

THE SOURCE

The Northeast Megalopolis 2.0

by George Lauriat, Editor In Chief, AJOT Apr 08, 2019



“An almost continuous system of deeply interwoven urban and suburban areas, with a total population of about 37 million people in 1960, has been erected along the Northeastern Atlantic seaboard. It straddles state boundaries, stretches across wide estuaries and bays, and encompasses many regional differences.” Jean Gottmann, Megalopolis

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The GIANT City in the Northeast USA

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Back in 1961, French-Ukraine geographer Jean Gottmann in his seminal 20-year study of the U.S. Northeast Atlantic coast popularized the expression megalopolis. Gottmann viewed the Portland, Maine to Richmond and Norfolk, Virginia expanse as one great urban corridor (often called the Boston-Washington DC corridor) composed of independent cities linked by overlapping suburban zones. In a night view from the lights from the cities in the Northeast – Boston, Providence, Hartford, New York, Philadelphia, Baltimore and Washington D.C. – indeed merge into a great 800-mile glowing north-south swath, like Gottmann’s megalopolis. It is perhaps unfair to say it is solely a U.S. corridor as the Canadian cities of Montreal, Quebec and Halifax, Nova Scotia also loosely fall within the orbit of the Northeast megalopolis. While they are linked east-to-west with the rest of Canada, in many respects the region has closer economic ties to the U.S. Northeast – especially New England – than Western Canada. But whatever the measure, the Northeast megalopolis is a unique multi-layered region with a deep global footprint which still marks it as one of the truly great centers of international commerce. If the economic rise had happened in another place – like China, Japan or Europe – it would have been described as an economic “miracle” or a “revolution.” But in the highly industrialized Northeast, there was always an expectation of a growth in commerce, like an expectation of sunshine in southern California.

A Very Special Region... But the Northeast corridor is more than a string of lights, it’s arguably the world’s greatest economic zone. Over 56 million people live in the corridor and even with the rise of other U.S. megalopolis regions like the greater Atlanta corridor in the southeast or Los Angeles-Long Beach region in California, the original Northeast megalopolis is still the most densely populated region in the U.S. In rough terms, the corridor has a GDP of \$4.4 trillion – a little over 20% of the U.S. total. Individually four states have a GDP over \$500 billion, topped by New York at around \$1.5-\$1.7 trillion. While California and Texas have higher GDPs, and the Chicago area is its own megalopolis, no other region has so many \$500 billion states in such close proximity. It is a major country’s worth of GDP. To put it in a global perspective, the Northeast region has a slightly larger GDP than Germany – the world’s fourth largest economy.

In his megalopolis study, Gottmann dubbed the Northeast corridor, “Main Street” USA. But over the ensuing 58 years, the north-south corridor built around Route 1, has become a superhighway of commerce not only linking the individual segments of the megalopolis but as the gateway to the U.S. Midwest – the North American hinterland. And two major economic influences of the last half century have shaped the Northeast corridor in ways even Gottmann couldn’t have foreseen. The rise of consumerism and containerization – an unexpected attribute of globalization which began in Port Newark with the sailing of the world’s first containership, the SS Ideal X in 1955.

Mega-portal It’s the Big Apple. It is hard to overlook the enormous economic gravity that metropolitan New York exerts on the entire Northeast region. It is the Jupiter of cities with a dozen satellite cities in its orbit. Without it, the Northeast would still be a significant economic entity but the sheer volume of activity of the City has a defining impact on the region. [Cont’d on Page 2](#)



The Northeast Megalopolis 2.0

(Front page article continued)

There is something like a thousand corporate headquarters in metropolitan New York including 52 fortune 500 companies – such economic power is nearly unmatched, not only in North America but the world.

