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Specialized Transportation

Pull Force is the force that a truck or prime mover can exert onto a transporter or any type of trailer. It has been a subject of much controversy and misunderstandings as truck manufacturers and end-users often do not talk the same language. Marco J. van Daal explains how to arrive from engine power to the actual theoretical pull force of the truck.

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With cranes becoming more technically advanced, manufacturers are training operators and service engineers for more efficient and safe operations. P. P Basistha reports.

Technical advancements in mobile and crawler cranes with superior quality components and aggregates related to the engines, winches, booms, control and display systems, and other auxiliary components, has upped the need for more intensive training of the operators and service engineers to ensure efficient operations of the machines.

Subhajit Chandra, Divisional Head, Liebherr Cranes India, informs that since they keep making modifications in the design and engineering functionalities of their mobile and crawler cranes, it has become imperative to make users aware of the changes and the advancements. “We bring out a training schedule for our service engineers to learn first-hand the basic maintenance requirements of the machines; and they are also sent to our production facility in Germany for a closer understanding of the products and their functions. We also give our engineers and operators simulation-based training at our training centers in Kolkata and Mumbai.”

Adds Chandra, “Our service engineers are trained to analyze the error codes in the crane so that they can remotely guide the crane owner’s maintenance team in rectifying the problem. This helps the owner minimize his machine’s downtime and save time and money.” Liebherr also renders training to the owner’s crane operators, technicians, and senior maintenance personnel (for the crane to be delivered) at the company’s facility in Germany. “Seeing
Operators' Training

the production process makes them better accustomed with the product, which helps them at the time of troubleshooting. We also provide onsite training when the machine is commissioned," says Chandra. As a member of the Indian Construction Equipment Manufacturer, Liebherr has entered the Skill India Program for training crane operators. Certified operators can operate cranes in any part of the world.

Ghananeel Molankar, Divisional Head - Construction Machinery, Liebherr India, informs that safe working of the cranes is top priority and mandatory for any lifting operation. Hence, the operators are trained to work within safe working parameters of the crane during lifting operations. The operator should have a clear understanding of all the controls in the cabin. He/She should be well-versed with all safety alarms and protocols. Although modern day cranes have monitors in the cabin with all relevant information being displayed, it is very important that the operator understands the correlation between the load being lifted, the boom angle and the radius. "Our cranes adhere to the utmost global safety standards as far as design and features are concerned. All data including engine parameters, vital hydraulic system parameters and real time calculations provide the operator with additional information so that he can perform the lift with utmost care and safety. The data is continuously processed and displayed on the monitor in real time so that the operator has all the necessary information available throughout the lifting operation." A perfect example would be the Ground Pressure Visualization which calculates the current ground pressure of the machine in real time and compares it with the specified safety limits of the relevant jobsite. Please see the picture below for illustration of this feature:
Operators' Training

"We have always been focussing a lot on training. We impart training to operators as well as to the customer’s site / operations team. We normally train operators on site – hands-on during commissioning of the cranes. We also provide troubleshooting training to the maintenance team on site. We often troubleshoot the machines remotely and this means that we need good, highly trained and qualified service engineers. This is an important aspect as remote diagnosis reduces the overall costs for the customer and reduces downtime to a minimum. Our service engineers are trained in our factory in Austria, at Liebherr-Werk Nenzing GmbH, for nearly two months, during which they are made familiar with the machine’s operations, safety features and troubleshooting."

According to Sanjay Saxena- Sr. VP & Head- HE at Sany Heavy Industry India, the company provides comprehensive training to the operators and service engineers of the crane owners - be they contractors, rental companies, or sub-contractors. Training is given on functions of the hydraulic, electrical, and electronic systems, and on safe practices, especially for the higher capacity mobile and crawler cranes. Sany India has a fleet of around 1100 cranes that include truck mounted, all terrain, rough terrain, and crawler cranes.

"With worksites in many states under lockdown due to Covid-19, we have been providing online training to our service engineers on many aspects of the cranes, especially on how to restart them after the long period of idling, and how to change the oil and oil filters. Most importantly, the service engineers have been advising the crane owners on how to check the machines that have been idling for long," informs Saxena.

Action Construction Equipments (ACE) has a dedicated training center at Ballabgarh for training its service engineers and crane operators. “Our business philosophy lays a lot of stress on product support that includes training the operators of our mobile, crawler and tower cranes. At our center we have advanced training tools, well-documented PPT presentations, and the capacity to train 100 people at a time. To make the exercise complete, we give hands-on training on our cranes at our Palwal manufacturing plant,” informs Manoj Agarwal, Chief General Manager, Marketing and Product Support, Action Construction Equipment (ACE).

He adds, “Since we have made some technical modifications in our 40 and 75-ton crawler cranes, our service engineers are being trained anew on the functions of their components, and also on our new line-up of higher capacity 100, 120 and 150-ton crawler cranes. We also provide onsite training to the contractor’s crane operators on general maintenance and safety aspects of the crane. We have a training manual for a two-day program and are also offering online training to our customers.”
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E-mail: ghananeel.molankar@liebherr.com
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Pull Force

Pull Force is the force that a truck or prime mover can exert onto a transporter or any type of trailer. It has been a subject of much controversy and misunderstandings as truck manufacturers and end-users often do not talk the same language. Marco J. van Daal explains how to arrive from engine power to the actual theoretical pull force of the truck.

A truck salesman talks about horsepower (HP), kilowatt (kW), or torque (lb-ft or Nm) when the end-user is often just interested in how many tons or pounds the unit can pull. In order to go from HP to pull force, many terms and conversion factors are thrown on the table such as number of driven axles, gear box ratio, rear end ratio, differential, tire size, truck weight and fifth wheel capacity, just to name a few. It gets even worse and more complicated if the buyer wants a custom truck with, for example, an auxiliary gearbox (also called a transfer case) to achieve even lower speeds and higher torque, or if he wants to have one of the rear axles retractable.

Let's start with a thumb rule. A truck can deliver a pull force equal to some 80 to 90% of the weight carried by the drive axles. The truck in figure 1 weighs 35 tons. The rear 2 axles are drive axles and carry 10 tons each; and the third rear axle and the steering axle carry 7.5 tons each. The maximum pull force that this truck can generate is between 16 tons (35,000 LBS) and 18 tons (40,000 LBS).

However, this is only if the correct gear is chosen and there is sufficient engine power (HP of kW) available and this power can actually be transferred to the road surface. Once it is known that the above conditions are complied with, this thumb rule is pretty accurate for practical purposes.

What is more important?

The power and torque of a truck is delivered by the engine and is expressed in HP / kW or lb-ft / Nm. A power of 1 HP equates to about 745 W and a torque of 1 lb-ft equates to about 1.36 Nm (Newton-meter). A 400-HP engine with a maximum torque of 1,500 lb-ft can deliver 298 kW and about 2,036 Nm.

To understand the difference between power and torque, it is important to understand that power (HP and kW) is a measure of the rate at which work is delivered; it is measured per unit of time. It may help to know that the definition of a HP is based on the (empiric) assumption that a horse can move 33,000 LBS 1 foot per minute, therefore 1 HP = 33,000 lb-ft/min = 550 lb-ft/sec.

