BARNHART

LIFTING LETTER

www.barnhartcrane.com

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A Publication of Barnhart

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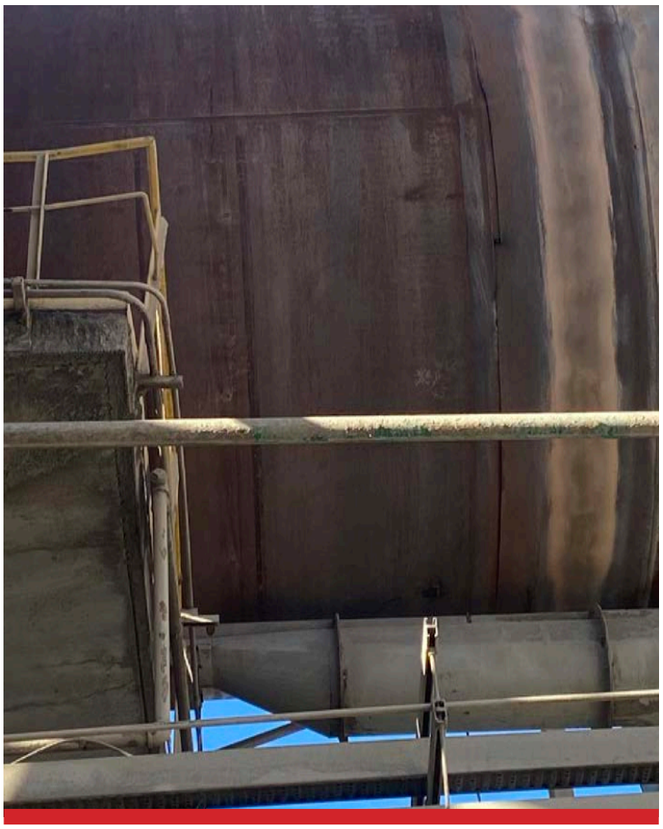
The crew installed 24" x 20' long slide beams and a 24" pusher gripper system that was used to build a shoring tower made of four BPU-750 barrels to slide under the cable tray.



Barnhart was contacted about an emergency job at a cement plant to support a 475,000-pound kiln that had developed cracks and was in danger of falling on the weekend of Thanksgiving.

The shoring tower was slid beneath the kiln, gradually taking on the load, until it was supported properly.

EMERGENCY PREPARATION

When an emergency hits at a plant, a quick response is necessary. Often, when a piece of equipment fails or a haul plan falls through, it affects the operation of a plant. It's a high-stress situation until the problem is remedied and the plant or project is up and running again.

One way you can prep for an emergency is having access to the right service provider. Barnhart excels in emergency services because of over 50 years of experience, resources, specialty tools, skilled labor, and a commitment to be responsive. Our depth of resources includes a 50-person-plus engineering team and an inventory of specialty cool tools. The nationwide Barnhart branch network provides highly skilled field personnel.

Hundreds of emergency projects have honed Barnhart's ability to be creative, innovative, and effective in lift and rigging plans, as well as transportation methods. That means there are few situations our people haven't seen, which helps when a quick response is needed.

Barnhart's experience came in handy at a cement plant in Indiana. Barnhart's Chicago branch received a call Thanksgiving weekend about a 475,000-pound kiln that had developed cracks and was in danger of falling. The team shifted into high gear, with the entire senior engineering team on a call Saturday afternoon and the first on-site contact on Sunday morning.