But it is the unquenchable demand for consumer goods that draws containership services into the whirlpool. Virtually every containership operator wants to center their East Coast services – whether coming from the East or the West - around the call in the Port of New York/New Jersey. In a real sense, every port from Norfolk, Virginia to Boston, Massachusetts to Portland, Maine is in competition (or collaboration) with the Port of New York/New Jersey. With larger ships –over 14,000 TEU – and fewer port calls, the lure of 8.6 million consumers packed into a little over 300 sq./mi is nearly irresistible. For containership operators, it is the ship call that matches their mantra of economies-of-scale like no other. The containers are offloaded and their contents consumed within miles of the piers, only to be reloaded on the ships to start the process again – the perfect circle of life for container shipping.

But PANYNJ is both the destination and the gateway. Freight movements from New England to Virginia are pulled into the New York/New Jersey orbit. Equally the Port is key to moving freight to destinations like Chicago, St Louis and Kansas City. In recent years, Southeastern ports like Charleston and Savannah (which are growing faster) have also risen to compete for the U.S. heartland, as have the Ports of Virginia, Port of Baltimore and to a lesser extent the Delaware River ports of Philadelphia and Wilmington, Delaware. But the rotation of ships is largely set up by the allure of the bright lights of New York. Last year the Port posted over 7 million TEUs and the next closest rival, the Port of Norfolk was less than 3 million TEUs. And the draw of NYC is very long and the question can be posed of whether the \$5.25 billion expansion of the Panama Canal would have occurred without the economic promise of the Big Apple? Still there are limitations even to the Port of New York/New Jersey. Moving freight over an antiquated infrastructure (despite the improvement to port bridges, terminals and rail) through a densely packed urban environment adds up to congestion and inevitably to delays. Congestion is the Achilles heel of the New York’s hub and spoke system and represents an opening, an opportunity for other regional ports to exploit.

And there is good reason for the ports to take the plunge. Virtually all of the ports in the Northeast corridor have shown sustained growth since the 2009 Great Recession. But to convince the container ocean carriers of the merits of an additional Northeast ship call to their rotation, the Northeast ports have to ante up with infrastructure and freight that makes it worthwhile...and in many cases, they have. Take for example, the Port of Virginia. The POV recently completed the \$375 million Phase I of the NIT (Norfolk International Terminals) expansion project which includes 12 new container stacks and 24 new rail-mounted gantry (RMG) cranes. Phase II is underway and is scheduled to be complete in 2020 adding 400,000 TEUs of capacity (850,000 to 1.25 million) to the terminal. It is part of the POV’s strategy of handling the 20,000 TEU linehaul ships currently operating on Asia-Europe routes, providing a gateway to the U.S. Midwest markets.

PhilaPort recently received two more super post-Panamax cranes for their Packer Avenue Marine Terminal, the Port’s main container terminal, which is currently undergoing \$300 million dollars in terminal improvement projects. In the Port of Baltimore, a major expansion is underway at Tradepoint Atlantic site – a multi-use site on Sparrows Point that recently celebrated the opening of an 850,000 sq./ft fulfillment center. Even the Port of Boston is undergoing a similar program of dredging and adding new cranes – albeit with the more modest goal of being the hub port for New England.

Megalopolis 2.0 Although the Megalopolis of Gottmann’s book is long gone, reshaped by forces that even Gottmann couldn’t foresee, Megalopolis 2.0 has risen and is still growing. Oxford Economics says in its annual Global Cities report that financial and business services will keep New York City in first place in 2035. In that year, the report projects metro New York City to have annual output of \$2.5 trillion after adjusting for inflation. This places New York City at the top of not only U.S. metropolitan regions but globally, even ahead of cities like Tokyo and London. What’s more, it reinforces the importance of the region even with the economic and population growth in the Southeast, Southwest and Far West, which are outpacing the Northeast.

But as Gottmann noted in his book, the “region indeed reminds one of Aristotle’s saying that cities such as Babylon had ‘the compass of a nation rather than a city.’”