Torque (lb-ft and Nm) is the measure of an object’s tendency to rotate about a point, a twisting force. It is not measured per unit of time but (in the case of engines) per crankshaft revolution.

In terms of rating an engine, it is the application that determines whether power or torque is the more important measurement. When speed or a certain duty cycle is required, the engine power is of importance; as power, like speed, is measured per unit of time.

When pull force is important, such as with trucks and most off-road and earth moving equipment, the engine torque is of importance as this determines if the truck will be able to move the object/trailer. It is a matter of wanting to know “how fast” versus “how much”.

Figure 1:
How does a truck work?
The power and torque are delivered to the engine shaft, which is connected to the crank shaft that is rotated by the engine pistons. The speed of this shaft is determined by the engine RPM, which in turn is influenced by the throttle.
The engine power and torque are not required all the time; you may be idling at a traffic light, but you do not want to shut off the engine. Immediately behind the engine shaft is the clutch, which can be engaged or disengaged. When the clutch is disengaged (you press down the clutch pedal), the engine runs but no power or torque is delivered to any mechanical part of the truck. When the clutch is engaged (you slowly release the clutch pedal), the engine power and torque now set into motion an array of gears. See figure 2.
The first set of gear can be found in the gearbox. Figure 3 shows an open gearbox. The protruding shaft connects to the engine shaft. The large open disk-like shape is the “bellhousing” that bolts to the engine block and covers the flywheel. The flywheel is a large steel disk or wheel that rotates inside the bellhousing. The function of the flywheel is to store kinetic energy. The speed of the flywheel is not easily changed because of its weight and momentum. Because of this, the flywheel helps to keep the shaft rotating at the same speed. This comes in handy as piston engines usually have uneven torque per piston and per firing. The flywheel fixes this problem.

The gears in the gearbox are of different diameters - each set with its own gear ratio. When you open a gearbox, you can calculate the gear ratio from the number of teeth on the gears, but that is a cumbersome way. The manufacturer can supply you with the gear ratio of each gear. The first gear is most important as this is the gear that will set the truck and transporter in motion. The ratio must be large enough to ensure a slow starting speed. Ratios of 16 or 18 or 20 are not unheard of. For comparison, your average car has a first gear ratio of 3.5 or 4.0.
As the output of the gearbox is connected to the drive shaft by a U-joint, in practical terms, a gear ratio of 20 means that it takes 20 crank shaft revolutions to make one drive shaft revolution.
So now we have the drive shaft rotating. The drive shaft is connected by a U-joint to the differential. The differential has two functions:
1. It allows the rear wheels to rotate at different speeds in turns and curves. The outside rear wheel needs to rotate faster than the inside rear wheel, the differential allows for this. See Figure 4.
2. The gears in the differential are designed with a certain ratio, similar to the gearbox but with the difference that the differential has one set (designed) gear ratio. This differential gear ratio is called the “rear end ratio” or “final drive ratio.” A differential gear ratio of 10 means that it takes 10 drive shaft revolutions to make one drive axle shaft revolution.
The differential also has a disadvantage. Since it allows differential speeds between the two wheels, in case one wheel loses traction and starts spinning, the entire power and torque goes into that wheel as this is the way of the least resistance. Many trucks nowadays have “differential locks” (or diff-lock) built in. Once the diff-lock is engaged, both the wheels rotate at the same speed no matter if one axle has lost traction. Note: diff-lock can only be used on straight roads as it completely eliminates the possibility of speed differential between left and right axle in turns.

If we now look at the total gear reduction between the gearbox (reduction 20) and the differential (reduction 10) we can conclude that it takes 20 crankshaft revolutions to make one drive shaft revolution and 10 drive shaft revolutions to make one rear axle shaft revolution. Therefore, it takes 10 \* 20 = 200 crankshaft revolutions to make 1 rear axle shaft revolution.

At the end of each drive axle shaft we find the wheels. The diameter of the wheels or tires has an influence on the velocity of the vehicle. Larger diameter tires gain speed much quicker than smaller diameter tires. In addition, larger diameter tires generally have a lower rolling resistance, particularly in off-road condition.

It is important to understand the difference between drive axles, non-driven axles, and steering axles. To determine pull force, we are solely interested in drive axles as these are the axles that convert the engine power into traction on the road surface. In general, it can be stated that the more weight a drive axle carries, the more traction it can develop. Keeping in mind, however, that engine power and axle capacity can be limiting factors.

The truck in Figure 5 has a Gross Vehicle Weight (GVW) of 56 tons. Of the five axles, the rear three axles are drive axles and each carry 12 tons. The front two axles are steering axles; these carry 10 tons each. Since the front two axles are not driven axles, these do not contribute to the development of the pull force.

As stated, the thumb rule for determining pull force is that a truck can deliver a pull force equal to about 80-90% of the weight carried by the drive axles. The drive axles of the truck in Figure 5 carry a total weight of 3 \* 12 ton = 36 tons.

The maximum pull force that this truck can generate is between 28.8 tons (63,436 LBS) and 32.4 tons (71,366 LBS). We arrive at these numbers by performing the following calculations:

- Pull force at 80% = 80% \* (3 \* 12 ton) = 28.8 ton
- Pull force at 90% = 90% \* (3 \* 12 ton) = 32.4 ton

Once the pull force is known, this can be used to determine how much weight can actually be set in motion by this truck. For this, it is necessary to know how much the rolling resistance is of the transport vehicle. The rolling resistance is generally expressed as a percentage of the GVW. On dry asphalt or tarmac the rolling resistance is around 2-3%. This means that the truck in Figure 5, with a GVW of 56 tons, requires between 1.12 tons (2% rolling resistance) and 1.67 tons (3% rolling resistance) of its pull force to set itself in motion.

Rolling resistance is a number that is empirically (by tests and observations) determined. When the surface is hard and solid, the rolling resistance is often in the 2-3% range. However, when performing transports on sand or dirt roads, this percentage is generally higher.

Figure 6 shows a transport in operation; it consists of a truck that is pulling a combination of a single wide 12-axle line transporter in the front and a double wide 6-axle line transporter in the rear. The rear double wide transporter provides the required stability. Both transporters are equipped with turn tables.

Calculation to determine if this truck is strong enough to pull this transport combination:

Overview of the various weights:
- Truck 40 ton of which 32 ton on the drive axles
- Vessel 466 ton
- Turn table 5 ton each
- Transporter 3.5 ton per axle line

The GVW is the total weight of the entire transport combination:

\[ \text{GVW} = \text{truck} + \text{vessel} + \text{turn tables} + \text{transporter} \]
\[ = 40 \text{ ton} + 466 \text{ ton} + (5 \text{ ton} \times 2) + (3.5 \text{ ton} \times 24 \text{ axles}) \]
road surface, but it is not strong enough adequate for pulling this transport on a flat It can now be concluded that this truck is (0.03 + 0.02) * 600 ton = 30 ton.

Required pull force = (3% + 2%) * GVW = rolling resistance + incline.

required pull force, which is the sum of the 28.8 tons. The difference here lies in the generates a pull force between 25.6 and this transport up a 2% incline. A stronger truck will be required.