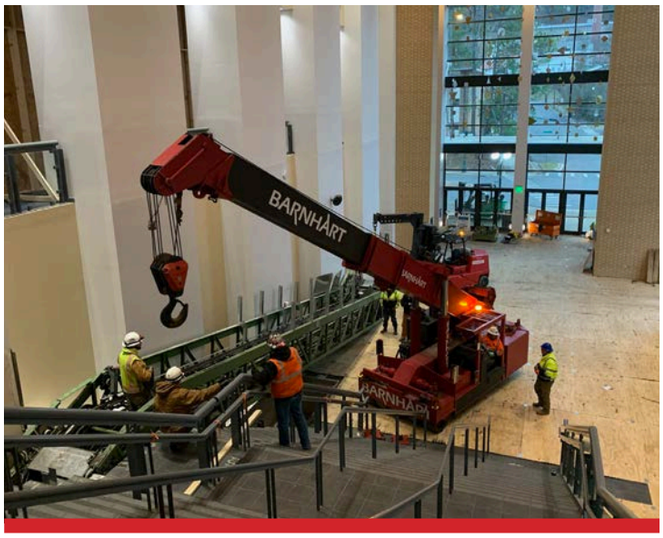
The shell was broken approximately 240 degrees around. The project required fast passed engineering working in parallel with the field setup. The engineering concept involved installing 24" x 20' long slide beams and a 24" pusher gripper system that was used to build a shoring tower made of four BPU-750 barrels to slide under the cable tray. The support method was chosen due to the unsafe condition of the kiln.

Barnhart's Movable Counterweight Cantilever System was used to build the remainder of the tower. The shoring tower was slid beneath the kiln, gradually taking on the load, until it was supported properly. The client repaired the kiln, and the support was removed. The unit was back in operation in less than two weeks.

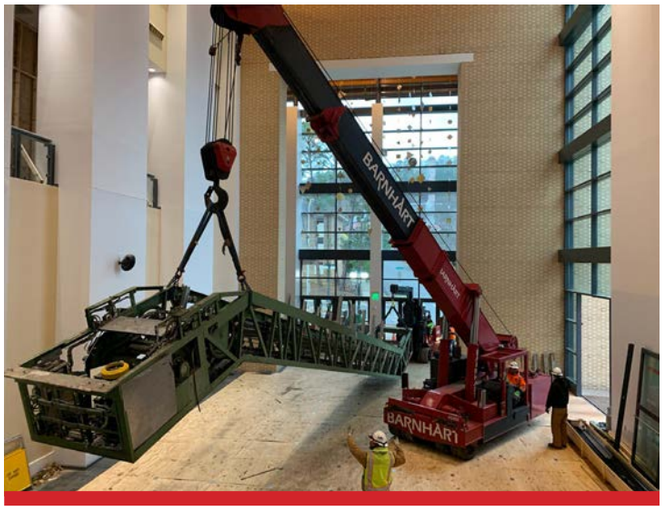
Barnhart also handles emergency haul jobs, such as a project in Canada, also profiled in this Lifting Letter. Whether you have an emergency that involves rigging, lifting or hauling, Barnhart can handle anything you throw their way.

1 Barnhart was contacted to remove and replace a 22,000-pound escalator inside an arena in Hot Springs, Arkansas.

2 Barnhart proposed an option for removing and replacing the escalator using a MobiLift and 18K Hyster forklift, versus using an engineered scaffolding option from a different vendor.