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TRIVIA QUESTIONS

- 1) How many Nephews does Popeye have?
 A. 3 B. 5 C. 2 D. 4
- 2) Disney’s beloved “Mickey Mouse” almost had a different name. What was it??
 A. Melvin Mouse B. Mortimer Mouse C. Marty Mouse D. All of the choices
- 3) The actors behind the voices of Mickey and Minnie Mouse:
 A. are Married B. Dated Briefly C. Hated Each Other D. are Brother & Sister
- 4) Which character was Walt Disney’s favorite?
 A. Mickey B. Pluto C. Goofy D. Donald Duck
- 5) How many Oscars did Disney win for Best Original Song?
 A. 12 B. 8 C. 14 D. 10
- 6) Which full length animated feature did Walt Disney originally consider having as a Live Action Film?
 A. Robin Hood B. The Sword In The Stone C. Jungle Book D. Peter Pan

Answers Later In The Newsletter

FUEL REPORT

U.S. On-Highway Diesel Fuel Prices* (dollars per gallon) <http://www.eia.gov/petroleum/gasdiesel/>

	4/1/19	4/8/19	4/15/19	Change from	
				week ago	year ago
U.S. National Average	\$3.078	\$3.093	\$3.118	↑0.025	↑0.014

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Diesel and the future of trucking

By: AJOT | Apr 17 2019

Continued innovations, increasing efficiency and lower emissions ensure a place for advanced diesel technology in the future

WASHINGTON – Thoughts on how diesel technologies will remain part of the trucking industry from the desk of Allen Schaeffer, executive director of the Diesel Technology Forum. Aspirations and predictions for new fuels and technologies are high, but these must be evaluated in the context of reality to meet the needs of the trucking industry both today and tomorrow. The new generation of diesel technology continues to evolve to ensure that truckers can deliver their cargo anywhere, anytime, under any conditions.

Diesel – the most energy efficient internal combustion engine – remains the technology of choice in the trucking industry. Diesel’s dominance in trucking has held steady over many decades and challenges from many other fuel types, thanks to its unique combination of unmatched features: proven fuel efficiency, economical operation, power, reliability, durability, availability, easy access to fueling and service facilities, and now near-zero emissions performance. And diesel technologies are not standing still. Right alongside the exploration of alternative powertrains, manufacturers are developing even cleaner, more efficient diesel engines. From coupling with hybrid-electric technology and battery storage systems, to pushing thermal efficiency boundaries, the new generation of advanced diesel technology is part of a sustainable future.

New renewable diesel fuels and advanced biofuels deliver further benefits when paired with diesel engines: lower carbon dioxide emissions and significant reductions in ozone precursors. These renewable biofuels are helping public and private fleets in cities and states across the country take meaningful steps toward a low-carbon future. Our shared goal is to provide goods movement technologies that meet the needs of the customer and society and are economically viable. The new generation of advanced diesel technology is already competing in the future, today.



LA-LB congestion easing, but empties remain an issue By Bill Mongelluzzo, Senior Editor JOC Apr 10, 2019 Imports at the ports of Los Angeles and Long Beach increased 9.3 percent year over year in September, 16.6 percent in October, 8.4 percent in November, 21.8 percent in December, and 4.8 percent in January, according to PIERS. Truck turn times, container dwell times, and chassis availability are steadily improving in the ports of Los Angeles and Long Beach, but a surplus of empty containers awaiting return to Asia remains a drag on productivity at the largest US port complex. “Imports are down. Our dwell time is less than three days, but the empty level is still very high,” Daniel Bergman, vice president of Long Beach operations at Total Terminals International, told JOC.com this week. Los Angeles-Long Beach suffered through truck visit times of 90 minutes or longer and container dwell times in excess of four days in late 2018 and early 2019, when retailers and manufacturers front-loaded imports to escape threatened Trump administration tariffs of 25 percent on imports from China. By comparison, truck turn times were consistently below 80 minutes and container dwell times were less than three days during the spring and early summer months last year.