The information in this article is useful to determine the truck pulling capacity, but do not forget, this is a theoretical number.

How do you really find out the thru power (pulling capacity) of a truck so that you do not have any surprises when it needs to deliver this force?

The only real test is to put it to the test. This is not a test recommended by the manufacturers, but it is a test that will tell you the thru power of the truck. Connect the truck via a wire rope sling and a load cell to an immovable object (I have used a large crawler crane and it worked just fine for this application). Let the truck pull in its lowest gear, slowly increasing the RPM. When the engine stalls or dies, you have reached the maximum for this truck. When the drive axles spin, you could add more counterweight and perform the test again, provided that the fifth wheel capacity, axle, tires is sufficient.

Three cautionary notes here:
• Never stand between the truck and the immovable object

• When performing this test, be aware that in the chain of components between the engine and the rear axles, the drive shaft is often the weakest link (the cheapest component and the easiest to replace). The standard drive shaft may not be strong enough for this test and can snap/break so you may need a stronger drive shaft version for heavy pulling.

• This test needs to be performed only once in the lifetime of a truck, unless an engine or gearbox is replaced.

Mahindra Logistics expands its multi-user & flex warehousing

Mahindra Logistics Ltd. (MLL), one of India’s largest third-party logistics (3PL) solution providers, has added more than 7.5 lakh sq.ft area to its existing ‘Built-To-Suit’ warehousing capacity in Hyderabad and Chennai. The facilities are developed to sustainable standards and allow MLL to provide flexible and scalable fulfillment and integrated distribution solutions.

Phase 1 of these sites are focussing on integrated solutions for e-commerce, consumer and engineering industries. In addition to this, MLL has set up nearly 10 lakh sq.ft. of flex warehousing solutions. A considerable size of this space is also catering to large Pharma companies during the pandemic. MLL is already gearing itself with a massive last-mile delivery roadmap to cater to the highly anticipated Covid vaccine for its pharma clients across India.

Rampreven Swaminathan, MD & CEO, Mahindra Logistics Limited, said, “Continuing our efforts in growing the non-Mahindra business, MLL continues to expand its warehousing capacity and is focused on tapping the huge potential in warehousing spaces across all regions. With the launch of these large spaces, we look forward to continued business growth from existing as well as potential customers from all regions. We have also deepened our focus by launching new solutions like returns processing, pop-up sort centers and integrated distribution services for our clients.”

MLL, a part of the newly created Mobility Services Sector of the Mahindra Group, serves over 400 corporate customers across various industries like Automobile, Engineering, Consumer Goods and E-commerce. The company pursues an “asset-light” business model, providing customised and technology enabled solutions that span the supply chain and people transport operations.
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Goldhofer & Universal Transport
40-Year-Old Tie Becomes Stronger

The oversized load and heavy hauling company Universal Transport of Paderborn is modernizing its wind power transportation fleet with 62 THP/SL-S (285) axle lines from the house of Goldhofer. With a vehicle width of 3,000 mm, axle spacing of 1,500 mm and a higher bending moment, the single wheel modules have been ordered as a replacement for the current Goldhofer THP/ET modules.

Markus Frost, Managing Director and Frank Rakowski, Fleet Manager, Universal Transport GmbH, Paderborn, discuss the new contract signed with Goldhofer on the sidelines of the handover of the first vehicles in Memmingen.

Your company has placed its trust in Goldhofer’s products and services since 1980, and you have been collaborating on vehicle development for 20 years. What is the basis of this 40-year relationship?

Markus Frost: There are several reasons: Goldhofer stands for outstanding product quality, intelligent transport solutions, long years of experience and close customer relations. We know that we will get exactly the solution we need. So, it is not surprising that more than one third of our heavy-duty fleet of over 500 vehicles are from Goldhofer.

Universal Transport will soon be transporting turbine blades, nacelles, and tower sections for wind power plants on 62 new THP/SL-S (285) axle lines supplied by Goldhofer. Do you need to increase the size of your fleet for wind power transportation and what has prompted your decision?

Frank Rakowski: With the THP/SL-S series vehicles, we are completely replacing the Goldhofer THP/ET pendular axle modules which we have been using to date. In concrete terms, this means lower deadweight, very high payloads, 1,500 mm axle spacing instead of 1,400 mm, and greater lateral stability, thanks to an increase in vehicle width from 2,750 mm to 3,000 mm. What’s more, with a suspension stroke of 600 mm we can now raise the maximum loading height to 1,600 mm above the axles – an enormous advantage in terms of extra height for negotiating obstacles. With this unique constellation, we can comply with Germany’s strict regulations for transporting heavy loads, including weight limits on bridges. It also enables us to provide safer, more flexible, and, above all, more economical delivery of wind power plant components. The new single wheel bogies with four 19-inch tires per axle line and the above-average loading height available are exactly the right solution for us in the context of construction site traffic for wind power plants.

The reason we are going for a full replacement is to have a high degree of standardization with regard to the axle systems used. This is the key to simplified and flexible solutions in choosing the right combination for the operation involved.

Markus Frost: The changeover also enables us to anticipate the increasingly strict regulatory requirements in Germany – because technically speaking, there is no such thing as an “old” Goldhofer vehicle; they are too good for that and have such a long service life. At all events we are convinced that the THP/ET heavy-duty modules we are selling will continue to provide reliable service to their new owners for many years to come.
To what extent are your 20 years of cooperation with Goldhofer reflected in vehicle developments?

Markus Frost: As far as I can judge, Goldhofer has brought a number of vehicles to the market that were directly influenced by our requirements and brain-stormed together. Some of these advances were subsequently adopted by the competition. A case in point is the design of the first railway vehicle transporters with two pendular axles right behind the gooseneck, followed by a bogie with steering knuckle axles. Goldhofer dispelled the doubts raised at the time as to whether the combination of these two steering systems was possible by developing the project with us and then simply implementing it as a first mover. Today, they all use this system because of the better load distribution that it offers.

To what extent does Universal Transport take advantage of the Goldhofer service?

Markus Frost: For us, the unparalleled quality of Goldhofer’s vehicles is beyond question. We use them not only in the wind power sector but also for transportation in other industries, including locomotives, railway vehicles and streetcars. In the harsh environment of heavy-haulage, wear parts must naturally be replaced from time to time. And Goldhofer’s service organization does an exemplary job in this respect – for both parts and maintenance. As a result, some of our Goldhofer vehicles have been in continuous use for almost 20 years. It should also be mentioned, that, for all our requirements, we have one and the same contact person at Goldhofer, who takes care of everything.

Frank Rakowski: Another aspect relating to service, and one that is eminently important to us, is the support available with Goldhofer’s software tools EasyLoad and EasyTrack, which greatly facilitate the planning process for complex transportation operations with heavy and oversized cargos. With EasyLoad, for example, which has full TÜV certification, we simply combine a cargo with a vehicle to find out which model in which combination will be the best solution – at a professional level of detail that is simply unique. And the data has the same status as a certified weighing slip. When applying for permits, e.g. using Germany’s new VEMAGS application system, we can attach everything in analogue or digital form, as the data is certified. In short, this enables us to comply with the transport process planning requirements pursuant to the German VDI Guideline 2700 Part 13 within the shortest possible time. Just as useful and indispensable in our everyday work is Goldhofer’s cornering simulation software, which delivers a realistic picture of the narrow passages to be negotiated on the planned route.

