three ports across the country.



The Port of Veracruz is strategically located in the middle of the Gulf of Mexico, offering sea cargo services connecting to the main ports of Northern Europe, the Mediterranean, the US, South America and the Caribbean, in addition to intermodal transportation services locally.

Hutchison Ports ICAVE (Internacional de Contenedores Asociados de Veracruz) terminal is located in the Port of Veracruz and is established as the main container port operator in Mexico.



In December 2019, Hutchison Ports ICAVE officially completed the migration of all the terminal equipment and port technology from the old facility to its new container terminal in North Bay. The investment to the new terminal exceeded US\$450 million to upgrade facilities and offer better customer service. The move to a new terminal after 24 years of operations and consolidated services were completed successfully without any disruption. The new Port of Veracruz is one of the most important port infrastructure projects in Mexico, in recent times.

Currently, ICAVE handles nearly 80 percent of all containers in the new Port of Veracruz, which

location, attracts advanced hi-tech and heavy industries such as automotive, aerospace, information and communication, electronic equipment, biotechnology and health care, it is also known as "The Silicon Valley of Mexico".

TIMSA offers a wide range of services besides container cargo handling, such as non-containerised cargo services like mineral bulk, steel rolls, pipes, wire rod rolls, as well as project cargo for automotive industry. The proximity to the highly industrialised agricultural area of El Bajío, makes TIMSA a highly attractive terminal for discharging and loading fertilizer, sulphur and seeds.



Hutchison Ports TIMSA

represents 20 percent of all containers handled in the country.

The Port of Manzanillo is ideally situated in the State of Colima, its ideal location promotes trading between Asia via the Pacific Ocean and towards local cities like Guadalajara in Mexico. The port is also well connected to the highly industrialised states of Jalisco, Guanajuato and Queretaro.

Hutchison Ports TIMSA (Terminal Internacional de Manzanillo), taking advantage of its strategic

On the west coast of Mexico, Hutchison Ports EIT (Ensenada International Terminal), facing the Pacific Coast, provides a new alternative to handling containerised cargo to and from Asia, central and south America for the northwest of Mexico, and southwest of the US. Located just 110 km south of the US border along the coast of the Pacific Ocean of the Baja California state, the terminal offers an alternative shipping route to the ports in Southern California.



Hutchison Ports EIT (left) and Hutchison Ports ECV (right)

Hence, EIT has high influential commercial advantages to agriculture and commercial activities to the state of Tijuana, Mexicali, Tecate and the San Quintin Valley in Baja California.

The terminal provides an import and export gateway to manufacturing facilities and assembly plants, due to its strategic location near major highways and the ports of San Diego, Long Beach and Los Angeles. It is also considered as the logistics centre for markets like the US, Central and South America and the Middle East.

Opposite EIT is Hutchison Ports ECV (Ensenada Cruiseport Village), a cruise terminal aimed at attracting tourists. According to the *World Tourism Organization* reports, Mexico is the Latin American country with the highest number of international visitors and is ranked 10th worldwide.

This comes as no surprise given the extraordinary diversity Mexico has to offer as a warm-welcoming culture, vast nature destinations and gastronomy. 32 locations in the country have been awarded World Cultural Heritage by The United Nations Educational, Scientific and Cultural Organization (UNESCO). Once again, Mexico leads the ranking in the American Continent in this category as well being placed sixth worldwide. (Source: WMP Mexico Advisors)

The growing number of visitors strengthens the position of ECV as one of the major cruise destinations in Mexico with four cruise lines and is the busiest port on the coast of the Mexican Pacific. It also offers a marina with over 190 operating mooring places and an area of 350 feet for mega-yachts.

CREATE MORE TRADE

To create synergy and increase influence towards the trade industry in Mexico, Hutchison Ports held a partial transfer contract of rights to operate a new terminal in the Port of Lazaro Cardenas in 2003. The port is located 272 kilometres from the state capital Morelia connected to the Siglo XXI highway and is the largest port in the Mexican Pacific.



Hutchison Ports LCT

Hutchison Ports LCT (Lazaro Cardenas Terminal Portuaria de Contenedores) is situated in the state of Michoacan, on the west coast of Mexico, facing the most important Pacific trade routes. It is a high potential port for cargo concentration and distribution from foreign trade operations between Asia, Australia, Mexico and the US.

Facilitating demand for non-containerised cargo, Hutchison Ports developed a multipurpose terminal, Hutchison Ports LCMT (Lazaro Cardenas Multipurpose Terminal), which includes an area of 21 hectares with a waterfront of 286 metres in which different types of cargo can currently be operated, such as mineral, general cargo, cars and buses, steel plate rods and sheet rolls among others.

Last year the Port of Lazaro Cardenas achieved a new record when the facility handled approximately 1.7 million TEU, container volumes

increased by 60 percent. As ports on the US west coast were plagued by congestion, carriers sought after alternative routes for their cargo and the Port of Lazaro Cardenas turned out to be one of the best options among other ports in the Americas.

Hutchison Ports LCT took advantage of the opportunity and had an astonishing year in 2021 with volumes jumping by 89 percent to over 1 million TEU mainly due to diverted cargo to LCT from Los Angeles, Long Beach where congestion caused lengthy delays for carriers.

Looking ahead, LCT is keen to develop container handling services to connect with Hutchison Ports TILH (Terminal Intermodal Logistica de Hidalgo), a logistics facility in the central valley of Mexico in Hidalgo, comprising 53 hectares within a Logistics Activity Zone.



Hutchison Ports TILH

TILH is well connected to the national transport network, including rail lines from different destinations around the country and Mexico's network of modern interstate highways.

In 2006, Hutchison Ports and Corporate UNNE constituted a strategic alliance to carry out the development in logistics and transportation for the Valley of Mexico and its Metropolitan area, located in the state of Hidalgo.

TILH is well positioned at Atotonilco de Tula, Hidalgo, was conceived as a strategic logistics node of road and rail connections for the major waterways and the northern border.

Hutchison Ports developed its strategic inland rail facility to meet demands from the intermodal sector at the most dynamic economic zone of the country, also known as the 'Valley of Mexico'.

TILH was strategically planned and developed to provide a competitive edge over competitors as it consolidates and creates vertical integration practices. TILH enabled an extension beyond the port by implementing integrated logistics services to outreach customers within their natural hinterland.

Hutchison Ports also acquired Hutchison Ports TNG (Talleres Navales del Golfo) to provide repair and maintenance services for vessels, rigs, barges and all types of maritime structures and equipment offering full marine service to its customers and shippers.

TNG through its professional staff, experience, infrastructure, and state-of-the-art equipment provides a plethora of high-quality services, including ship repair, offshore structures fabrication and conversions.