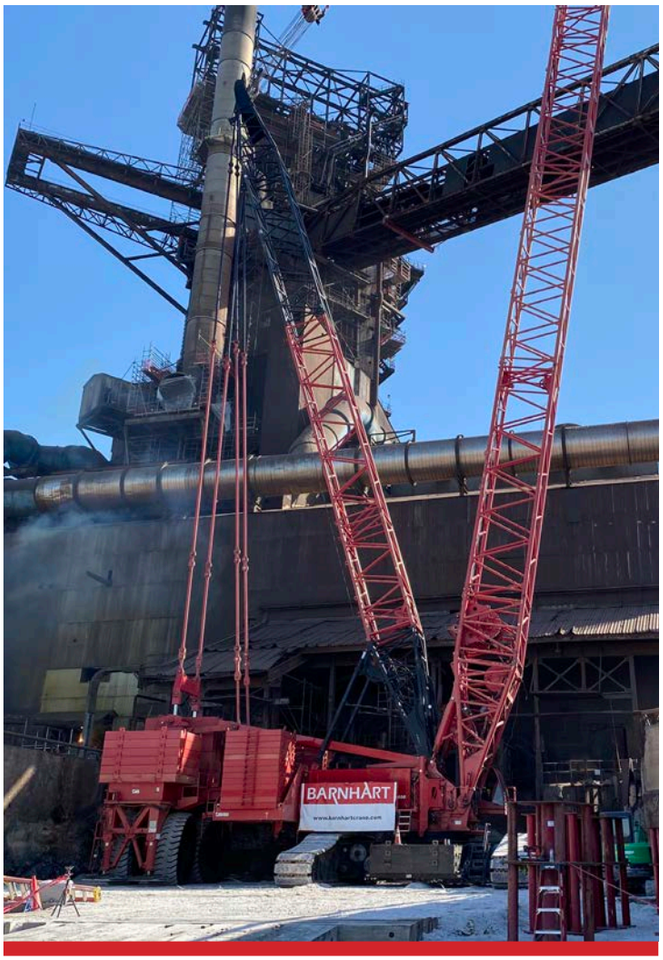


3 The crew had to reach out 25 feet over steps to pick 11,000 pounds at a 15-foot elevation in a limited working area inside the arena's entry hall.



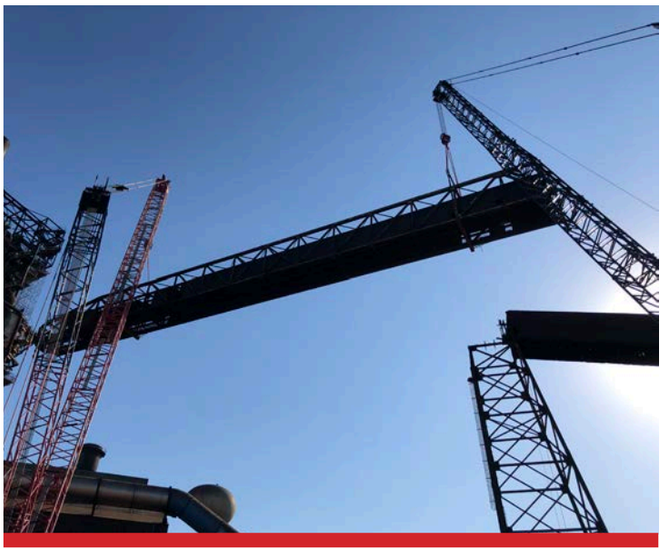
4 Barnhart's solution saved the customer two weeks of labor at a third of the cost of the scaffolding rental.

5 Plus, the project was completed in less than two eight-hour workdays.

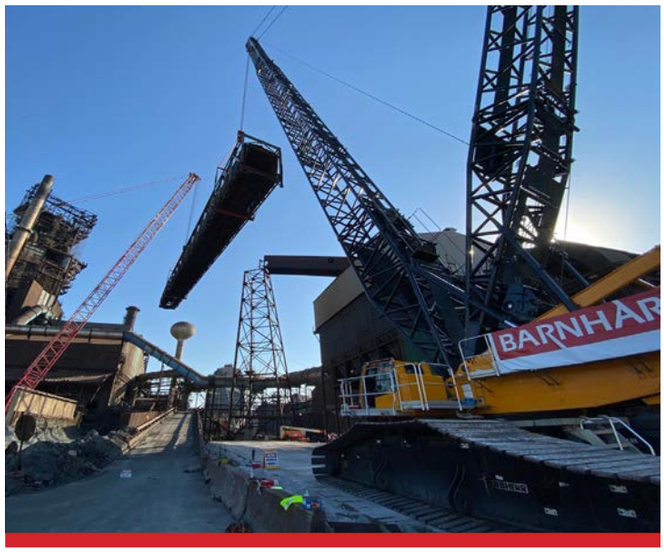


1 Barnhart was called to a steel mill in Illinois to remove and replace a 320' conveyor section weighing approximately 600,000 pounds. The crew assembled an LR1600 crawler crane in full super lift with tray and a Manitowoc M18000 crawler crane with full super lift and maxer wagon.