Markus Frost: Frank Rakowski and I could of course have summarized our remarks in one succinct sentence: we are satisfied with Goldhofer in every respect!

What does the business portfolio of Universal Transport comprise of and what is its current fleet size?

Frank Rakowski: Universal Transport of Paderborn is a leading operator in the field of heavy-duty logistics. The haulage expert with more than 60 years of experience primarily serves companies in the construction, wind power, rail, and manufacturing industries. The company’s portfolio includes project consulting, organization, and implementation at numerous locations in Germany as well as in Poland, the Czech Republic, Romania, Turkey, Ukraine, Russia, and Egypt. UTMs’ diversified fleet comprises about 320 tractors (trucks) and over 500 trailers.
High-intensity focus on making India a global manufacturing hub has caused warehousing clusters to expand rapidly beyond the top cities and into tier 2 and 3 cities, reveals ‘Indian Industrial & Logistics – Gearing Up a Global Manufacturing Hub’ – a joint report by US-based Binswanger Commercial Real Estate Services and ANAROCK Group.

- ~50% (3PL)
  Largest occupier of warehousing spaces in India
- 66%
  Share of road transportation in India’s logistics
- 77 Mn sf
  Total warehousing stock across top 8 cities in India
- 14% of GDP
  India’s logistics cost (better than China 15% of GDP)
- 15 approvals (2019)
  Reduction from 33 to set up a warehouse in 2015
- 3.5 months (2019)
  Reduction from 6 months to construct a warehouse in 2015
The report says that India’s industrial prowess is appropriately depicted by over 3,400 industrial clusters spread over 4.6 lakh hectares, of which only 25% is vacant. While the manufacturing sector is large in India, its contribution to the GVA is only around 17%. Realizing the current need, the government has initiated several plans under its flagship ‘Make in India’ campaign and is looking to expand the manufacturing sector’s economic contribution to 25% by 2025. To attain this, nearly 75,000 acres of new industrial areas are planned across the top cities of India. Meanwhile, India’s logistics ranking also improved significantly during the past few years - from 54th in 2014 to 44th in 2018.

Physical infrastructure development of roads, and enhanced connectivity via rail, road, and sea has improved the country’s logistics performance index over the years. With an average logistics cost of 14% (of GDP), India fares well compared to China which has 15% and EU which has 13%. The policy reforms undertaken by the government aims to reduce it to 9-10% making India highly competitive across the world. The major planned and upcoming warehousing and logistics destinations along with several government policies will augment the development of new industrial corridors, leading to the rise of new warehousing clusters in the country.
Logistics & Warehousing

Emerging Warehousing Hubs in India

Warehousing clusters are expanding rapidly beyond the Metro & Tier-I cities

Warehousing clusters are expanding aggressively in Tier-II and Tier-III cities. Majority of these emerging clusters are in line with the industrial and freight corridors being developed in India. Demand for small and multi-location warehouses is expected to rise significantly.

Upcoming Warehousing Clusters

1. Ludhiana
2. Ambala
3. Lucknow
4. Sihag
5. Guwahati
6. Bhuj
7. Jaipur
8. Vishakhapatnam
9. Vizianagaram
10. Coimbatore
11. Kochi
12. Nagpur
13. Indore
14. Diu

Source: Compiled by ANAROCK Research

Shobhit Agarwal, MD & CEO – ANAROCK Capital, says, “The rising demand for Grade A warehousing properties across the country is a key trend. Our data indicates that there is more than 110 mn sq.ft. of Grade A warehousing stock available across the country - most of it in the top 8 cities. 3PL (third-party logistics) and e-commerce are the largest occupiers of warehousing space. There is a massive opportunity for Grade A warehousing development in the smaller cities amidst rising demand.”

The report highlights that nearly USD 7 bn worth of platforms have been created for the warehousing sector since 2015. Over USD 2 bn in PE investments have been infused in the Industrial and Logistics sector between 2017 and Q1 2020. Investors are upbeat on this sector and are working closely with developers to identify warehousing investment opportunities.

Indian Warehousing Sector: Key Occupiers

3PL & logistics and e-commerce are the largest occupiers of warehousing space in India

Share of Occupiers (as of 2019)

- 23% 3PL & Logistics
- 23% E-commerce
- 20% Manufacturing
- 17% Others
- 9% Auto Components
- 8% Retail

E-commerce which started flourishing in India by 2012 has gained prominence within a short span.

Note: Supply of 3PL players which have leased to e-commerce players is accounted in 3PL.

Source: ANAROCK Research
Global Ocean engaged for last two decade in door to door solutions from international freight to Custom Clearance including local transportation facility, warehousing etc.

The company has registered with WCA, MTO, IATAI, CHA, ISO and FFI

Services offered:
- Break bulk
- Custom Clearance
- Transportation
- Warehousing
- Sea Freight (Imports & Export)
- Ex Works (Pick-up and delivery from door to door)
- Air Freight (Imports & Export)

Global Ocean Group
C 101, Business Square, Chakala, Andheri Kurla Road, Opp Kanakia Wall Street, Mumbai 400 093
Tel: +91-22 4877 8888, Website: www.globalocean.in

Branches:
Chennai, Mundra, Kandla, Tuticorin, Bangalore, Coimbatore, Karur, Vizag Cochin, Nagpur, Pune and Aurangabad
Jeff Binswanger, Managing Partner, Binswanger International, says, “COVID-19 has exposed the challenges of consolidation within the warehousing sector. The market is expected to decentralize to mitigate future disruption, ensure business continuity, and ease operations. To contain costs and maintain social distancing norms, automation will become a major focus area. Also, e-commerce will flourish in the post-COVID-19 era, giving an edge to online businesses, which will eventually boost new warehousing demand - particularly multi-level warehouses within city limits.”

A fertile arena for growth has been created by the government with the significant reduction in the number of approvals for setting up warehouses - from 33 in 2015 to 15 in 2019. Likewise, the time taken to construct a warehouse has reduced to 3.5 months from the previous 6 months, during the same period. Thus, the efficiency in setting up a warehouse is better than many developed nations. These indicate India’s competitiveness and preparedness to be a preferred destination.
The world looks up to India as a land of opportunities, offering sizeable returns. The country is prepared for the big leap. Improved EoDB ranking (63rd in 2019 from 142nd in 2014), low corporate tax rates, burgeoning infrastructure, changing policies, and reforms are aimed to attract global industries to India. The competitive corporate tax rate of 15% for new manufacturing companies is capable of attracting global manufacturers. To support future economic growth, physical infrastructure is also being upgraded with an investment of USD 1.3 tn. Over 10,000 km of dedicated freight corridor is being planned to enable efficient and economic transportation of freight across the country. Additionally, the rich demographic dividend comprising a large employable workforce at a highly competitive cost can be leveraged while operating out of India. Nearly 54% population is aged between 20 and 59 years with a balanced diversity ratio. The constant inflow of FDI across sectors and industries over the past years stand testimony to the confidence of global investors. Over USD 457 bn FDI has been added since April 2000, of which manufacturing focused sectors account for nearly 26%.