Hutchison Ports TNG

AI DRIVING SMARTPORT ACROSS MEXICO

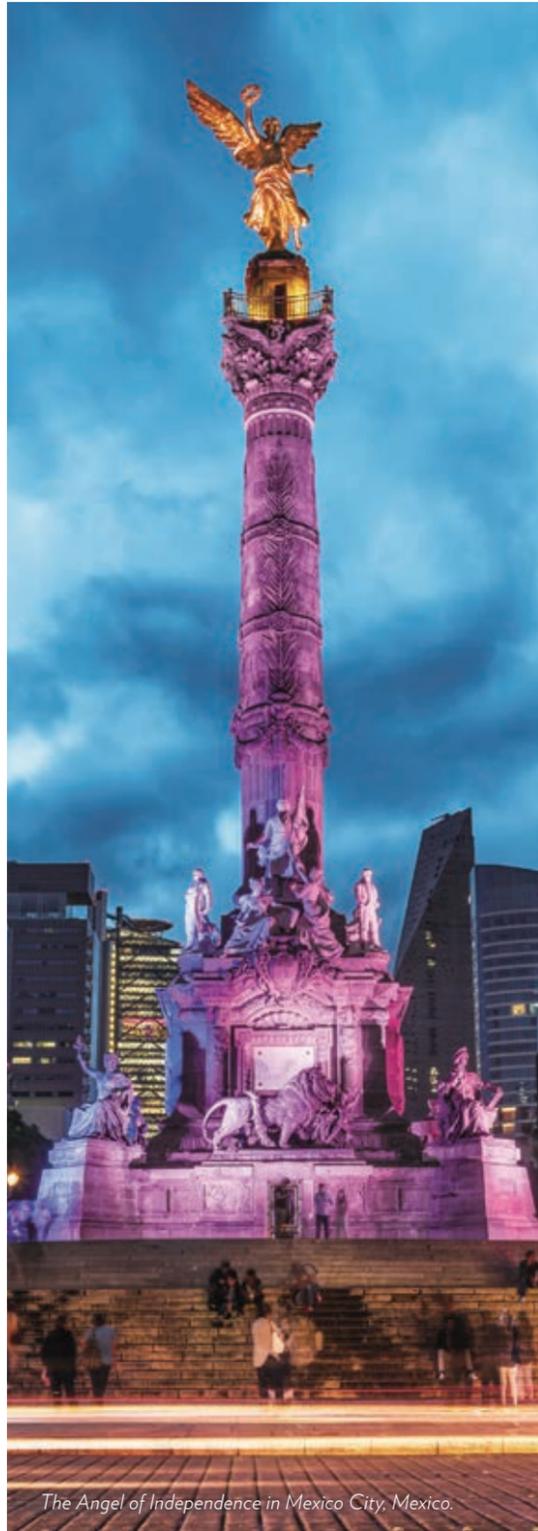
Throughout the diverse investment and development by Hutchison Ports in Mexico, it has transformed the country's terminal operations and services to the next level. Hutchison Ports Mexico has currently introduced a new technological solution through a single platform called SMARTPORT, powered by artificial intelligence (AI), it encompasses digitalisation for daily terminal operations, providing a more efficient and transparent user experience to customers.

Cargo Release, a blockchain-enabled application offering a paperless, efficient and transparent solutions is being rolled out at ports across Mexico, connecting shipping lines, consignees, their agents, and terminals for imported cargo.

This product cuts the time for cargo to be document-ready for release from days to hours.

Mexico and Panama were selected due to their proximity to North and Latin American markets, and important ports for global trade.

The latest announcement marks the first anniversary of Cargo Release which was first rolled out across China by GSBN in 2021 and has since followed successful deployment across Southeast Asia, Europe and most recently Latin America, serving over 10,000 customers to date. Involved in the roll out are COSCO SHIPPING Lines, OOCL and Hutchison Ports.



The Angel of Independence in Mexico City, Mexico.

With a population of almost 130 million, a rich cultural history and diversity, injection of the latest technology and communication network, abundant green energy resources, a relatively young and energetic workforce, new infrastructure development plans by policy makers and the support of the local government, Mexico has strong macroeconomic institutions, and it is open to more trade activities than ever. The Mexican economy grew by 4.8 percent in 2021, after an 8.2 percent fall the previous year due to the COVID-19 pandemic. Its recovery is underway, albeit slowly: the economy forecast is to grow by 2.1 percent this year and 2.1 percent in 2023. (Source: The World Bank)



Mexico's growth is supported by its trade openness, a strong export manufacturing base connected to global value chains integrated with the US, and a stable macroeconomic framework. Although there are already routes that function appropriately as logistics hubs in the Mexican southeast, the goal is to unfold the potential of developing additional hubs that would give dynamism to the different modes of transportation in the country that attracts the attention to more foreign investors.

DID YOU KNOW? THE WORLD'S LARGEST PYRAMID... IS IN MEXICO

If you think about pyramids most people think of Egypt. In fact, Sudan, Guatemala and Iraq all have their own pyramids but the world's largest is in Cholula, Mexico.

The Great Pyramid of Cholula, also known as Tlachihualtepetl, is 54 metres tall and its base covers 45 acres — making it the largest monument ever constructed by any civilization on the planet, just 80 miles from Mexico City.

The Great Pyramid was an important religious and mythical centre in pre-Hispanic times. Over a period of a thousand years prior to the Spanish Conquest, consecutive construction phases gradually built up the bulk of the pyramid until it became the largest in Mexico by volume.

According to the *Guinness Book of Records*, it is, in fact, the largest pyramid as well as the largest monument ever constructed anywhere in the world, with a total volume estimated at over 4.45 million cubic metres, even larger than that of the taller Great Pyramid of Giza in Egypt, which is about 2.5 million cubic metres.



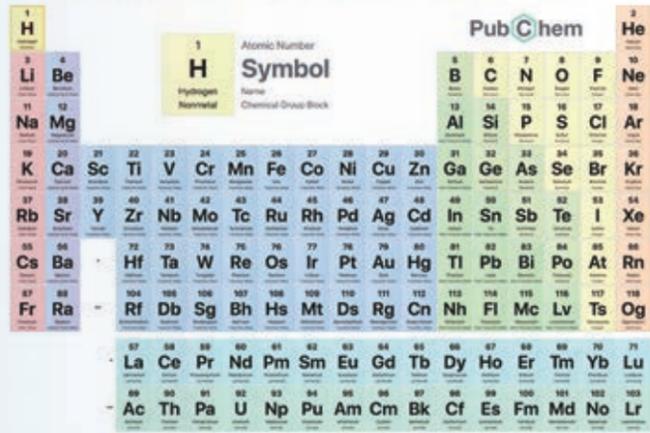
The ruins of the Cholula pyramid still dominate the skyline in Puebla, Mexico.

LIFTOFF FOR H₂HYDROGEN

Hydrogen is the first element of the periodic table as its atomic number is one, which means it has only one electron in its atom and thus only one electron is present in its outermost shell. The placement of elements in the periodic table is based on their electronic configuration.

It is composed of a single proton and a single electron. Liquid hydrogen is used in the study of superconductors and makes an excellent rocket fuel when combined with liquid oxygen. Numerous compounds are formed by hydrogen combined with other elements.

PERIODIC TABLE OF ELEMENTS



Hydrogen is also perceived as the magic bullet that will reduce carbon dioxide (CO₂) and Greenhouse Gas Emissions. It is the most abundant gas in the universe and the cleanest energy source on the planet.

Forecasts are that hydrogen consumption will represent 24 percent of the global energy sector by 2050, with an investment of US\$2.5 trillion.

These compelling facts have led to a race both on land and at sea to harness the potential of hydrogen and provide the sustainable fuel that we need to slow the pace of global warming.

We have all experienced the consequences of climate change in recent years, with droughts, flooding, crop failures and extremely high temperatures all over the planet.



IT IS THIS PHENOMENON THAT HAS DRIVEN ON THE SEARCH FOR A NEW ENERGY SOURCE THAT IS EMISSION FREE AND PLENTIFUL IN SUPPLY. HYDROGEN FULFILS THESE CRITERIA ALTHOUGH THERE ARE MANY CHALLENGES BOTH TECHNICAL AND REGULATORY TO OVERCOME.

SO WHY IS HYDROGEN SO IMPORTANT AND WHAT ARE ITS PROPERTIES AS A GAS AND AN ENERGY SOURCE?

 Hydrogen combines with oxygen to form water, essential for life on this planet.

 Hydrogen volumetric density can be increased by storing as a gas under pressure or as a liquid at very low temperatures. Hydrogen turns into a liquid when it is cooled to a temperature below -252.87 °C.

 High energy content per weight (nearly three times as much as petrol), but the energy density per volume is quite low at standard temperature and pressure.

 Highly flammable but does not produce carbon dioxide when it burns.

 At ambient pressure and temperature, the storage tanks are needed to store and transport the gas would be very large. For ships, this would mean taking up a large area of the vessel, reducing cargo capacity.