2 The height of the conveyor was 300' on the low side and 340' on the high side. Installing the cradle beam to carry the load using Barnhart's Movable Counterweight Cantilever System posed a challenge to the team. Once the rigging was assembled, the maintenance contractor removed the anchor hold securing this section. It was lifted up and out.

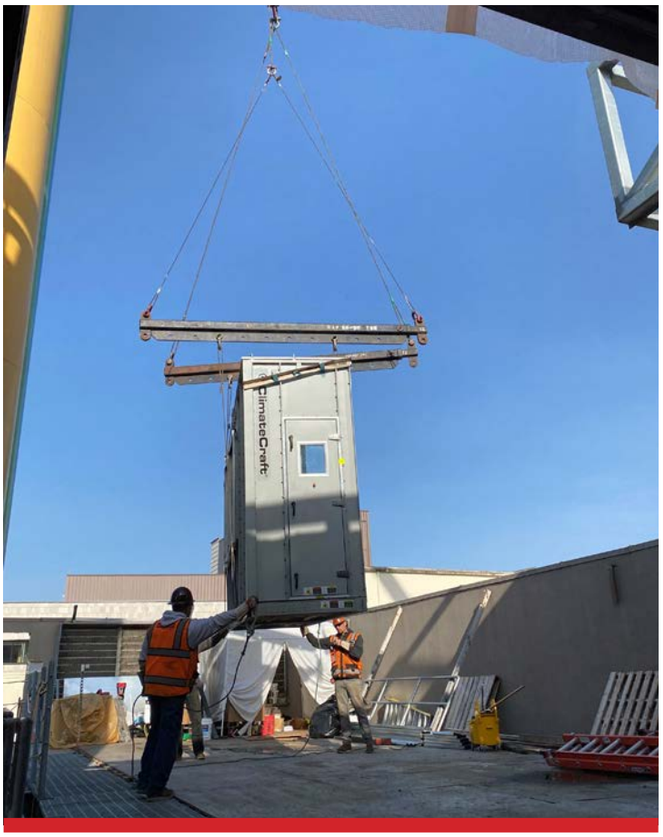


3 Using spreader bars, Barnhart made a tandem lift using both cranes at the same time. The conveyor section had to be swung 40 feet to the right to clear the tower.



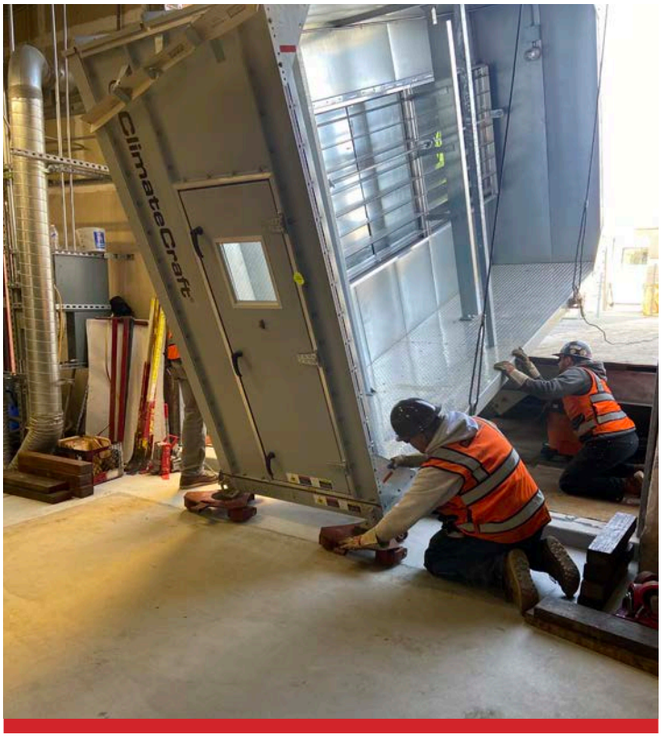
4 Once the old conveyor was removed, it was loaded to a 12-Line PSTe Goldhofer and set on-site. The new conveyor was loaded onto the Goldhofer. The process was reversed for the replacement of the conveyor.