Thus, today, India can attract companies for setting up an alternate base due to its strategic location and connectivity to major markets across the world. A survey of the supply chain companies also indicates that India is a preferred destination, followed by Vietnam and other Asian countries.
Avigna Space
Modernizing India’s Warehouses

Abhijit Verma, Executive Director & CEO, Avigna Space, gives insights on the importance of having a tech-enabled warehousing system with a world-class infrastructure to cater to important catchment areas in major markets, and his company’s initiatives towards modernizing the age-old warehousing industry of India.

How does India’s Warehousing Industry rank vis a vis other countries?

According to World Bank’s Logistics Performance Index (LPI) 2018, India holds the 44th position in the global ranking of Warehouses and Logistics - still sitting at the bottom tier as compared to other countries. This is largely because the warehousing industry in India still awaits a facelift and technology-driven transformation at a mass level.

Currently, we have only 20-30% of the warehousing sector which is organized, with only 10% of the total warehousing space made up of A-Grade facilities – the rest are B and C Grade, which do not have planned storage, input and output models, well-defined movement of goods, and negligible technology integration. This adversely affects a multitude of things in terms of the cost and time allocation and the consumers and brands experience, which stands heavily compromised.

However, India’s Warehousing Industry is now striving to keep pace with world’s Grade-A facilities, having realized that B and C grade facilities ultimately lead to an increased cost in their maintenance and upkeep in the long-term.

How is the Warehousing Market evolving in India and what are the growth drivers?

India is witnessing a sea change from the era of godowns to well-equipped, well-planned, and technology-backed warehousing facilities. This revolution, which was further propelled due to the ongoing pandemic, is now leading to a complete revamping and remodeling of the Warehousing and Logistics Industry.

According to an industry report by ResearchAndMarkets.com, the warehousing market in India, which was valued at ₹1,501.2 billion in 2019, is expected to reach ₹2,821.1 billion by 2024, expanding at a CAGR of ~13.57% during the 2020-2024 period. Currently, India’s total warehousing capacity is estimated to be 160 mn tons.

Several factors, including the country’s changing tax regime, growth across major industries, including automobiles, food, agriculture, pharmaceuticals and FMCG, and the emergence of organized retail have been supporting the growth of the warehousing industry in India. Consequently, while the Indian real estate industry has been facing hardships on account of a challenging residential market, the warehousing property segment has
emerged as a promising investment opportunity for institutional investors. Warehouses are typically the backbone of the supply chain of any business or industry that relies on the distribution of products from factories to retail outlets and subsequently to the end-users. With the booming e-commerce market in the Indian sub-continent, the demand for state-of-the-art A-grade warehouses with a strategic location has increased tremendously.

What are the challenges and how is the industry meeting them?
Factors such as poor infrastructure, lack of safety measures, and poor quality of supply-chain management have traditionally proved to be major impediments in the growth and development of India’s warehouses at the macro-level.

The industry is now awakening to the need for an urgent transformation, which will see technology at its forefront. This will open up a plethora of opportunities not only for the large players but also for the medium and small-sized players. In fact, there is a surge in demand from the unorganized sector as well for fully equipped and technology-backed A-Grade warehouse facilities that provide superior infrastructure, and also ensure the safety and well-being of the workers. So, it’s time for the industry to upgrade and provide the right infrastructure that meets international standards.

According to a Knight Frank India report 2020, the warehousing sector has seen institutional investment volumes growing from USD 125 million in 2016 to USD 2.3 billion in 2017. In 2018 and 2019 it was recorded at USD 2.2 billion and USD 1.8 billion, respectively. In 2020, the investor activity was on account of the disruption caused by the Covid-19 pandemic.

However, as we move towards the new normal, the sector seems to have made a quick recovery. Amidst the current upheavals in the overall market dynamics, which will also see many interim fix-ups and short-lived trends, we reckon that the warehousing sector is a long-term player - whether in terms of lease tenures or investment horizons - as reflected in the Knight Frank report.

Players who have understood the importance of A-grade storage facilities are progressing towards upgradation and modernization of their warehouses. Avigna Space is the torchbearer of this transformation and is committed to providing A-grade facilities that compete with our international counterparts. It is marking its presence in the most strategic locations in South India, while also planning to move towards the northern and western parts of the country.

What are the recent developments at Avigna Space and its future plans?
Avigna Space aims to become India’s one-stop solution for world-class Warehousing Solutions and Logistic Parks. It plans to first monetise its existing land bank to fuel expansion in other parts of the country. Our ultimate goal is to come up with a REIT.

We plan to invest ₹2,000 crore for developing about 10 million sq.ft. of warehousing space in southern India, and subsequently in the western and northern parts of the country.

We will be developing 95 lakh sq. ft. of warehousing space, which will include 3 million sq. ft. at Karnataka’s Hosur, 4 million sq ft at Hoskote, 1.5 million sq ft at Chennai, and one million sq ft at Andhra Pradesh’s Nellore. We will be investing ₹400 crore for the Hosur project which will be developed in three phases of 10 lakh sq. ft each phase; the first phase will be operational by December this year.

Avigna Space recently partnered with Strata to raise ₹140 crore for a consortium of three Grade-A warehouses; and just within 42 days of the launch of Strata Avigna Warehousing I & II in Hosur, we received 100% commitment from investors. We plan to develop industrial and warehousing projects spread over 9 million sq.ft in Bangalore, Chennai, Hyderabad and in four other cities during the next five years.

How has the company progressed from Infrastructure to Real Estate to Warehousing?
Avigna Space, which was launched in 2018, is a vertical of the Avigna Group - a 40+ year old business conglomerate that operates across several industries such as Infrastructure, Real Estate, Textiles, Education, and more. Avigna Space specializes in providing turnkey warehousing solutions from land-acquisition to asset development and management to 3Pl companies, and to medium and large-scale corporates in sectors such as FMCG, FMCD, Agriculture and Automotive, among others.

Through built-to-suit, state-of-the-art, multi-modal logistic parks developed in strategic locations across south India, with Grade-A construction across the board, Avigna Space is enabling efficient and easy to access catchment areas of major markets for a wide range of verticals. The company’s land holdings are in prime hubs with great connectivity to support industries and allow better reach into catchment areas and markets in a cost-effective manner. These include about 8 million sq.ft of land in the Bangalore-Chennai corridor and in the Hoskote-Hosur-Chennai corridor.

Avigna Space offers Grade-A services in the following areas:

- Land Acquisition and Holding: It helps to find appropriate land, along with the associated vetting, assessment, and legalities.
- Construction, Asset Development & Management: In partnership with TATA Consultancy and Engineering Services, the company helps to build warehousing facilities with a commitment to superior quality.
- Industrial and logistic parks: The company offers the option of ready-to-move or built-to-suit facilities at its logistic parks. The parks are fully equipped to offer value-added services such as storage and personnel and are designed to enable optimal operations and sustained growth.