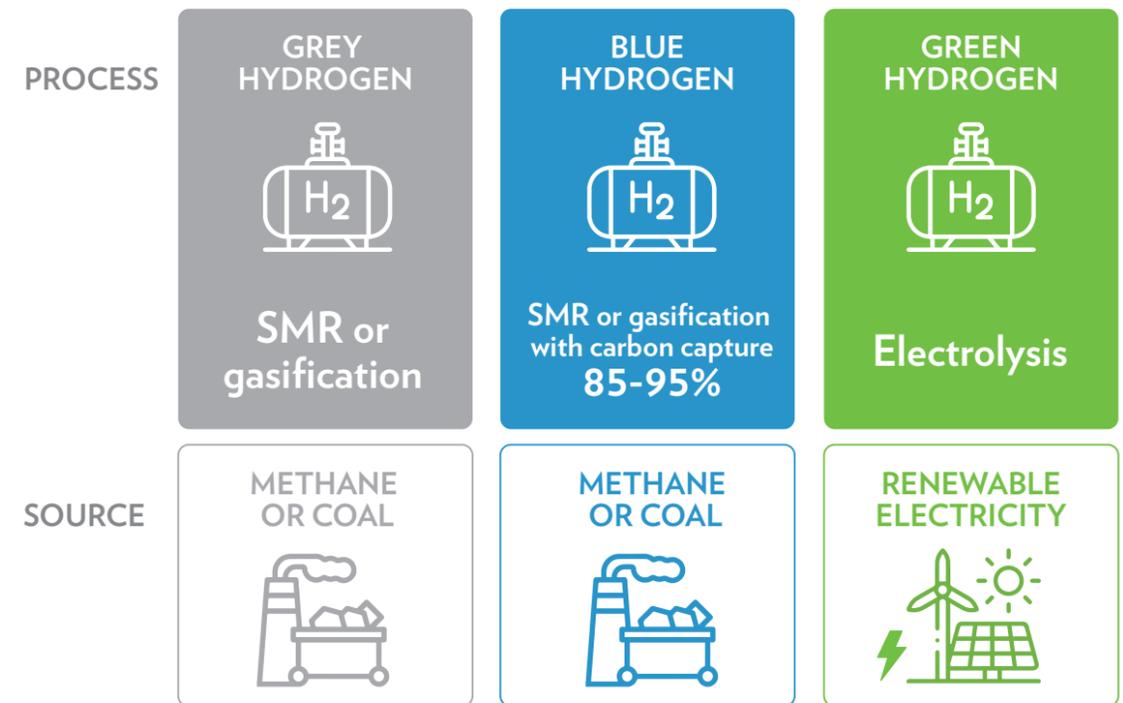
 Can be produced by renewable sources such as electrolysis, using electricity and water.

If hydrogen sounds too good to be true, there are certainly some caveats that need to be considered, including the fact that hydrogen in the form of gas is also the most explosive substance in the universe. Other challenges that need to be resolved are the safest, greenest and most cost-effective way of harvesting and transporting the gas.

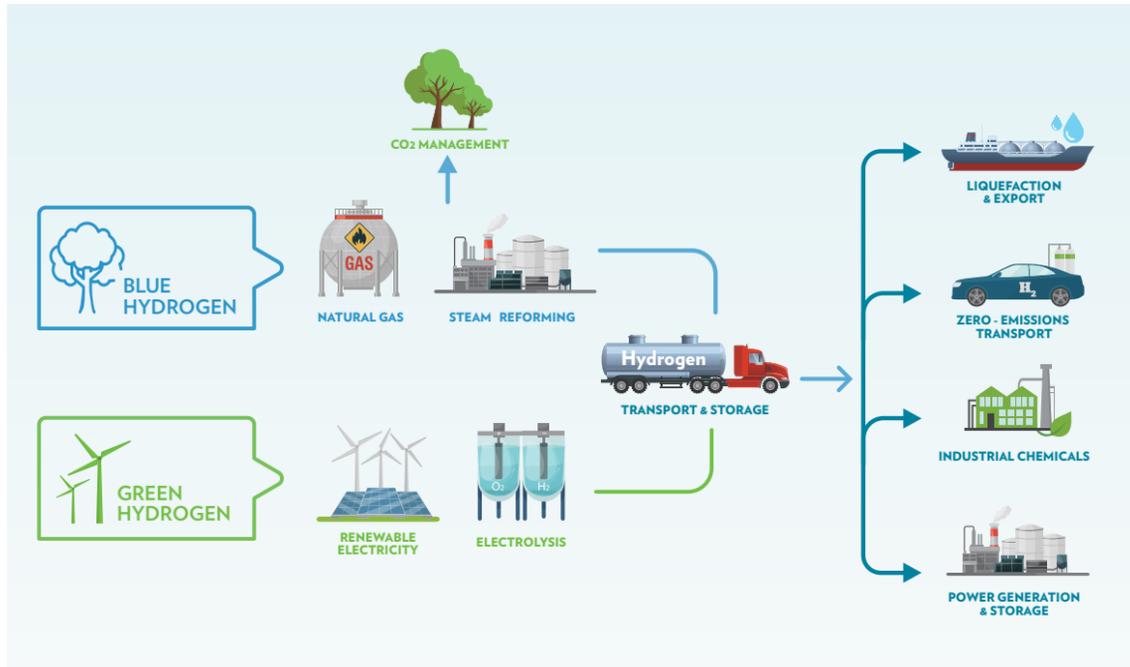
The level of hype around hydrogen is driven by the thriving clean energy industry, racing to find the replacement for fossil fuels and the emissions that continue to increase CO₂ levels in the atmosphere leading to global warming.

There are a few types of hydrogen that are classified by the way the gas is produced, namely Grey, Blue, and Green. Today, hydrogen fuel can be produced through several methods. The most common methods are natural gas reforming (a thermal process), and electrolysis. Other methods include solar-driven and biological processes. Grey hydrogen is produced by burning natural gas at high temperatures and if the carbon is removed or captured then the result is Blue hydrogen.

Green hydrogen is produced through the electrolysis of water or by using renewable energy sources such as solar cell, hydropower, wind energy and nuclear to avoid any emissions during the production stages.



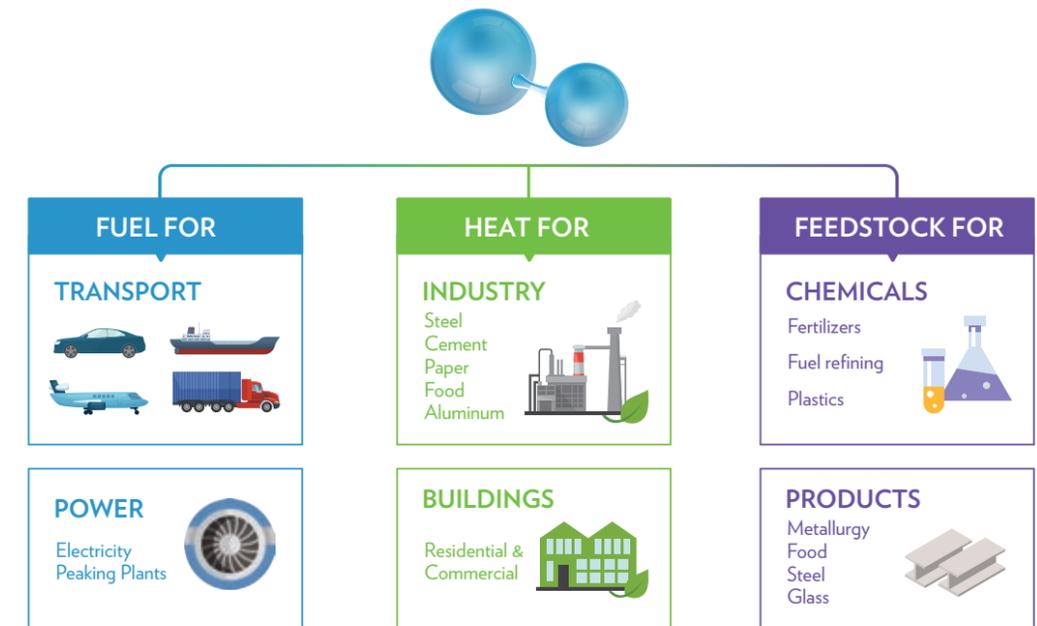
Note: Steam Methane Reforming (SMR)
Source: World Economic Forum



SCALING UP RENEWABLE HYDROGEN PRODUCTION

Renewable hydrogen production costs could fall faster than estimated, if scaled up with the right long-term regulatory framework and public support, along with a continued decline in renewable costs, and a rapid scale-up of value chains for electrolysis and carbon management. Estimates are that hydrogen costs will fall by about 50 percent to make the gas competitive with low-cost alternatives and even fossil fuels, according to the Hydrogen Council.