1 An air handling unit installation at a hospital in Seattle was a multi-team effort between Barnhart's Mount Vernon and Kent branches in Washington. The crew first used their 155-ton Liebherr crane to lift the sections to the roof.



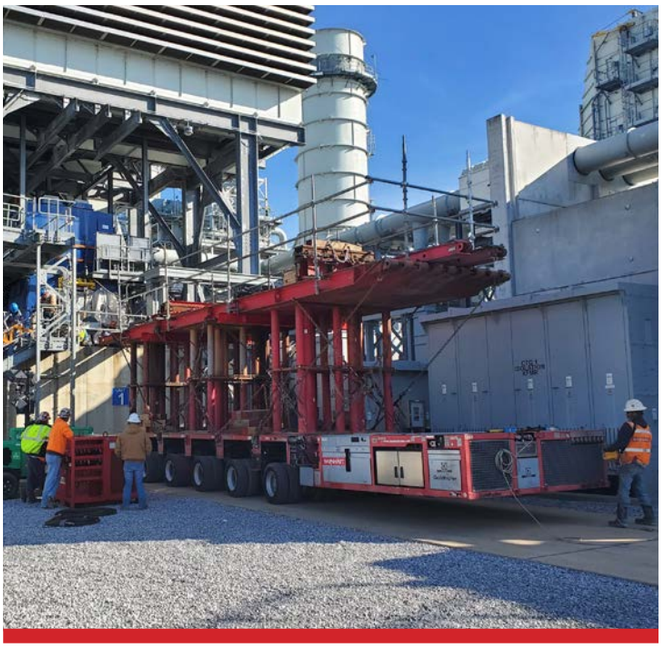
2 A total of six sections had to be installed into the mechanical room using Barnhart's Bear Paw link and spreader bars. The work was directly above an operating room and had to be completed on a Sunday, while it was closed.

3 The Bear Paw was needed to navigate an elevated steel framework 3 feet from the opening. It allowed the front of the unit to be lowered while holding the rear off the structure until it was all the way in the mechanical room.

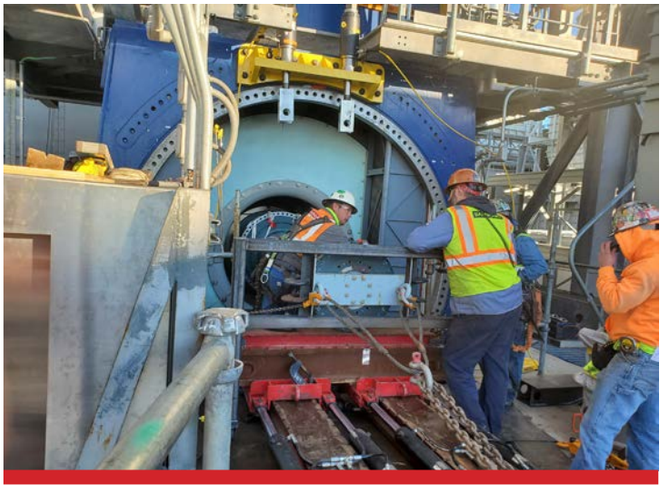


4 The sections were transferred to skates and moved into place. The project was completed ahead of schedule, to the delight of the customer.

1 Barnhart was contracted to remove a 113,900-pound rotor from a generator at a power plant in Tennessee. It was emergency work that needed to be engineered and executed quickly to allow the plant to come back online. The rotor was also elevated, so the team had to engineer a method of removal.



2 The method involved setting up 48" pipe stands on top of a 6-line self-propelled Goldhofer trailer and using 38' barge ramps to achieve the appropriate elevation to remove the rotor.



3 The crew then slid the rotor out of the generator onto the platform trailer and barge ramps using a 500-ton slide system.

4 Barnhart disconnected from the equipment on the pedestal and transported the generator to Barnhart's 210-ton crane, where it was loaded to a trailer and shipped out for repairs. Once the repairs were complete, the team installed the rotor in reverse order. The project was completed in fewer shifts than scheduled with zero safety incidents.