In fact, Avigna Space is helming the transition of India’s unorganised warehousing industry to an A-grade well-planned, well-equipped and hygienic facility with a focus on ‘Proof of Concept’ by managing the end-to-end processes from land acquisition, vetting, and assessment, to construction and the associated legalities. It is offering built-to-suit models and tailor-made Warehousing Solutions and Industrial Parks, and is committed to contributing to the country’s economic growth with its strategic approach and well-defined processes.

The company’s progress over the years is due to its vast experience and deep knowledge of the infrastructure sector. Its long-term vision is to make deep inroads into important catchment areas across India by forming a ‘golden circle’ of world-class warehouses.
Interview

NEC Corporation
Transforming India's Logistics Industry

Debashish Debsikdar, AVP & Business Head - Transportation & Logistics, NEC Corporation India, discusses the challenges, solutions, and plans to enhance the development and delivery capability from India to aid the global business growth and serve as a global delivery hub for offshore support and product development.

Please give an overview of the Logistics industry and where India’s growth curve is headed.

As per Reportinker.com, the logistics market in India is forecasted to grow at a CAGR of 10.5% between 2019 and 2025. With multi-model types of transportation available in the country (oceans, rivers, etc) the potential of this segment is immense. The ongoing pandemic has further reinforced the fact that the logistics industry is truly the backbone of the economy.

In the context of the Indian government’s focus on ‘Make in India’ and ‘Self-Reliance’ initiatives, the logistics sector is witnessing a boom. Aligned with the government’s vision of achieving exponential growth in the Indian logistics segment, a new division of logistics has been set up under the Ministry of Commerce. We are looking forward to partnering with the government and the ministry for more ventures soon.

What are the mid and long-term goals set by NEC for India and its growth strategy?

NEC has been a long-standing partner of India’s growth since the 1950s and we have contributed significantly to the country’s progress. Most often than not, we have been amongst the first movers to adopt and build on newer technology than our competitors in the country. Our advantage with being a front runner is that we, as a global brand, are committed to bringing the best practices to this country and adapting it to suit the needs of the respective sectors.

To this end, with our ‘In India – For India’ and ‘From India – For Global’ strategy, we are focusing on strengthening our R&D efforts and developing innovative solutions at NEC Laboratories India to create social value and drive long-term impact. We are focusing strongly on sectors like logistics, public safety, and telecommunications, to name a few.

Please share some of the solutions provided by NEC for various sectors.

We are focused towards both the public sector as well as private enterprises in the country. NEC has a proven track record in delivering marquee Government projects in smart cities and making communities safer. As regards the logistics and transportation industry, our solutions are not only empowering incumbents in the sector but also benefiting the end-consumers. Some of the major projects include:

Logistics: Tracking India’s EXIM container movement through NEC’s Logistics Visualization System. Through this project, we are handling 97% of the container volume in the country and tracked over 27 million containers.

Public Transport: Managing over 4000 buses through Bus Rapid Transport (BRT) system in major cities of India. We are facilitating contactless payments of bus tickets to provide a safe and seamless...
experience. In Ahmedabad, we have collaborated with Paytm to provide cashless tickets. Additionally, we have developed Janyatra app for booking tickets through Paytm, and have introduced QR codes to validate them at the bus and railway stations. We are working on introducing paperless boarding using biometrics at 4 major airports in the country, which will enable a seamless travel experience.

Citizen services: NEC leverages its world-leading facial recognition and biometric authentication technology suite to create fair and efficient civil ID and law enforcement systems that help protect national security, reduce serious fraud risks for governments and private enterprises, and open the doors for the vast majority of global citizens without an irrefutable form of ID to a wealth of public and private services for a more satisfying and safer daily living.

Within the enterprise business, we focus on Manufacturing, Retail, Displays, PNS, and AI platform. The first 4 units have a clear focus as to the service and solutions provided by NEC Corporation India. For Manufacturing and Retail, NEC Logistics solutions like Warehouse Management, TMS (Transport Management System), and Logistics Control Tower play a key role in addressing the Supply Chain Management (SCM) of our clients. NEC Corporation India is working with the government to provide digital services to the rural and remote locations of India through the Common Service Center (CSC).

The automobile and automobile ancillaries’ industry is our key focus. We have a strong SAP story that contributes towards NEC’s holistic growth. We offer industry-recognized Enterprise Resource Planning (ERP) practice to the manufacturing entity, primarily on Systems Applications and Products in Data Processing (SAP). We
Ahmedabad BRT

have done real complex implementation of SAP in multiple instances, SAP spreading out at a shop flow integrating with the IoT platform, mobility solutions, SAP fury as a mobile solution, and SAP on the cloud. Additionally, in the manufacturing industry, NEC’s focus is on value creation and innovation, which is primarily the journey of our digital transformation.

What are the challenges in the Indian Transportation & Logistic industry? Please share a case study.

The current challenges that the industry faces are with regard to operations, SOP/Mechanism, un-optimized planning, cash collection frauds, bus bunching, and too much analog data. There are user experience concerns in real-time schedule availability, route opinion planning, and community accessibility. Moreover, there are user experience concerns on overcrowding, cash handling ease, safety concerns, and no PA/PIS.

Our transportation solutions are aimed at tackling issues faced by passengers as well as the operating agencies. We leverage the power of ICT to solve social and economic issues such as traffic congestion in public transport. Building on our experience of delivering best quality work in the Indian market, we continue to accomplish turnkey projects and contribute towards achieving a more eco-friendly public transportation infrastructure. For instance, NEC’s Intelligent Transportation System (ITS) is an advanced suite of applications which aims to provide innovative services related to different modes of transport and traffic management. Additionally, this enables users to be better informed and make safer, more coordinated, and smarter use of transport networks.

Our key solutions in transportation and logistics segment include:

**For Passengers:** NEC intelligent Transit solutions are implemented for BRT operations in cities like Pune, Ahmedabad, Surat, and Hubli. Our intelligent Traffic Management solution is implemented as a Smart City initiative by Gurugram Metropolitan Development Authority (GMDA). We are working on introducing paperless boarding using biometrics at 4 major airports in the country.

**Freight Transport:** NEC Logistics platform integrates ports, railways, and toll plazas on highways to monitor and track the movement of India’s EXIM containers. This has helped in providing visibility and transparency in the fragmented logistics sector.

What are NEC’s plans for the Indian market?

Our recent rebranding from NEC Technologies India to NEC Corporation India reflects our strong commitment to the country and India’s growing importance to NEC Group’s global business. We plan to expand the portfolio and the depth of solutions and services offered both in the Indian market and globally. Moreover, our huge pool of engineering and technology talent across various verticals, including public safety, communications, infrastructure, aviation, logistics and transportation solutions contributes significantly to the digital transformation journey of the country. To support our business and expansion plans, we are looking at increasing our employee strength from 6,000 to 14,000 employees in India by the end of 2023.