The applications for hydrogen now include hydrogen boilers, cars, short-sea ship operations and energy intensive industries such as steel production.



Source: BloombergNEF

QINGDAO PORT BOOSTS HYDROGEN FUELLING CAPACITY

Qingdao Port has built a hydrogen refuelling station to supply clean energy for its operations.

The station project has two phases and is designed for a daily hydrogen supply capacity of 1,000 kilograms, which can serve 50 hydrogen fuel cell vehicles every day. The first phase of the project occupies an area of 4,000 square metres, half of the total designed capacity.

Qingdao Port started three years ago to supply hydrogen energy to container trucks by using relay-tank trucks, the filling of which takes about one hour. Today, just like any other car going to a petrol station, it only takes approximately 8-10 minutes to fill a cell vehicle with hydrogen.

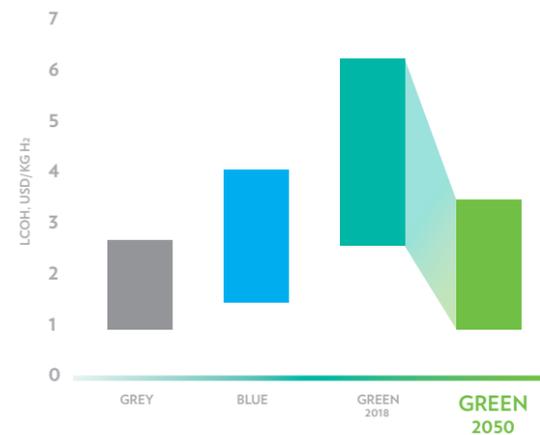
Since June 2020, the port has also used hydrogen fuel cells in moving six gantry cranes at the port's fully automated container terminal, becoming the world's first port to do so.

GREEN HYDROGEN PRICES RISING

As the preferable option, green hydrogen is in demand but is also sensitive to price hikes in electricity needed in the electrolysis process along with water.

The cost of hydrogen from US electrolyzers shot up to \$16.80/kg in July this year (2022) as a result of energy price hikes during a heatwave between 6 -12 July 2022, according to data from *S&P Global Commodity Insights*.

Despite the efficiency of green hydrogen compared to other types, its price remains a major obstacle in the promotion and marketing, which is estimated at 3.5 Euro/kg, compared to 1.5 Euro/kg for blue hydrogen.



LCOH (Levelized Cost of Hydrogen)
Source: KPMG Global

Liquid hydrogen is also being used for submarines and other naval vessels, but the gas only liquefies at extreme low temperature using cryogenic tanks, again proving to be very expensive to produce, store and transport.

“ Decarbonising associated activities are very challenging. There are a large number of diverse operators not under the direct control of the port. However, the scale of operations at Felixstowe and Harwich increase the potential to supply a carbon-free energy alternative and will drive the concept of a port energy supply hub. If the project can supply enough hydrogen, synthetic fuels or bulk carbon-free power, it can facilitate a far-reaching energy transition. ”

-Clemence Cheng, CEO of Hutchison Ports Port of Felixstowe.

Qingdao Port mentioned that leveraging both hydrogen fuel cells and lithium battery packs can reduce power consumption for a gantry crane carrying a container by 3.6 percent and save about 20 percent in purchasing costs for a single machine's power equipment.

It is estimated to reduce emissions of 20,000 metric tons of carbon dioxide and 697 tons of sulfur dioxide annually, based on an estimated annual cargo handling capacity of 3 million twenty-foot equivalent units. (Source: *China Daily Hong Kong*)

LARGEST HYDROGEN ELECTROLYSER

Another long-term project underway to increase production capacity in Europe include Shell establishing an industrial scale 10 Megawatts (MW) electrolyser at its oil refinery in Cologne, Germany, this is the largest in the world so far. The plant will produce green fuels within a European Union-funded consortium which is already setting sights on a facility of 100 MW at the site near Cologne to scale up its commercial operations.

In Rotterdam, several companies are planning to produce a combined 450 MW of power using hydrogen by 2025, rising to 110,000 MW by 2050 based on the expected demand for 20 million tons of hydrogen.

NEW INFRASTRUCTURE KEY TO SUCCESS

To unlock hydrogen applications, a cost-efficient transmission and distribution will be required. Long-term, a network of pipelines offers the most cost-efficient means of distribution, while in the short-to-medium-term, the most competitive setup involves hydrogen production close to resource-rich regions to demand centres via trucks, trains, refuelling stations, and smaller industrial users.

Shipping can transport hydrogen over longer distances but needs to be converted to liquid hydrogen, liquid organic compounds or ammonia.

Hutchison Ports Port of Felixstowe has been chosen as an agent of economic transformation as one of the eight national freeports, Freeport East. It also has plans to become an agent of ecological change by transforming the local economy to run on emission-free hydrogen.

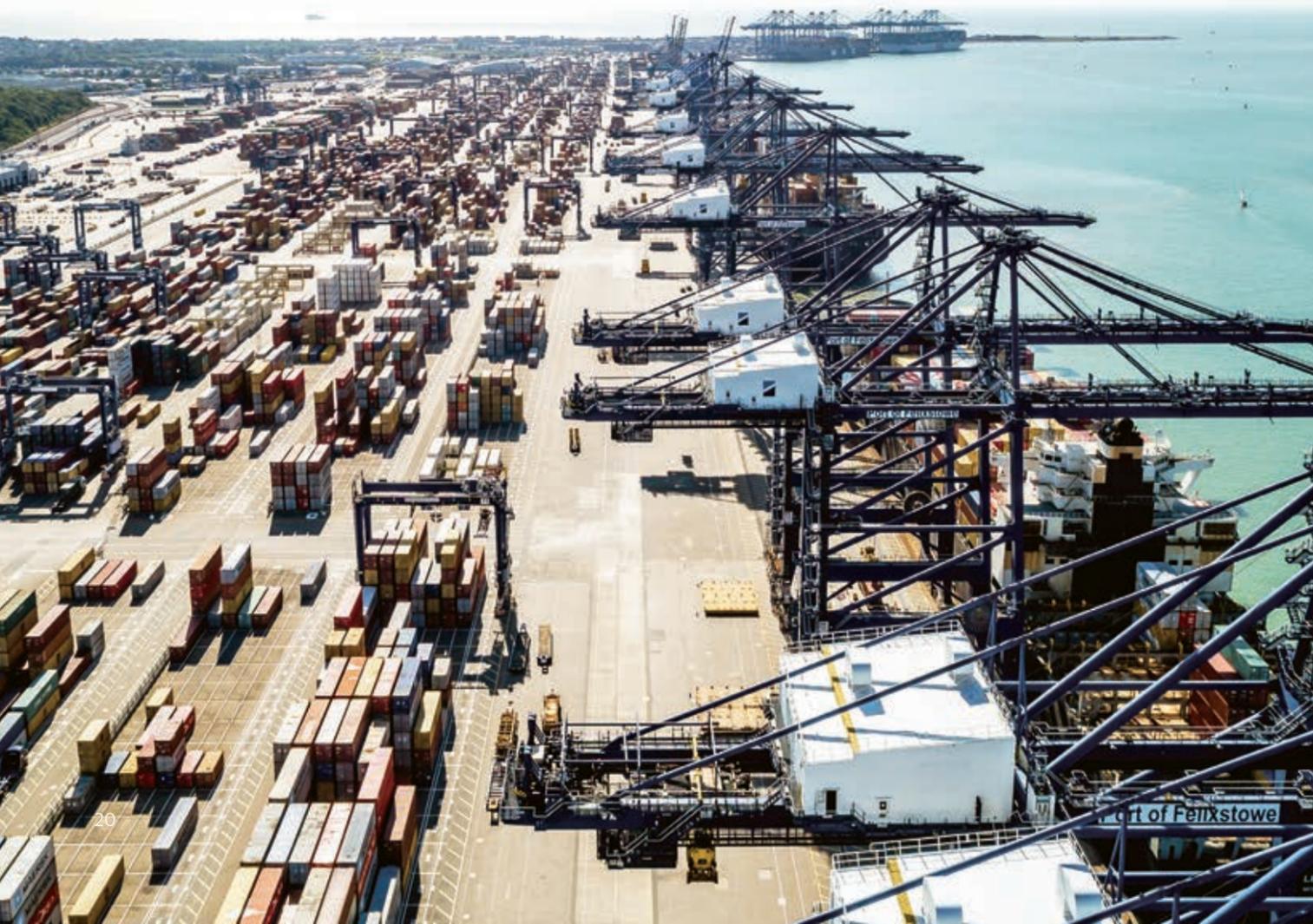
Port of Felixstowe is examining ways to build on the steps it has already taken to eventually reach net-zero. It is working with partners, including Ryse Hydrogen, to explore the use of hydrogen powered port equipment and with Cranfield University, Sizewell C and EDF, the Port of Felixstowe is involved in one of the projects selected to receive support from the Clean Maritime Demonstration Competition.