The tariff deadline was delayed from Jan. 1 to March 1 and has yet to take effect as negotiations in the US-China trade war continue. Meanwhile, the import surge dissipated in February, with US containerized imports from China declining 6.9 percent compared with February 2018, according to PIERS, a JOC.com sister product within IHS Markit. With the drop in imports, truck visit times at the 12 container terminals in Los Angeles-Long Beach have steadily improved, according to the Harbor Trucking Association. The average turn time in March was 83 minutes, down from 98 minutes in January and 90 minutes in February. Container dwell time surged to 4.32 days in January but dropped in February to 3.2 days, according to the Pacific Merchant Shipping Association (PMSA). Terminal operators view dwell times above three days as an indicator of congestion. As containers sit for days at the terminals, they generate multiple moves within the facilities, contributing to congestion and increasing terminal operators’ costs. The PMSA dwell time numbers for March have yet to be released, but anecdotally, individual terminal operators are reporting dwells of less than three days.

The main cause of congestion in Los Angeles-Long Beach was an especially strong peak season last summer and early autumn, and unusually robust imports in November and December, which are usually slow months. Imports increased 9.3 percent year over year in September, 16.6 percent in October, 8.4 percent in November, 21.8 percent in December, and 4.8 percent in January, according to PIERS. In order to handle the surging imports, carriers in the trans-Pacific deployed several dozen extra-loaders, vessels not associated with a regular liner service. However, many of the extra-loaders “didn’t stick around to pick up empties,” Bergman said. Terminal operators responded by rationing the return of empty containers, which reduced congestion within the terminals but caused empties to pile up at warehouses and truckers’ yards. The problem was compounded in February and March, when carriers blanked more than 30 sailings because imports from Asia plummeted during the post-Lunar New Year lull. Terminal operators say vessel arrivals in April are back on schedule. “The vessel proformas have returned to normal,” said John Ochs, senior director of regulatory affairs at APM Terminals in Los Angeles. “There is a slight excess of empties at APM,” he added, while noting that truck turn times and chassis availability have improved.

Chassis availability has returned to normal throughout the harbor, said Ron Joseph, executive vice president and chief operating officer at Direct ChassisLink, Inc. (DCLI). The Pool of Pools website maintained by the three major equipment providers in Southern California — DCLI, Flexi-Van Leasing, and TRAC Intermodal — lists a total of 41,000 chassis this week spread out over the 12 container terminals. That’s 124 percent of the amount requested, Joseph said. The street dwell time for chassis currently stands at 4.3 days, down from an average of 5.7 days in March and a high of seven days earlier this year, he said.

However, terminal operators and chassis providers continue to struggle with chassis dislocations, with terminals fluctuating between having too many chassis on some days and not enough on other days. The problem, according to both equipment providers and terminal operators, is that under the carriers’ vessel-sharing alliances, loaded import containers often enter through one terminal, but the container and chassis are returned to a different terminal after the container has been unloaded at a local warehouse. According to the Pool of Pools website, of the 185,803 chassis trips in early April, 100,557 of the chassis were returned to a terminal other than where the inbound container/chassis trip originated. “This changes literally ship by ship and shift by shift,” Ochs said.

The improved metrics for truck turn times, container dwell times, and chassis availability are corroborated by logistics providers in Southern California. “That’s what we’ve seen,” said Scott Weiss, vice president of business development at Port Logistics Group. Weiss said he checked with three other trucking and warehouse providers, all of whom confirmed that the congestion problems were generally dissipating. “It’s time to take a breath, catch up and prepare for the next wave of volume,” he said. The next spike in imports will occur around mid-May with the beginning of the back-to-school shipments. “That will be the next acid test,” Weiss said.

Panama Canal warns of sharper El Niño draft limits by Keith Walls, JOC Asia correspondent | Apr 12, 2019

SINGAPORE — The Panama Canal Authority said the El Niño weather phenomenon is forcing draft restrictions in the waterway, but the impact of those restrictions on ship transits has been limited. A pinch will come within three weeks, however, if there isn’t enough rainfall, its chief warned. “Right now there is a 45-foot draft restriction on the Neopanamax locks. If the dry spell continues, we may need to restrict it to 44 feet. But very few container ships have a draft beyond 45 feet, so the impact is not that much. It will start to hit us at a 44 foot draft; the next 20 days are critical,” Jorge Luis Quijano, administrator and chief executive of the Panama Canal Authority, said in a recent interview. While the authority has imposed its draft restriction on the canal’s enlarged locks, which are able to handle ships with up to 14,800 TEU in capacity, the old locks, which are limited to ships with capacities of up to 5,000 TEU, remain unaffected.

