

CASE STUDY



US Manufacturer for LNG heat exchangers uses Omni-directional Transporters within their existing

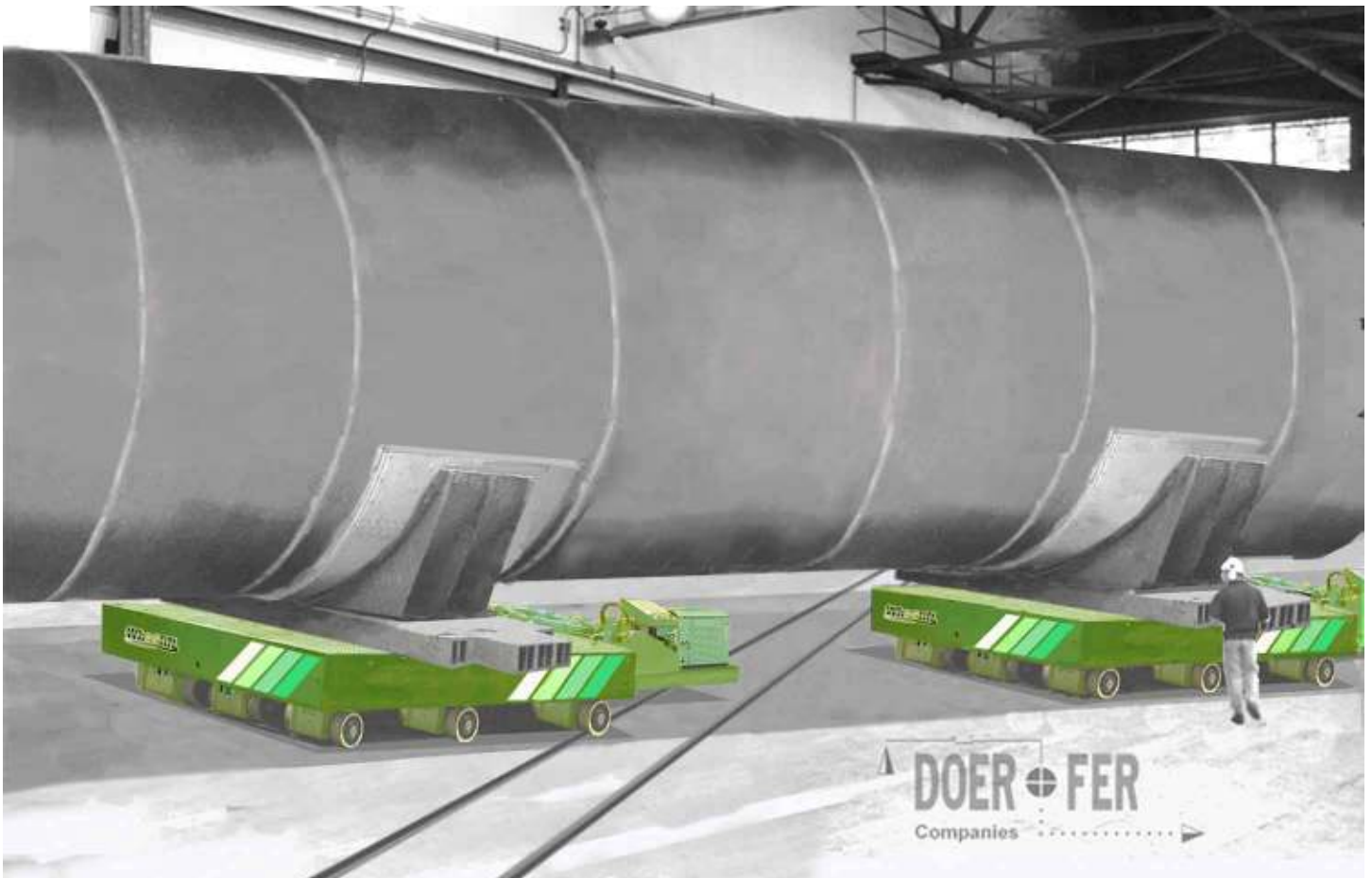
trade-secrets facilities for sub-assembly buildup, core insertion, and final assembly through shipping.

Challenge: To transfer and position loads up to 17' diameter x 70' long and weighing 220 tons throughout manufacturing and assembly within existing facilities compromised by uneven surfaces, low ceilings, obsolete rail tracks, and fixed machinery locations.

Solution: Provide two self loading 110-ton capacity Transporters, each capable of operating independently or jointly as a single 220 ton capacity Transporter.

Benefit:

- Increased production capacity
- Increased plant utilization
- Process flexibility through elimination of inflexible rail transfer carts and overhead cranes





A Doerfer Companies' Technology

A major provider of LNG heat exchangers was looking to increase production capacity to serve the growing worldwide energy needs for importing clean burning natural gas. This first-of-its-kind heavy transportation and manufacturing system is at a US location with plants that build massive heat exchangers for liquefying natural gas for ocean going LNG tanker shipments.

These 110 ton capacity Transporters are designed for in-plant operations. With their low mounted LPG engines and low profile axles, they have deck heights of 24" and have the capability to lift and lower eight inches for self-loading and surface compliance. Each of the two Transporters has nine on-center rotation axle assemblies. With their 3-point fluid equalizing suspension, the axles have interconnecting fluid lines that divide them into load sharing groups to assure that every wheel carries only its specific share of the load, regardless of variations and irregularities in the floor surfaces. Floor loading is dispersed with ground pressure loads spread over a wide footprint.

In this trade-secrets manufacturing and assembly operation, heat exchanger segments begin as separate sub-assembly units progressing through several manufacturing process steps. The Wheelift Transporters are used extensively as individual units, driven and positioned with a hand-held joystick pendant under partially completed sub-assemblies where they engage the loads to precision lift and remove from work holding chucks.

At marry-up, the Transporters orient the loads to precise locations, providing support and ground anchoring as a special towing device pulls the subassembly units together, eventually making up a fully assembled heat exchanger for shipment via dedicated special trains that transport the completed heat exchangers to US seaports.

For full load movement, the Transporters are positioned under the load saddles, and a communication link is established. The resulting

positioning values are transmitted into one of the Transporter's SynchroSteer computer. One unit becomes the "master" and the other the "slave", allowing the two dual wheel 9-axle Transporter to function as a single 18-axle, 36-wheel Transporter with fully synchronous Omni-directional steering. Movement and positioning of the paired Transporters is once again performed via a single hand-held joy-stick pendant.



The Transporters ease of use and flexibility drove several weeks off production build cycles. The Transporters capability to operate independently and jointly have driven a total change to the production and assembly flow providing a degree of flexibility not obtainable with conventional cranes, heavy roller systems, or rails.

Manufactured in Iowa, **Wheelift** Transporters and AGVs are custom developed to each application including close positioning die loading, roll transfers, assembly, and general material handling. Load deck and fixturing is built to suit with load capacities to 500+ tons and deck heights as low as 18". Power options include LP gas, diesel, battery, or on-board generator. Electric or hydraulic drives are standard. For more information on our Wheelift Transporter and inertial/wire guidance AGV systems, please visit us at www.wheelift.com

Headquartered in Iowa, **Doerfer** develops application specific, custom manufacturing systems and machinery - many which revolutionize the way our customers manufacture, assemble, move, package, and test their products. We thrive on your toughest process challenges for manufacturing. For more information on our capabilities, please visit us at www.doerfer.com