Overall, we are aiming at “India Go Big” initiative by leveraging our solutions’ development and delivery capability from India to aid the global business growth and serve as a global delivery hub for offshore support and product development.
International Trade Fair for Construction Machinery, Building Material Machines, Mining Machines and Construction Vehicles.

bauma CONEXPO INDIA 2020 is postponed to **February 23–26, 2021**
Gurugram/New Delhi

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www.bcindia.com
What are the latest trends in India’s supply chain and manufacturing sector?

There have been some key triggers in the last 5 years which have changed India’s supply chain and manufacturing sector, such as the rise of E-Commerce and its spread into every nook and corner of the country. The internet data revolution, growth of organized retail in major towns and cities, and implementation of GST has led to consolidation of small warehouses into mega distribution centers. The high real estate prices in cities forced consumer warehouses to move outside the city which led to supply and demand fluctuations. These triggers necessitated a flexible supply chain to accommodate the demand surges and reliable warehousing operations that help in fulfilling the requirement within stipulated timelines and in an accurate manner.

As operations scale up, it is critical to improve the productivity of people working in warehouses and factories; people are also becoming more conscious about doing more productive work. So, in line with this, demand for automation solutions such as autonomous mobile robotics, automated guided vehicles, picking technologies like Pick to Light, Pick by Voice and Pick by Vision based systems, warehouse software etc, is increasing as these can improve productivity drastically vis-a-vis manual operations. Also, the packaging robots, once constrained to the assembly line, are being used in warehouses for applications such as bin picking, pick & place, while mobile robots are being used for multiple applications of material transfer in warehouses. More importantly, during the last 5 years, due to the technological advancements, automation has emerged as a necessity more than a luxury.

How is automation impacting e-commerce in the post-pandemic world?

Right now, the availability of workforce in warehouses is limited as most of the working class left for their hometowns...
due to the fear of Covid-19. Even after their return, due to social distancing norms, factories and warehouses will not be able to deploy a full force. Hence, in order to operate at full capacity, the need for automation is more than ever. These include AMRs that move material from one place to other, driverless forklifts, IoT that provide visibility etc. Also, it is essential to maintain a minimum number of touches on the product while it is inside the warehouse. Automation systems like the Goods to Person technologies such as shuttles, ASRS systems and the respective software provide the desired solutions.

The rise of e-commerce, especially for essentials such as grocery and medicines, necessitated that the warehouses be located nearer to the customer, that is, inside the cities, which led to the rise of micro fulfilment centres. These MFCs are mini distribution centres, enclosed in an area of 2k to 10k sq.ft.; they help deliver the orders to customers within 2 hours of an order placement. To minimize the operational expenses of these MFCs and to fulfil the customer expectations of a <2-hour delivery, MFCs need to use automation, which is a big boost to the automation industry in the post-Covid world.

What are Addverb's intra-logistics automation solutions for the manufacturing and supply chain industry?

Addverb Technologies is a global robotics and industrial automation company offering intra-logistics automation solutions to make the manufacturing and supply chain industry future-ready. Dynamo, our in-house built autonomous mobile robot, is used for material movement of different payloads from 100 kg to 1000 kg in warehouses and works in collaboration with humans. It moves at a speed of 1.5 m/s and is guided by LIDAR based natural navigation. Its 2-stage sensor-based navigation mechanism, one to slow down and another to stop the robot in case any obstacle/human intervention in the environment, coupled with a warning and alarm signal, makes it very safe to work along with humans.

The robot's movement is completely autonomous wherein a map of the entire layout is fed at the beginning by taking it for a walk, after which it starts working by finding out the shortest and less congested path for a given mission (movement operation). This entire operational set-up procedure takes less than 20 minutes, and a fleet of bots will be ready to perform material handling operations. Some of the exceptional features of Dynamo, which make it a must-have for material movement, are as follows:

- Robust: It can operate in harsh environments like deep-freeze or hazardous areas.
- Dynamic Planning: In case of an obstacle it will find an optimal path to reach the target.
- Easy Integration: Seamless addition to existing assembly/production line without changing the present layout.
- Flexible Movement: Allows free roaming unlike conveyors and requires lesser space than conventional forklifts, allowing for narrower aisles.

How is Addverb's picking solution helping businesses improve their customer SLA?

One of the major objectives of operating a warehouse or running a fulfilment operation is to increase the dispatch accuracies and to improve inventory accuracy. Our picking solutions help the customer to keep inventory levels accurate and improve the dispatch accuracy by 99.9%. The real-time update of stocks and the resulting accuracy levels help businesses in optimising their cost of operations by more than 15%, on an average.

**Addverb’s voice- and image-based picking technologies are one of the newest offerings in the India's supply chain and manufacturing industries. How do they improve workflow performance and accuracy?**

Addverb’s robust products based on industry 4.0 technology enables us to design innovative warehouse and intra-logistics automation solutions. Our Voice Picking system, Khushi (Pick by Voice) offers paperless hands-free order picking and fulfilment solutions that gives high accuracy and productivity. Upon activation, Khushi gives verbal instructions to the picker on which location to go, how much quantity to pick, a double check on the product picked, and then the location of the next order. If an operator can pick up to 60 items in an hour when he is using pen and paper to search and locate the item, the same operator can pick up to 240 items in an hour if he is using a Pick-By-Voice. It can be installed on any Android smart phone and is available in 14 Indian languages. Khushi is enabled with speech to text and vice-versa algorithms enabled with AI & ML. It continuously interacts with the picker during the picking that makes the picker to be more engaged in the job. It also showcases the dashboard of various performance indicators, helping pickers to keep a track of how they are performing vis-a-vis their peers.

Quimo, our pick by vision system, is another Person to Goods picking technology designed to enhance the productivity of the pickers and the overall order picking accuracy. This augmented reality system offers hands-free operation with 100% error-free picking and improves quality control. It is best suited for large DCs with thousands of orders processed daily. Vision Picking glasses comprise an integrated navigation system that guides the operator through AR and provides the shortest travel path to reach the destination. An integrated camera in vision picking glasses optically displays order information, providing the source and target locations. They are connected with an existing network for real-time inventory management and updation with the stocks accordingly. Pick by Vision fits the requirement for fast picking environments, enabling workflow improvement and process optimization.

**How has Addverb grown to become a 100-crore company within a span of 3 years?**

All the six co-founders (Sangeet Kumar (CEO), Prateek Jain (COO), Neeraj Sharma (CTO), Bir Singh (Chief of BD), Amit Kumar (CIO), and I), were working with Asian Paints and setting up some of the most automated factories in the world. This helped us understand how technology was disrupting manufacturing. Indian manufacturing got a
boost in 2014, when India embarked on the ‘Make in India’ campaign. As we all had a passion for technology and had seen first-hand how robotics and automation can help manufacturing and also due to the dearth of robotics players to serve businesses in Indian conditions, we decided to start our own Robotics & Automation venture. The aim is to help businesses embrace automation and industry 4.0 for their supply chain and manufacturing operations, and thereby achieve flexibility, scalability, and improved operational performance.

Despite multiple challenges, being a young company against the decade-old industry behemoths, we worked our way slowly - customer by customer. In the initial two years, we chose to do a pilot implementation for the customer and delivered the results with the promised level of customization, which gained us the customers’ confidence, and subsequently, helped us bag big orders.