The canal authority is working on plans for a third water reservoir, which would help replenish the locks system during dry weather as well as supply drinking water to Panama’s population of 4 million. Quijano said the authority will make a decision on whether to proceed by the end of the year, adding that such a project would take about four years to complete. “If we are going to have more transits, then you will have to have more water,” Quijano told JOC.com in July.



Answers to Trivia

Port of Boston lays the groundwork for future growth by George Lauriat Editor In Chief, AJOT, Apr 08, 2019

The Port of Boston is hands down New England's largest port, but with the Canadian ports of Montreal and Halifax to the north and northeast, and the mega-port of New York/New Jersey to the southeast not to mention a host of other East Coast ports all clamoring for ships calls, remaining the biggest duck in a regional pond is a difficult task. Nonetheless, the Port of Boston has done it well over the past decade and is laying the groundwork to remain competitive for the immediate future.

Last year, Massport Board of Directors approved an \$850 million investment plan for the Port. And in the recently announced fiscal year 2019-2023 comprehensive financial plan for the Authority, \$405 million was inked in for Conley Container Terminal and another \$52 million for Flynn Cruiseport. Much of the money is dedicated to keeping the port competitive with its larger neighboring ports by upgrading Conley Terminal's ability to handle larger 22-wide containerships with lower profile ship-to-shore gantry cranes. The lower profile cranes are necessary as the container terminal falls within the flight path of Logan International Airport, which lies on the East Boston side of the harbor.

Ship Calls The Port of Boston has done very well of late. It has set container volume records in four consecutive years, with the latest record hitting just over 298,000 TEUs up 10% over 2017. This is a remarkable tally for a port besieged by container hub ports on all sides. But it also speaks to the draw that is the "Hub" or metro Boston. Because it is one of the wealthiest cities in the Northeast and similar to New York, concentrated in a relatively small footprint of under 90 sq/mi, holding nearly 700,000 full time residents and another 130,000 plus undergraduate students. With so many consumers practically on top of the port, this is a consumer market to be fed by ship calls. But to keep the boxships calling requires having terminal facilities that favorably match other ports within a vessel's rotation. In the case of the Port of Boston, handling 12,000-14,000 TEU ships is becoming a must, especially since the expansion of the Panama Canal in 2016. Containerships operate largely on the concept of economies-of-scale which puts smaller ports like Boston at a distinct disadvantage. Ideally, the larger the vessel, the faster a block of containers can be discharged and replaced with export boxes. Conversely, if there is only a small number of boxes being discharged - picked off piecemeal - the slower and less efficient the operation. Additionally, the greater the imbalance of imports to exports, the slower the process...and time is very much money to boxship operators. Of course, there is the caveat that most carriers calling the Northeast make their money on the inbound high value side rather than with the lower value (often higher weight) exports. Historically, there have been periods where the inbound/outbound ratio approached 7/3 but the trend has been a little more even since the Great Recession. However, the combination of the tariff war has again inched imports upwards. In 2018 imports hit 147,820 TEU up 13.7% over 2017 while exports tallied 80,190 TEU down 8.4%. Empties were up over 31%, a function of higher imports and the need for container repositioning. The actual number of ships calls was down to 164 in 2018 compared to 194 in 2017, again reflecting a global trend of bigger ships but fewer port calls. Productivity has been a key calling card for the port and truck turns remain competitive - mainly in the lower 30-minute range. The lifts per hour (the boxes shifted by the gantry cranes) have also remained relatively steady at over 32 per hour - well above the Massport benchmark of 27.20.