THE METHOD INVOLVED SETTING UP 48" PIPE STANDS ON TOP OF A 6-LINE SELF-PROPELLED GOLDHOFER TRAILER AND USING 38' BARGE RAMPS TO ACHIEVE THE APPROPRIATE ELEVATION TO REMOVE THE ROTOR.

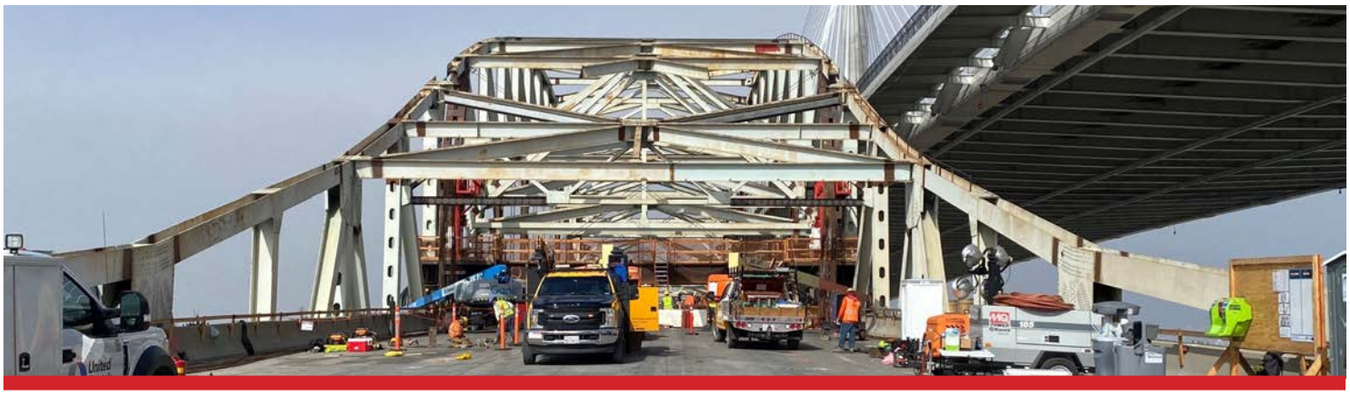
1 Barnhart was hired to install two Through Air Dryers (TADs) and one Yankee Dryer at a pulp and paper mill expansion project in South Carolina. The customer came to Barnhart with a rough idea as to the setup and steps needed to lift all three pieces over 20 feet and into the second level of the new building. However, after several site walks and working together with the customer, Barnhart was able to optimize the installation process, saving the customer time and money.

2 Barnhart's close relationship with the customer was extremely important, as the team was trusted to assemble a lift system that included 450-ton J & R gantries, I-beams and specialized rigging, while several hundred other contractors were on-site. The dryers were staged half a mile from the tissue building and were self-loaded onto a 9-line transporter before being safely secured into the Barnhart lift system.

3 Once the dryer was secured, Barnhart lifted the 114,000-pound TADs 22 ½ feet and connected to a slide system that would allow the pieces to narrowly fit between two beams.

4 The TADs moved north along the slides to a system of gantries and multipurpose girders that Barnhart had assembled inside the building with the customer's overhead crane. Once inside the building, the rigging configuration was changed to allow the dryers to be slid over 50 feet east and west.

5 After both TADs were safely in place, the process was repeated for the 281,090-pound Yankee Dryer. Once those dryers were set, the Barnhart crew dismantled and demobilized their equipment. Both Barnhart and the customer were extremely pleased, as the project was completed safely, on time and under budget.