Keeping the customers at the center of everything, we study their problems and requirements, do innovative solutioning, and world-class manufacturing. Our dedicated team of engineers and aftersales personnel have helped position our company as the preferred automation partner of major industry players like HUL, Reliance, Flipkart, CEAT, and J&J, to name a few. We raised a seed funding of 10 million USD in 2018 with a view to build a world-class manufacturing facility where robots would make robots.

How have Addverb’s solutions helped product manufacturers, suppliers and customers impacted by the Covid-19 pandemic?

The biggest challenges that Covid-19 brought was a complete stoppage of transport of raw materials from suppliers to manufacturers and the final goods to customers. There has been shortage of labour as people left for their hometown. There was no contingency plan as most businesses were not prepared to handle the unprecedented crisis of such a scale. While certain industries offering essentials like groceries, FMCG, and medicines saw a demand surge, industries like entertainment, travel, luxury shopping etc took a hit. The markets saw reduced consumer spending as the uncertainty in the market made consumers spend only on the essentials. And as the economy came to a standstill, liquid cash in the market has become unavailable.

To meet the increased demand amidst the handicapped supply chain, automation has emerged as the leveling point and with it, various distribution concepts such as micro fulfillment centers arose. Till now, the concept of MFCs was restricted to some advanced countries, but they are now mushrooming in India.

With a diverse automation product portfolio, we can design multiple solutions for MFCs. Some of the major components that can fulfill the customer order fulfillment within an area of 2k to 10k sq.ft. and within 2 hours of order placement are Dynamo - our autonomous mobile robots, Quadron – our carton shuttle bots, Veloce – our multi-purpose vehicle, Box-it-our picking stations, and the web of smart conveyors. How have Addverb’s solutions helped product manufacturers, suppliers and customers impacted by the Covid-19 pandemic?

Also, to successfully fight the pandemic and assist the frontline warriors of Covid-19, we have designed and deployed Decimator – our disinfectant mobile robot across hospitals, and quarantine centers. With its navigation capability and computer vision, Decimator moves from place to place and sprays UV rays in 360 degrees. It can also be used to disinfect public places such as shopping malls, airports, railways stations, schools etc. With 50mj/cm2 UV light, it kills the virus/bacteria/fungi to 99.99% and helps in reducing facility acquired infections by keeping the surroundings clean.

What are your goals and plans for FY 2020-21?

The last three years have been very eventful for us. We have on-board clients from various sectors and have deployed our automation solutions across the country. We strongly feel that this is the time to take Indian technology to global markets. We have opened an office in Singapore and have completed a couple of big-ticket automation projects in Europe. Our global footprint is expanding rapidly, and we aim to make a stronghold in global markets in the coming years. India continues to be our focus area and we will continue to provide affordable robotic and automation solutions, thus leading to higher adoption among Indian companies, and we will also penetrate the education, hotels, and airport industries.
Niftylift appoints **RentEase** as distributor in India

U.K.-based mobile elevating work platform company Niftylift Ltd has appointed Mumbai-based RentEase International LLP, the fastest growing Aerial Work Platform rental company, as its exclusive partner and distributor in India. Under the arrangement, RentEase will provide sales and rental services for Niftylift’s range of access equipment across the country.

Jim Craddock, International Sales Manager, Niftylift, commented: “This new arrangement will provide Niftylift with excellent market coverage and a service support network in India, whilst working with a proven market leader like RentEase in the rental sector.”

Meghraj Singh, Managing Director, RentEase, said, “We are thrilled with the opportunity to join hands with one of the industry’s leading brands and innovators. This association will be mutually beneficial for both the organizations in India. Niftylift will offer significant advantages to the Indian market with its range of hybrid and zero-emission All-Electric machines that have a high working outreach, compact dimensions, low weight, and are environmentally-friendly.”

Niftylift working heights range from 12m to over 28m and include road-towable trailer mounts, self-propelled all-electric, hybrid and diesel booms, self-drives with outriggers and track-drives mounted on continuous tracks for maximum traction. The products are used extensively worldwide in the construction, maintenance, installation, and service sectors.

Avers Vipul Kumar Tulsian, CEO, RentEase, “By partnering with Niftylift, we have added another feather in our cap, the benefits of which will be reaped by our customers. We specialize in rental, sales and service of Access Platforms towards building and factory maintenance. We have a wide range of Aerial Work Platforms (AWPs) - a rental fleet of 550 aerial lifts, including booms, mast booms, scissor lifts, spider lifts and small truck mounts - which gives us tremendous opportunity and confidence to satisfy clients for all kinds of needs for safe working at heights. We offer clients the advantage of having a single window solution for all Aerial Work Platform needs and in any working environment.”

He added, “RentEase’s growth since its inception in 2017 is in line with its vision to be an industry leader by offering efficiency in performance along with worker safety. Our mission is to partner with customers to deliver superior solutions that safely and efficiently move people and material at work round the clock.”
Godrej Material Handling eyes range expansion for SKUtro to meet increasing demand for intra-logistic solutions

Godrej Material Handling, a business of Godrej & Boyce, has announced that it is preparing for a range expansion for its unique intra-logistic, mobility-cum-transport solution, Godrej SKUtro. Launched last year, SKUtro is a manual rider equipment used for transporting loads from one point to another within a shopfloor.

With two subdued quarters owing to the extension of lockdown and the staggered easing of restrictions, India Inc is expected to make an aggressive push to fulfil the pent-up demand in the remaining two quarters of the fiscal year. Among others, retail, pharmaceutical and FMCG sectors are expected to adopt rapid shopfloor mechanization and automation, as well as plug productivity gaps to mitigate the loss of market share and capture back the share of wallet.

Anil Lingayat, Executive Vice President & Business Head, Godrej Material Handling, said, “The pandemic has disrupted the supply chain and warehousing sector in the country. Businesses are now re-assessing their warehousing and intra-logistic preparedness in anticipation of a market bounce-back on and soon after Day Zero. Therefore, ensuring smooth material handling without putting the employee productivity and health in duress will be one of the key priorities for India Inc. SKUtro has proven to be an innovative mobility cum transport innovation in the intra-logistic space since its launch last year. We have witnessed a spike in the number of queries for SKUtro during this period. Therefore, we have decided to expand the SKUtro range to meet the growing demand for intra-logistic solutions and help the industry to #EmergeStronger.”

Experts predict a sudden spike in consumer demand post easing of lockdown norms, coupled with the issue of easy availability of skilled workforce due to the exodus of migrant workforce, that will put the supply-chain and warehousing sector under severe stress. SKUtro will play a key role in improving shopfloor mobility and employee productivity without putting the health of employees at risk.

An assessment by Godrej Material Handling has revealed that pre-Covid, the average distance covered by an employee during an eight-hour shift in a 50,000 sq.ft warehouse was approximately 15 km. SKUtro enables employees to ride instead of walking while picking and shifting loads from one point to another. Empirical evidence suggests SKUtro can increase productivity by up to 25 percent, reduce fatigue, and also add an element of fun to the workplace.
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