Future Port Plans In 2018 the port made plans for purchasing at \$45 million three ship-to-shore low profile gantry cranes to facilitate the handling of the larger boxships. Additionally, there's the two 50 foot berths being built which will allow the handling of ships with greater draft (there is a long history in the port of playing the tides to accommodate deep draft vessels). In functional terms, this means that a vessel call full laden from Asia or Europe could call Boston first inbound rather than being at the end of an outbound rotation when the vessel is lighter. Other projects underway include an expanded reefer storage area and new in-and-out gate facilities. Additionally, Massport and Columbia Intermodal have worked together to introduce 300 new chassis to the Fargo Street chassis pool.

Besides the gantry cranes, Massport also will take delivery of four Konecranes RTGs in 2019. The cranes will be delivered to Conley Terminal in Boston, where Massport will operate a fleet of twelve Konecranes RTGs. The order was booked in 2018. The Konecranes RTGs on order are 16-wheel machines lifting 40-ton containers 1-over-5, at six container rows wide plus truck lane. They will be equipped with the Konecranes Active Load Control (ALC) system, which eliminates container sway. They will also be equipped with the Auto-steering feature.

Perhaps the most important initiative is the "Boston Harbor Dredging Project." The project is a \$350 million partnership between the U.S. Army Corps of Engineers, the Commonwealth of Massachusetts, and Massport. The project includes maintenance dredging of the inner harbor (completed in 2017) and the deepening of the main ship channels. It was announced in March that the ongoing dredging project will receive \$34.8 million in 2020 for USACE Civil Works budget which takes effect in October.

An additional \$500 million of planned landside infrastructure investments is also in the works supported by a \$42 million U.S. DOT FASTLANE Grant and \$107.5 million from the State. Overall, the combination of investments and initiatives will provide the port with the basis to handle the current crop of boxships and to open up the possibility for more services.

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Panalpina and DSV agree to join forces

By: AJOT | Apr 01 2019 | Air Cargo News

DSV and Panalpina have reached an agreement on the terms and conditions of a combination by way of a Public Exchange Offer to all Panalpina shareholders. If the offer is successful, DSV and Panalpina will become one of the world's largest transport and logistics companies with a pro forma revenue of approximately DKK 118 billion and a workforce of more than 60,000 employees operating in 90 countries. Following completion, DSV will propose to its shareholders, at an extraordinary general meeting, to change its name to "DSV Panalpina A/S", which reflects the long, rich history of both companies.

Kurt Larsen, Chairman of the Board of DSV, comments: "A combination of DSV and Panalpina further strengthens our position as a leading global freight forwarding company. Together, we can present a strong global network and enhanced service offering to our clients, further solidifying our competitive edge in the industry. It's a great match on all parameters. Panalpina is a great company and we're very excited by the possibility to join forces and to welcome Panalpina's talented staff".

Peter Ulber, Chairman of the Board of Panalpina, comments: "In the course of the past weeks, Panalpina's board of directors and management have been exploring different strategic initiatives and held discussions with DSV about a potential combination. The board of directors' assessment is that the updated proposal of DSV is very attractive. We are now looking forward to joining forces with DSV and contributing to creating, one of the world's largest transport and logistics companies."

A great position for further growth DSV and Panalpina is a strong match with many potential synergies as a result of similarities in business models, services and strategies: Unique customer relationships and vertical expertise

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- Consolidation of IT infrastructure

Following settlement of the Public Exchange Offer, further details on the impact of the acquisition will be communicated.

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Air freight decline adds to warning lights for Europe's economy

By: Richard Weiss, AJOT | Apr 10 2019 | Air Cargo News | International Trade

Air-freight movements in Europe are declining at the fastest pace in six years, joining a host of indicators that have raised concern about the economic outlook. At airports in the region, air-cargo volumes fell 3.3 percent in February, data by Airports Council International Europe show. That's the fourth consecutive decline and the worst reading since 2013.

While falling cargo volumes hit at a lack of confidence and demand across the economy, the key question for European Central Bank policy makers meeting in Frankfurt on Wednesday is whether this will be temporary or a more sustained slowdown. The U.S. is threatening new tariffs on imports from the European Union, and the IMF on Tuesday cut its global growth forecast again.