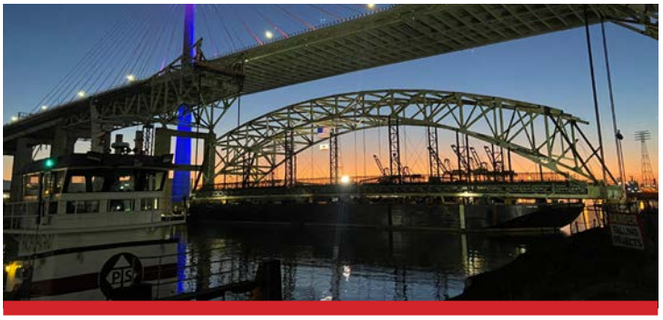


1 A bridge in California, closed to traffic since October 2020, had to be dismantled to open the port's waterways to larger cargo ships. Barnhart was called in to help with a solution for removing the main span of the bridge, which was 400' long and weighed 6.8 million pounds.

2 The eventual solution involved lowering the bridge 150 feet to a waiting barge using four 1,100-ton strand jacks. The lift required the cutting and sharpening of 264 individual strands. Prior to the lift, Barnhart performed load tests and certifications on the strand jacks and developed a contingency plan to rebuild a jack if one failed.

3 The crew had a 48-hour window to complete the work and would incur a $15,000-per-hour penalty if the project was not completed in the allotted time and the channel reopened.

4 Construction crews cut the suspended portion of the bridge free and it was lowered by Barnhart onto a barge below for removal. Barnhart supplied manpower to set up, operate and remove the strand jack lowering system. They also supplied 285 hours of engineering support.



5 The project was expected to require a 48-hour continuous work schedule over a weekend, but it wasn't needed. The operation was completed in 20 hours with no safety incidents, and the channel reopened one day early.

1 Barnhart was hired to offload 16 ammonia modules from three ports and deliver them to a chemical plant in Texas over a period of 10 weeks. The modules were first offloaded from ship's crane to three deck barges at the Industrial Terminal. The biggest challenge at the terminal was the discharge sequence, moving barges back and forth, and limited berthing space at the port.

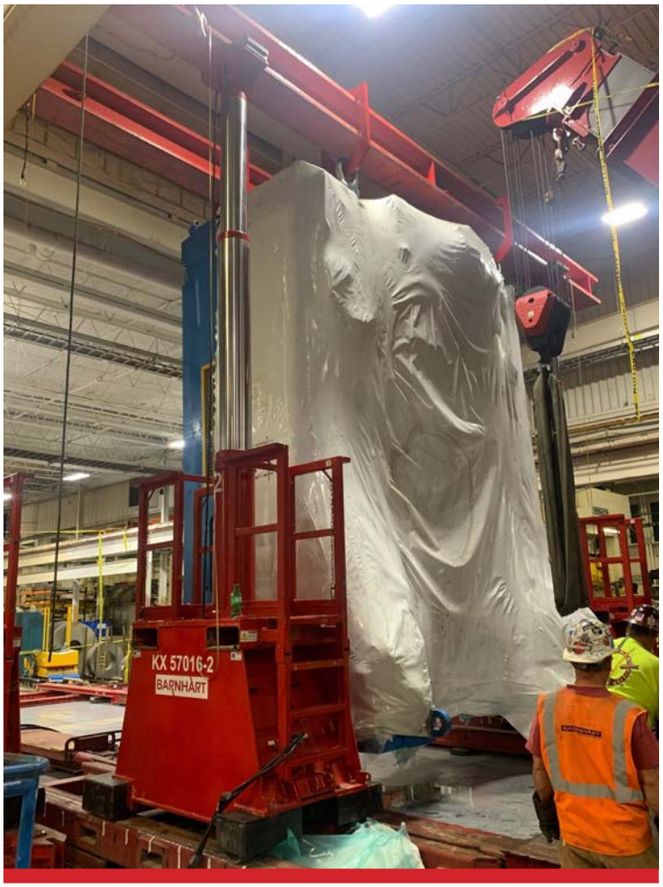
2 The modules were delivered on deck barges to the Port of Texas City and to Central Dock, where they were loaded to 16-line PST trailers. The largest module was 97'8" long x 19'6" wide x 25'6" high and weighed 407,000 pounds. Nine of the modules, which went directly to Central Dock, were rolled off and staged on crane mats. They were then transported as needed 20 miles to the site on an 18-line single Goldhofer trailer.