The project involves a feasibility study into the potential for Freeport East, which includes the ports of Felixstowe and Harwich International, to become a net-zero port and a net-zero energy hub for third parties and the adjacent region.

Commenting on the project, Clemence Cheng, Chief Executive Officer at the Port of Felixstowe, said: “There is considerable use of fossil fuel in ports all over the world. Replacing hydrocarbons completely is a huge challenge. Technology replacements are in some cases becoming available but, in many cases, they are in their infancy or face other hurdles to adoption. All solutions demand very significant investment. The study will identify which solutions give the best viable outcome regarding speed and efficacy towards net zero.”

In addition to decarbonising the port's own operations, the study will also consider how Freeport East can play a role in helping to reduce or eliminate carbon from associated and adjacent businesses.

To learn more please read *SHIP2SHORE* magazine #35.



ADVANCED NUCLEAR SOLUTION

With the dawn of the green hydrogen economy, there is demand to make zero carbon fuels from water, and produce those fuels with a true-zero emission energy source. Advanced nuclear floating production platforms are being designed and tested to produce green hydrogen as well as ammonia and methanol as fuels for shipping and heavy industry.

Hydrogen electrolyzers can be installed on board the floating platforms and the reactors can also power the desalination process, creating the fresh water needed for electrolysis. With a life span of 30 years, the small reactors are modular in design, emission free and highly fuel efficient.

By deploying advanced reactors offshore, the seawater acts as a heat-sink, and removes the complex site preparations including pressurised water containment structures needed on the land.

The Molten Chloride Fast Reactors, is a design with the fuel dissolved in a fluoride salt coolant, are currently being developed in the US at the Idaho National Laboratory, by a consortium that includes Bill Gate's Terrapower, UK-based Core Power, Southern Company and French nuclear company Orano.

China and South Korea are also developing small modular atomic reactors to be deployed for energy hungry industries such as refineries, steel, fertiliser production and mining.

EU CARBON TAXONOMY: LEVELLING UP HYDROGEN WITH OIL

WHAT IS GREEN TAXATION?

Environmental or green taxes include taxes on energy, transport, pollution and resources. Energy taxes are taxes on energy products and electricity used for transport, such as petrol and diesel, and for other purposes, such as fuel oils, natural gas, coal and electricity used in heating.

As part of a broader policy mix, green taxation initiatives at both European Union (EU) and Member State level can help us to reach environmental policy goals by encouraging a switch to cleaner energy, more sustainable industry and greener habits. By setting a price for social costs, altering decision-making and incentivising behavioural changes by companies and people, this action can help mitigate resource waste and to preserve the environment.

HYDROGEN, ABUNDANT AND VERSATILE

Hydrogen has the properties needed to provide affordable, cost effective and clean energy to support the drive to lower carbon emissions and slow the rate of global warming.

Hydrogen is abundant and versatile and the technical capability to harvest this amazing resource already exists. The gas can be used to produce, store or move energy in different forms and it's only by-product is water.

This contrasts with fossil fuels, which are responsible for increasing greenhouse gas and carbon emissions.

COP 26 AND IMO COMMITMENTS

One of the major successes of COP 26 (United Nations Climate Change Conference) held in Glasgow in 2021 was the agreement "to revisit and strengthen the 2030 targets set by the Paris Agreement in their nationally determined contributions...by the end of 2022".

The aim of the Paris Agreement set in 2015, is to limit global warming to below 2 degrees Celsius preferably below 1.5 degrees Celsius.



In June 2021, the International Maritime Organization (IMO) adopted short-term measures to reduce the carbon intensity of all ships by 40 percent by 2030, compared to 2008. In addition, the IMO made a commitment to cut annual greenhouse gas emissions from international shipping by at least half by 2050, compared with their level in 2008, and work towards phasing out GHG emissions from shipping entirely as soon as possible in this century.

Green fuels are a major part of the IMO's strategy to transform shipping's reliance on fossil fuel burning ships and hydrogen is one of the energy sources leading the race to enable that change.

GREEN CHALLENGES AHEAD

WHEN THE WIND DOESN'T BLOW AND THE SUN DOESN'T SHINE

One of the main challenges facing renewable energy production from using wind power and solar energy is that it is intermittent, as the wind does not always blow and the sun does not always shine.

That is why the hybrid solutions of using LNG as an energy source to produce hydrogen is being considered in the interim to complement the use of wind and solar which would at least mean production would be uninterrupted on still and sunless days.

LNG also produces less CO₂ than oil and coal so there would be an incremental reduction in overall emissions, but only as an interim measure until renewable energy capacity was sufficient to meet increasing demand for hydrogen.

SCALING UP

There will be a rapid scale up of hydrogen, but the challenge still exists that in order to produce green hydrogen there needs to be a sustainable renewable energy source such as wind, solar or nuclear.

The volume of hydrogen required to replace fossil fuels used in shipping is enormous, given the lower calorific value of the gas when compared to oil. It will take many years to scale up the hydrogen industry to meet demand both on land, sea and household.

The investment required in infrastructure and technology to transform the shipping industry to green energy will run into the trillions of dollars, but already we see ambitious developments in China and Europe that will provide a platform for future growth.

Hydrogen is just one part of the drive to create a more sustainable shipping industry and help to reduce emissions globally, other renewables such as wind, solar and nuclear will also be key to achieving the ambitious emission reduction targets.

GANTRY CRANES

FROM ANCIENT GREECE TO ARTIFICIAL INTELLIGENCE



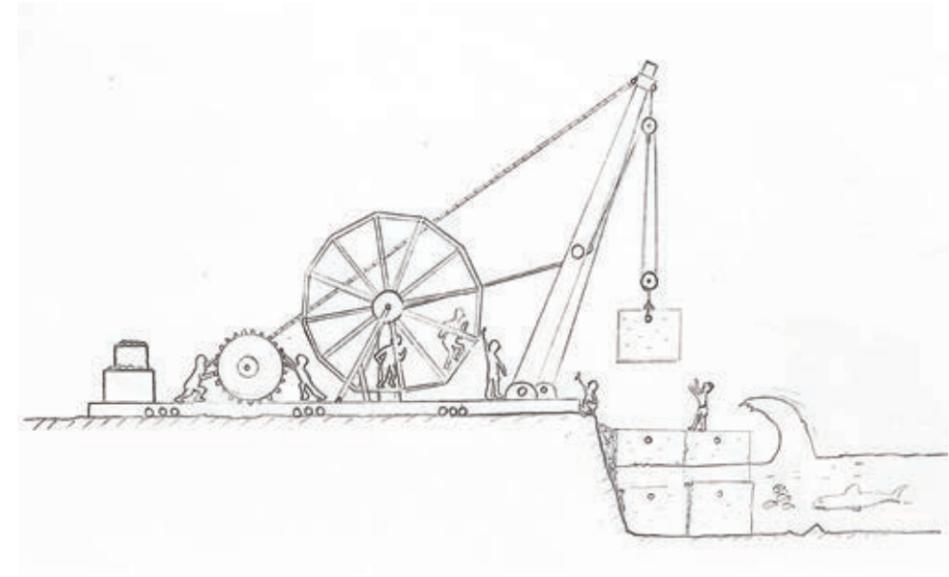
Credit to Billy Chu, Hutchison Ports HIT.