In Germany, Europe's largest economy and its biggest exporter, the picture is also turning more gloomy. February saw the country's top four airports by freight, where more than 90 percent of the country's air cargo is handled, all post declining volumes. German industry is in a deep slump, with the factory Purchasing Managers Index at the lowest in more than six years.

The German freight data excludes air traffic in transit that's not destined for the country or doesn't originate there.

Revolutionary propeller technology developed to reduce underwater radiated noise

By: AJOT | Apr 02 2019

A revolutionary new technology capable of substantially reducing the underwater radiated noise (URN) generated by ships' propeller cavitation has been developed by Strathclyde University and Oscar Propulsion, a UK-based innovation and technology transfer company.

The patented Oscar PressurePores[®] system reduces propeller tip vortex cavitation by applying a small number of strategically bored holes in the propeller blades. The addition of these pressure-relieving holes now allows ships to operate with a more silent propeller with a minimum of compromise on its efficiency or having to slow steam. Reducing cavitation also reduces its associated erosive effect.

During the development of this technology at Strathclyde using comprehensive computational fluid dynamics (CFD) modelling and cavitation tunnel tests, it was demonstrated that the PressurePores system can reduce cavitation volume by almost 14% and underwater radiated noise (URN) by up to 21dB.

The results were further verified in separate tests on the sub-cavitating propellers used by the Princess Royal, a 19m research catamaran operated by Newcastle University. The original, unmodified model propeller was tested and used as a reference. Then CFD analysis and model tests were carried out on two propellers of the same design, one with 33 strategically-introduced holes in each blade, another with 17 holes.

The outcome showed that PressurePores technology substantially reduced tip vortex cavitation and URN. "Remarkably, it was found that the optimum number of holes could be as few as 17 per blade tip so long as they were placed in the most effective positions," said Taylor.

"It's not a case of simply drilling holes into the blades, as this will affect the propeller's thrust capability. CFD modelling at Strathclyde allows us to know exactly where to place the holes for maximum efficiency and optimum noise reduction." Taylor added.

Professor Mehmet Atlar, the Research Director of the Department of Naval Architecture, Ocean and Marine Engineering at the University of Strathclyde, said: "For a ship with non-cavitating propellers, the dominant URN is associated with the hull and propeller flow, as well as the ship's machinery and electrical sources. As soon as the propeller incepts cavitation, the dominant source becomes propeller cavitation, whilst these other sources still contribute. As a result, a series of periodic tones at discrete blade rate (low) frequencies and its multiples, takes place. This is accompanied by a spectrum of broadband (high) frequency noise due to cavitation and its complex dynamics".

It is interesting to note that propeller cavitation can generate as much as 180dB of underwater radiated noise and can be heard by marine life 100 miles away.

Dr Stephen Simpson, Associate Professor in Marine Biology & Global Climate Change, University of Exeter, a leader in marine noise pollution research, said: "Noise levels in the ocean due to maritime activity has been rising for decades, from a growing number of sources, including shipping, motorboats, oil prospecting, offshore energy installations and military activity. Loud sound can cause irreversible damage to marine wildlife through stress, deafness, habitat displacement, reduced reproduction, lost feeding opportunities and even death. Any way to reduce our acoustic footprint in the ocean will benefit marine ecosystems".

David Taylor furthered: "PressurePores has a major mitigating effect on propeller cavitation and URN and can be incorporated into new propellers or can be retrofitted to existing propellers either in drydock or possibly in-water. While PressurePores are suitable for all types of vessel, they are particularly suitable for naval vessels, fishing fleets, offshore vessels and cruise ships operating in sensitive environments. The technology can be applied to all types of propellers, including pods and thrusters." Oscar Propulsion is now looking to partner with shipping companies and propeller designers or manufacturers to commercialise the PressurePores concept and to help the shipping industry operate in an environmentally safer way.

Biggest US truckers grab larger market share

by William B. Cassidy, Senior Editor JOC 4/1/19

Trucking may be a fragmented market, but the largest trucking companies in North America are increasing their market share, year to year and decade to decade. Truck pricing may be volatile, and subject to short-term swings in the US economy, but in the long term, the growth rate of the biggest US trucking operators reveals a steady and sizeable surge of business. From 2009 to 2018, the 50 largest US trucking companies boosted their share of the for-hire trucking market from 27 percent to 38 percent, according to an analysis of data from SJ Consulting Group and the American Trucking Associations (ATA). That's a big share for 50 companies in a field of more than 500,000 registered motor carriers operating in the United States.

The SJ Consulting Group data are the basis for the annual JOC.com Top 50 Trucking Companies special report, an overview of the Top 50 carriers ranked by revenue, which will be published in the April 15 edition of *The Journal of Commerce*. The ATA for-hire trucking industry revenue data are released in the association's monthly and annual trucking reports. The Top 50 share of the for-hire market, as defined by ATA, actually stayed between 27 and 28 percent until 2014, the year the economy and trucking first showed sustained, higher growth. The Top 50 carriers claimed an additional 9.4 percent of the market in just four years. That points to increased reliance by US shippers on larger transportation providers. Over the last 10 years, the 50 largest US trucking operators increased their combined revenue 66 percent, despite seeing revenue tumble 17.7 percent during the 2008-2009 recession. Last year, the combined revenue of those motor carriers reached \$157.5 billion, according to the 2019 JOC.com Top 50 Trucking Companies special report, prepared by SJ Consulting Group.

That growth has created an entire new class of motor carriers with more than a billion dollars in annual revenue. In 2003, the first year the JOC and SJ Consulting Group issued the Top 50 trucking rankings, there were only 12 motor carriers with \$1 billion or more in annual revenue. By 2018, there were 32 carriers in that revenue class — a gain of 20 companies in 15 years. In 2003, those 12 companies with more than \$1 billion in revenue had combined revenue of \$46.1 billion. In 2018, the 32 carriers in the billion-dollar club had combined revenue of \$144 billion, a 212 percent increase for the group as a whole. In terms of same-carrier revenue, the 12 billion-dollar companies of 2003 had \$107.2 billion in combined revenue in 2018. The accumulation of revenue at the top underscores the emergence of what are really two separate industries in recent decades, one composed of very large carriers handling high volumes of freight and the other made up of hundreds of thousands of small companies, most of them with fewer than 100 trucks, playing a very different role in the freight marketplace.

The growth in trucking revenue can be tracked in the expansion of what 20 years ago were purely regional carriers into large multi-regional, national, or international companies, and the acquisition of competitors to form larger and larger enterprises. UPS, for example, acquired Overnite Transportation in 2005, and XPO Logistics absorbed Con-way in 2015. Old Dominion Freight Line, a multiregional carrier with \$668 million in revenue in 2003, is now a \$4 billion company and the second-largest less-than-truckload (LTL) carrier in the United States. Estes Express, the largest privately owned LTL carrier, was the 14th-largest US trucking firm in 2003, with \$865 million in revenue, and today it is number 12, with \$2.8 billion in revenue.

Last year, which in terms of revenue growth was the best year for the Top 50 US motor carriers since 2004, five companies in the Top 50 rankings broke the billion-dollar barrier, including Daseke, Ryder System (in its dedicated and last-mile trucking business), the Evans Network of Companies, Universal Truckload Services, Forward Air, and Alliance Shippers.

7 Advantages to Outsource Inc

Today, ninety percent of Fortune 500® companies rely on 3PLs for outsourced logistics and supply chain services, according to an Armstrong & Associates report. Whether you're a B2C or B2B company, how promptly and efficiently you react to customer orders has a direct bearing on customer loyalty, retention and earnings.

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| 1. Focus on Core Business | 2. Gain Access to Technology | 3. Drive Efficiency and Cost Savings |
| 4. Improve Risk Management | 5. Acquire Custom Solutions | 6. Develop Internal Staff |
| | 7. Improve Customer Satisfaction | |