For many years the gantry crane, the unsung hero of container terminal operations, has dominated the skylines to ports around the world. However, its origins are in the ancient world of Greece and Rome, whose engineers used the lifting equipment to build cities, roads and temples across their empires thousands of years ago.

The Ancient Greek's used the word 'crane' for the lifting equipment as its construction resembled that of the wading bird. The appearance of the lifting device, with its vertical column and a boom that usually points up at an angle and can

The Romans for their part adopted the Greek cranes and improved construction to lift heavier loads, they equipped cranes with large treadwheel drives, for example, according to The History of Cranes published by Cargo-Partners.

The Romans went on to construct cranes that could lift more than 100 tons lifting a stone block 19 metres to build the Temple of Jupiter in Baalbek in Lebanon. Today we can marvel at Trajan's Column in Rome, where a gantry crane lifted 53 tons of stone with a height of 34 metres.



rotate, looks similar to the long neck and beak of a standing bird, the crane. The earliest known cranes were developed by the Ancient Greeks in the 6th Century B.C.

LABOUR SAVING DEVICE

The Greek Empire was a series of small independent states and unlike other civilisations did not have access to slave labour to work on infrastructure and building projects, so they developed the crane.



Trajan's Column in Rome

THE FIRST HYDRAULIC GANTRIES

To the modern day, the first pure hydraulic gantry was designed and built in 1963 by Hartley Belding, then the Chief Engineer of Belding Engineering Company in West Chicago, Illinois, in the United States. The company was awarded a project contract to dis-assemble and relocate a sink factory. Belding decided to design a gantry style crane raised up so that it could lift the large and heavy presses used in the manufacture of metal kitchen sinks.

The main advantage of the gantry for Belding was that because of the height of the crane it was possible for the presses to be lifted in a horizontal position to be loaded directly onto waiting trucks with flatbed trailers. This concept became a major design benefit that led to the use of gantry cranes to lift containers horizontally on ship-to-shore operations.

CONTAINERISATION IN FULL SWING

At the same time as Belding's invention of the modern gantry cranes in the 1960s, Malcolm McLean's containerisation revolution was also underway in the United States, with Sea-Land the first shipping line to launch scheduled services using containers with service to Vietnam.

In late 1968, a commercial container ship service was inaugurated from the Far East to the United States. This service was expanded to markets in Hong Kong and Taiwan in 1969, and to Singapore, Thailand, and the Philippines in 1971.

The one main challenge McLean faced in his drive to standardise the shipping industry through containerisation was that many of the US and international ports did not have gantry cranes to maximise the efficiency of loading and unloading the boxes.

McLean soon became a board member of Sea-Land and the company was a pioneer in the

construction of container ships and the first container terminals in New Jersey and Hong Kong. McLean's standardisation vision went on to become the bedrock for container shipping worldwide.

FAST FORWARD MODERN GANTRY CRANES

In the container terminal operating ecosystem, the gantry crane is not only the most expensive and important piece of cargo-handling machinery but potentially also a major bottleneck restricting the working efficiency of the entire terminal. All major container terminals have invested heavily in the quay crane's reliability and efficiency such is the importance of the equipment to the overall terminal.

Yard cranes, terminal tractors and quay cranes are used to transport containers between wharf and yard and vice-versa. Quay cranes' container handling speed is the performance indicator for container terminals and measured in Moves Per Hour (MPH). As such, quay cranes with high reliability and availability are paramount to ensure the desired container handling performance is achieved.

Container handling equipment at ports have been developed to handle increasingly heavy loads, with higher speeds and built-in safety technology. With the current disruption in the supply chain and frequent delays to shipping schedules the need to quickly load and unload cargo at each port has become essential.

Quay cranes have once again become the focal point of the drive to greater productivity, helping shave time off each box move. The advancements in science and technology have enabled quay cranes weighing over 2,000 metric tonnes to be designed, built and operated. The quay cranes are constructed to the required specifications of each container terminal to ensure durability, availability, and reliability under the varying operating conditions.

The first major leap forward for gantry cranes since containerisation is the move from manual to remote control and full automation.

MANUAL TO AUTOMATED EVOLUTION

As ports around the world move towards full automation one important interim step has already been taken on a broader scale, that is to introduce remote operations on all types of cranes, eliminating interruptions caused by breaks and moving staff between cranes, enabling the use of higher crane motion speeds and acceleration.



Hutchison Ports Automated Rubber Tyred Gantry Cranes

Remote control operations provide an ergonomic working environment for the equipment operators and enables unified management of exception handling for cranes, gate and vehicle identification contributing to maximised net production time.



Hutchison Ports Thailand Remote Control Centre



The world's largest automated container port Yangshan Port in Shanghai was built with an investment of US\$2.15bn. In total the terminal is capable of handling a maximum of 6.3 million twenty-foot equivalent units (TEUs) of cargo.

Plans are to automate 120 rail-mounted gantry cranes at Yangshan Port as well as 130 automated guided vehicles (AGVs) and 26 bridge cranes.

HANDLING CAPACITY **6.3M TEU**

120 AUTOMATED RMGC
130 AUTOMATED AGV

Devices previously operated manually will be replaced by smart ones. These smart facilities will automatically perform production tasks as instructed by the system. Yard staff will remotely control bridge cranes, rail-mounted gantry cranes, and AGVs.

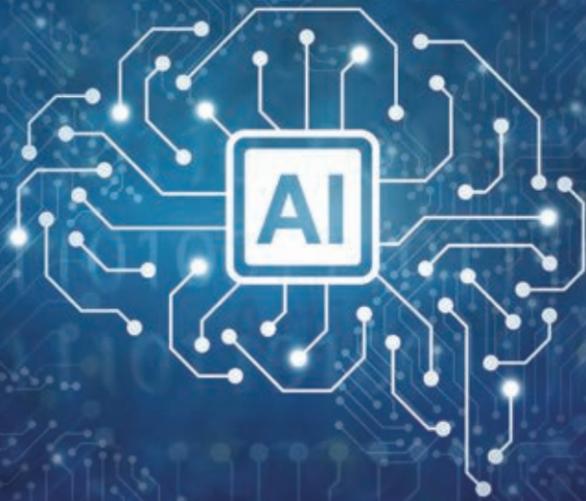
The terminal's operating system has been exclusively developed by Shanghai International Port Group's (SIPG) research and development team and is designed to enable port machinery to perform loading and unloading operations simultaneously. The operating system is spread across 2.23 million square metres of the port's area.

GPS DELIVERING PINPOINT ACCURACY

One of the major advances in container terminal operations has been the advent of Global Positioning System (GPS) technology, enabling pinpoint accuracy of yard equipment and boxes providing a digital map of all the moving parts in a port.

The effectiveness of a quay crane relies heavily on its integration into the terminal operation system, and synchronising with other terminal equipment are all essential to maximising the overall efficiency of the terminal.





SMARTER CRANE ADOPTS AI TECHNOLOGY

The development of Artificial Intelligence (AI) has enabled container terminals around the world to leverage greater efficiency across a range of yard equipment including gantry cranes. AI allows for the optimisation of processes and the synchronisation to deploy and position equipment most effectively and efficiently. On a high level, it works by analysing a dataset and looking for patterns where it can draw conclusions. It essentially learns to 'fill in the blanks.' AI's value to gantry crane operations is that it constantly checks for anomalies that human operators might not even know about.

THE AGE OF ARC

AI is now frequently deployed at container terminals as the operations are often repetitive and confined to a specific area within the terminal. It allows data from specific operations and equipment to be gathered, enabling AI to enhance and improve operational performance.

The popularity of Automated Robot Cranes (ARC) is growing in recent years, particularly in the freight and logistics industry; and now being installed at shipping ports and container

terminals. ARC are cranes that are integrated with Artificial Intelligence (AI) technology and can perform tasks autonomously or be controlled remotely by operators working indoors in a control centre.

These cranes have technology which can detect objects close to the equipment capabilities with sensors and HD cameras including workers or objects, when detected the equipment stops instantly and helps to avoid collisions, accidents, and delays during operations to ensure terminal safety.

By merging AI technology with crane machinery, repetitive tasks results in cost savings for the operator through a reduction in time taken to perform tasks, less damage to equipment and cargo, fewer workforce injuries and improved utilisation of assets.

DIGITAL TWIN ENHANCES GANTRY CRANE MAINTENANCE

With large gantry cranes the maintenance costs are very high and the lost revenue caused by breakdowns can be expensive for the terminal operator.

Planned maintenance ensures that regular upgrading and replacement of mechanical and technical parts and components.

In order to minimise the inefficient operations of gantry cranes and maximise efficient operations, the use of Digital Twin* technology is a valuable tool to terminal operators to optimise performances at different levels and can develop a maintenance schedule that minimises gantry crane inefficiencies or breakdowns.

**A digital twin is a virtual representation of an object or system that spans its life cycle, is updated from real-time data, and uses simulation, machine learning and reasoning to help decision-making. (Source: IBM)*

NEW ENERGY SOURCES

As momentum builds to reduce emissions in shipping, the spotlight is also turning on to port equipment and the use of green, renewable sources of energy.

The use of hydrogen fuel cell technology is one of the energy sources being trialled at ports across the world. Currently the focus is on heavy-duty trucks and cargo-handling equipment. Hybrid power

systems for gantry cranes are being developed using a combination of low carbon fuels and hydrogen energy batteries for a range of port machinery. This interim solution moves the port industry a step closer to realising net-zero emissions of CO2 and contributes to building a greener port environment.

The hybrid energy solution can reduce carbon dioxide emissions of a traditional quay crane by 300 tons a year when compared to high-powered diesel generators, based on an annual average of 120,000 TEU movements. The equipment provides electricity for the whole machine by hydrogenation, and only discharges purified water during the whole process. (Source: Seatrade Maritime News)

FROM A BIRD TO A SMART WORK HORSE

The quay crane has come a long way since the 6th century B.C. and moved from a project-based engineering tool to becoming the single most important piece of equipment at the modern port. The simple construction of the gantry crane has not changed in all those thousands of years, but has been constantly improved, refined and through the advent of advanced technology remains essential to the productivity of container shipping and world trade.



RAILFREIGHT ON THE RIGHT TRACK

Rail freight has not always had the profile of other major modes of transport such as ocean transportation and air cargo.

During the recent disruption to the global supply chain, rail has been providing a consistently reliable mode of transport for both transcontinental routes in Asia, North America, and Europe as well as inland markets.

The global rail freight market is expected to grow to US\$258.11 billion in 2022 from US\$242.53 billion, a compound annual growth rate (CAGR) of 6.4 percent according to *Reportlinker.com*. By 2026 the global rail freight market will increase to US\$318.42 billion at a CAGR of 5.4 percent, according to the report.

GLOBAL RAIL FREIGHT MARKET

US\$258.11Billion



US\$318.42Billion



In a separate report by *Research and Markets* the US rail freight market is estimated at US\$58 billion in 2022, while China is forecast to reach US\$35.4 billion by 2026. Other big investors in railways like Japan and Canada, are forecast to grow by 2.8 percent and 4.1 percent respectively in 2022.

North America is the largest continental global rail freight transport market owing to its extensive network of railways spanning over 200,000 miles.

ASIA PACIFIC LEADING INFRASTRUCTURE GROWTH

It is the Asia-Pacific market that is driving forward most aggressively with new rail freight transport infrastructure projects providing vital transport links to land locked countries across the region and importantly incorporating smart systems and technology across the network.

Emerging economies in Asia-Pacific are also upgrading rail freight transport notably, like Cambodia, Thailand and Laos all with new rail connections to China either under construction or completed in recent years. This development has helped boost trade and alleviate congestion at many of the ports and on the roads.

The latest cross border connection between China and Laos opened in December 2021 and has recorded more than one million tons of cargo moving between the two countries, according to the Laos-China Railway Co., Ltd. (LCRC).

Goods carried on the China-Laos Railway, have shown a rising trend, including commodities, fertilizers, electronics, photovoltaics, textiles and vegetables shipped from China to Laos, while iron and zinc ore, cassava flour, barley rice, charcoal, rubber, potash and fruits were transported from Laos and neighbouring countries to China.

Out of the 1,076,500 tons total of cross-border goods, 263,400 tons originated from China and shipped to Laos, while 813,100 tons transported from Laos to China, with an average monthly growth rate of 16.95 percent.

Among them, the China-Laos Railway has been in operation for 9 months, and the total value of international freight has exceeded 10 billion yuan, becoming the “golden line” linking China and ASEAN countries. (Source: *Ta Kung Pao*)

Plans are already underway to launch the Lancang-Mekong Express, an international freight train connecting China and Laos, according to the LCRC.

EUROPE CONNECTING THE DOTS

Rail has become a critical mode in strategic plans to develop a more effective multimodal transport network in Europe.

The European Commission’s new and extensive investments aim to make the European multimodal network more efficient. The aim of the plan is to create an affordable, reliable, and effective rail network, improved inland waterways navigation and infrastructure in maritime ports and a balanced interconnection between different modes of transport.

The rail related investments will provide the backbone for infrastructure developments within the TEN-T* network and will primarily target railways, rail-road terminals, multimodal logistics hubs, inland waterways, and the maritime and inland ports.

The ultimate objective of TEN-T is to close gaps, remove bottlenecks and technical barriers, as well as to strengthen social, economic and territorial cohesion in the EU, according to the European Commission website.

Tracking and tracing systems of rail freight using GPS and GSM helps the transportation organisations to overcome the rail freight transportation drawbacks such as loss and theft. It provides full-fledged security and monetisation of freights, and more effective and efficient freight transportation over short distances for smaller loads.

**The Trans-European Transport Network (TEN-T) policy addresses the implementation and development of a Europe-wide network of railway lines, roads, inland waterways, maritime shipping routes, ports, airports and railroad terminals.*

NEW TRADE CORRIDORS VIA RAIL

This year Hutchison Ports has multiple new rail freight service extensions in China, Asia and Europe.

In Shenzhen, South China, Hutchison Ports YANTIAN established new inland port connections in Longchuan County and Jiangmen in Guangdong Province, Yueyang in Hunan Province and Nanchang in Jiangxi Province.

At Hutchison Ports Pakistan, rail operations commenced in December 2021. Since then, over 79 trains have been successfully operated from the terminal for the base station in Lahore transporting approximately 5,976 TEU. It also offers to exclusively make customised arrangements with several carriers for the movement of their containers via train to provide Port-to-Door and Door-to-Port freight train service to its customers.

Hutchison Ports Felixstowe in the UK introduced its 38th daily rail service which now connects the port with Birch Coppice in the British Midlands.

While Synergy, the logistics operator of Hutchison Ports BEST, continues to provide a variety of cross-border railway network infrastructure services between the Port of Barcelona and France, offering ‘all-in-one’ port-to-door solutions in logistics, terminals and customer service.



ENVIRONMENTAL BENEFITS

Shifting freight from trucks to rail reduces highway wear and tear and alleviates the cost of building new roads and highways.

A study by the American Association of Railways claims that rail is three to four times more fuel efficient than trucks, also using rail reduces greenhouse gas emissions by up to 75 percent, on average. A single freight train can also replace several hundred trucks, freeing up space on the highway for other motorists and reduce traffic congestions.

Freight railroads account for just 0.5 percent of total US greenhouse gas emissions and 1.9 percent of transportation-related greenhouse gas emissions according to the US Government Environmental Protection Agency.

The environmental advances in railway freight technology across the country’s operations have reduced the impact on the environment. In 2021 alone, the US freight railroads consumed 790 million fewer gallons of fuel and emitted nine million fewer tons of carbon dioxide than they would have if their fuel efficiency had remained constant since 2000.



(Top & below) Hutchison Ports Pakistan and Port of Felixstowe rail freight service.



YANTIAN established inland port in Jiangmen, Guangdong Province, China.

GEARING UP FOR HYDROGEN-POWERED LOCOMOTIVE

In North America, Canadian Pacific Railway expanded its hydrogen locomotive programme to include the conversion of three line-haul locomotives and the installation of two hydrogen production and fuelling facilities. Both hydrogen production and fuelling facilities will deploy electrolyser plants to produce hydrogen fuel from water. One of the hydrogen production plants will operate on renewable solar power to produce a zero GHG emissions hydrogen fuel to power hydrogen locomotives. It will be the first line-haul using hydrogen-powered locomotive combining hydrogen fuel cells and battery technology to power the locomotive's electric traction motors.

END OF THE LINE?

Rail's limiting factor when compared to ocean transport is of course its capacity, restricted to a few hundred containers per block train when compared to the 24,000 TEUs carried on the largest box ships.

For large continents like North America, Europe, Australia and countries such as India and China, rail comes into its own as the most cost-effective way of transporting commodities, general freight and consumer goods over long distances. The cost per ton kilometre also moves in favour of rail between distances of 500 and 700 miles when compared to trucking.

Of course, there are many variables to consider such as how close a shipper or consignee to the rail head and the last mile transport by road, as an additional cost.

In many port areas around the world, rail connection means that freight can keep moving irrespective of local road congestion. Rail also provides direct access to inland areas, which benefits the development of the economy in the hinterland and provides opportunities for manufacturers, distribution warehouses and logistics companies close to the railway and intermodal hubs.

NEW CHALLENGERS FROM SKYTRAINS AND VACUUM TUBES



In August 2022, China's first maglev suspension railway undergoes a test run in Xingguo County, Ganzhou City, Jiangxi Province./CFP (source: news.cgtn.com)

The future of traditional rail freight seems to have few challengers, but the 'sky train' built in Xingguo County, Jiangxi Province in China, may hold a glimpse of the future. (image above)

The experimental train rides along a track suspended 10 metres in the air by a steel structure and while it uses Maglev technology, the train travels underneath the structure, leading some to dub it a "sky train." The train without a power supply can reach at a speed of 80km/h, the maximum speed for local domestic underground, and its top operational speed is approximately 120km/h.



In November 2020, Virgin Hyperloop's 'Pegasus', aka 'XP-2', pod successfully carried its first passengers in the newest form of travel in over a century.

Also looking to the future nascent Hyperloop technology is being developed in Dubai which promises freight travelling at the speed of flight and closer to the cost of trucking. The technology developed by Virgin Hyperloop uses a 'near-vacuum' environment within a tube, which enables high speeds, low power consumption, and almost completely removes aerodynamic drag. Inside the tube, battery-powered pods glide at speeds of up to 670mph (1,078Km/h).

With the 200th anniversary of the inauguration of the first commercial railway approaching in 2030, rail has come a long way from the days when Stephenson's Rocket steam train first made its way along the Liverpool to Manchester railway. Rail continues to be the 'backbone' of transportation in many countries and looks like it will stand the test of time.



Stephenson's Rocket steam train (3D Rendering Illustration)

NEW DEVELOPMENTS ACROSS AFRICA, MIDDLE EAST AND EUROPE

EGYPT

In August 2022, Hutchison Ports has announced the expansion of its cooperation with the Egyptian Government through the initialing of concession agreements to operate world-class container terminals in Ain Sokhna Port and El Dekheila Port.

Marking the event, a ceremony was hosted by His Excellency Mostafa Madbouly, Prime Minister of Egypt and His Excellency Kamel Al-Wazir, Minister of Transport, Egypt. Other attendance included representatives from CMA CGM, COSCO SHIPPING Ports and Terminal Investment Limited; and Clemence Cheng, Managing Director, Europe of Hutchison Ports.

Mr. Eric Ip, Group Managing Director of Hutchison Ports said, “We have been operating in Egypt for almost 20 years, and it has always been an extremely important market to us, not only because it is located at the crossroads of one of the busiest east-west trade lanes but also the young and very energetic population of the country will result in increasing demand for international trade. We look forward to working closely with the Egyptian Government to develop these port projects to their full potential to provide first class service to all the stakeholders.”



Left to right: Fan Jue, Managing Director of COSCO Egypt; Jose Bou Malhab, Director, Business Development of Terminal Investment Limited; Laurent Martens, Vice President of CMA Terminals; Clemence Cheng; Dr. Mostafa Madbouly; Lieutenant General Kamel Al-Wazir; Eng. Yahia Zaki, Chairman of Suez Canal Economic Zone; Admiral Nehad Shahin, Chairman of Alexandria Port Authority.

SAUDI ARABIA

The following month in Saudi Arabia, Hutchison Ports celebrated the inauguration of the Port of Jazan City for Primary and Downstream Industries (JCPDI Port) attended by His Royal Highness Prince Mohammed bin Nasser bin Abdulaziz, the Governor of Jazan Region, in the presence of His Royal Highness Prince Mohammed bin Abdulaziz, the Deputy Governor, and the Minister of Industry and Mineral Resources, the Minister of Investment as well as other high-ranking government and private-sector officials.

Hutchison Ports has been operating in Saudi Arabia for 22 years and the ceremony marked a new chapter for the group in the Kingdom. JCPDI Port will be a key driver of the logistics services in the Kingdom and the Middle East, due to its strategic location as the port sits on a global trade corridor.

The port consists, in its first phase, of three industrial berths, an SPM that provides services to Saudi Aramco Refinery, three commercial berths with a depth of 16.5 metres, which enables receiving modern fifth generation ships with a capacity reaching over 21,000 TEU. It can handle containers, general cargo and bulk goods, in addition to storage yards with special areas for storing and monitoring refrigerated containers.

Eric Ip, Group Managing Director of Hutchison Ports said, ‘the Group will be working closely with the Royal Commission to make Hutchison Ports Jazan a success and help JCPDI reach its full potential and contribute to the Saudi Vision 2030.’



Charlie Darazi (left), CEO of Hutchison Ports Jazan; Andy Tsoi (second from left), Managing Director of Hutchison Ports, Middle East & Africa and The Royal Commission in Jubail and Yanbu.

THE NETHERLANDS

During the same month in the Netherlands, Rotterdam, Hutchison Ports and Terminal Investment Limited Sàrl (TiL), the terminal investment company of Mediterranean Shipping Company (MSC), announced their intention to develop a new container terminal in the Europahaven, where the north side of the Hutchison Ports ECT Delta terminal and Hutchison Ports Delta II (the former APMT-R site) are located.



Both locations on the Delta peninsula are part of the new container terminal and will facilitate MSC’s ambitions for further growth. The entire terminal will be developed and launched in phases and is expected to start the first phase of operation in 2027.

Leo Ruijs, CEO of Hutchison Ports ECT Rotterdam and Hutchison Ports Delta II said, “We are looking forward to developing and operating the terminal together with TiL. In our plan, the new terminal will consist of five deep-sea berths with a total length of 2.6 km. We are delighted to further strengthen our presence in the region, with the goal of building an automated container terminal that offers high productivity levels and a sustainable working environment.”



HUD Group
50th Anniversary



Hutchison Ports YANTIAN
29th Anniversary



Hutchison Ports FCP
25th Anniversary



Hutchison Ports Venlo
40th Anniversary



Nanghai International Container Terminals
28th Anniversary (Commercial Operation)



CELEBRATING ANNIVERSARIES



Hutchison Ports PPC
25th Anniversary



Jakarta International Container Terminal
23th Anniversary



Hutchison Ports Thailand
20th Anniversary



Hutchison Ports BEST
10th Anniversary

50

HUDGROUP

50TH ANNIVERSARY