3 Five of the modules went directly to the Port of Texas City where they were rolled off and staged on crane mats. The crew faced limited space when rolling the modules off the barge.

4 Some of the vessels were ammonia converters, which went directly to the port. The converters were then transported nine miles on 18-line Double Wide Goldhofer trailers to the plant.

1 The Barnhart team helped with the installation of a 176,000-pound press at a manufacturing facility in Tennessee. The team first unloaded the press from a third-party trailer with a 75-ton MobiLift and 75-ton TriLifter.

2 The press was transported inside and through the building on a Goldhofer trailer while the plant was operational.



3 Using the MobiLift and 400-ton gantry system with track beams, the press was upended. Working conditions were very tight inside the plant for equipment setup and hauling.

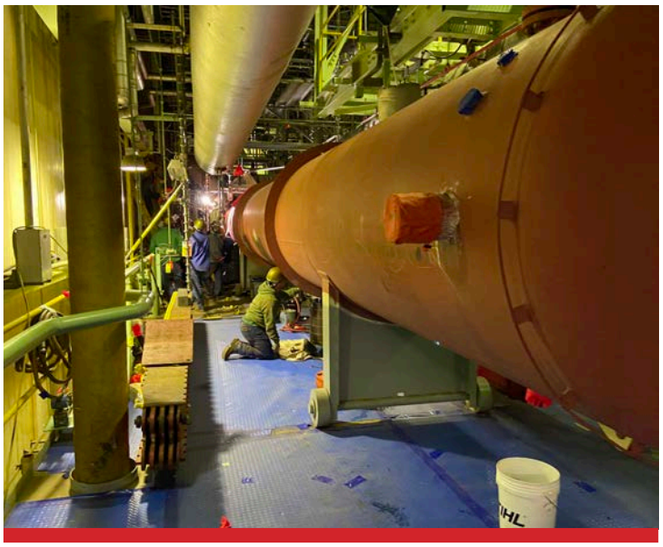
4 The press was moved on a slide system over to the pit and set into place. There were mere inches of clearance between the press and the header beams and roof steel.

1 Barnhart was contacted for an emergency project to haul two generators in Canada. A competitor had the job, but failed bridge analysis late in the game. Barnhart had to mobilize manpower and equipment and get both across the border and into Canada. A dolly transporter also had to be built.

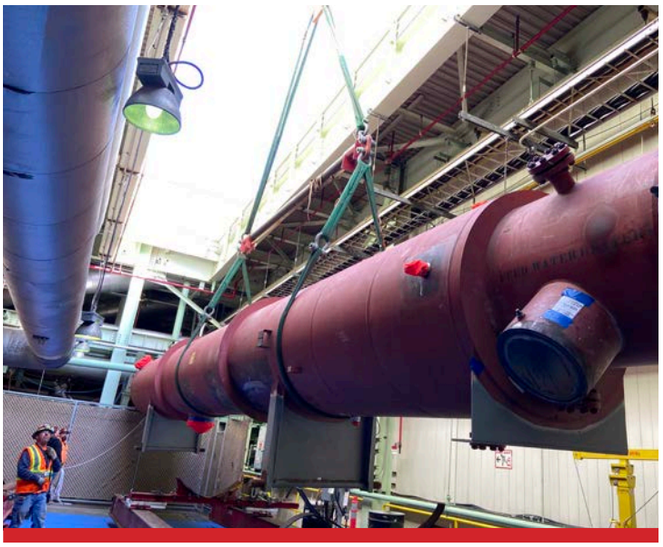
2 The team had 3-4 weeks to engineer a plan, find a haul route and obtain permits. The generators were 36' long and weighed 790,000 pounds. The client was up against frost laws, which had the potential to delay the delivery of the generators.

3 The crew mobilized a 24-dolly rig and manpower to transport the two generators along an approved route that was 260 miles from Edson to Edmonton, Alberta, twice the driving distance.

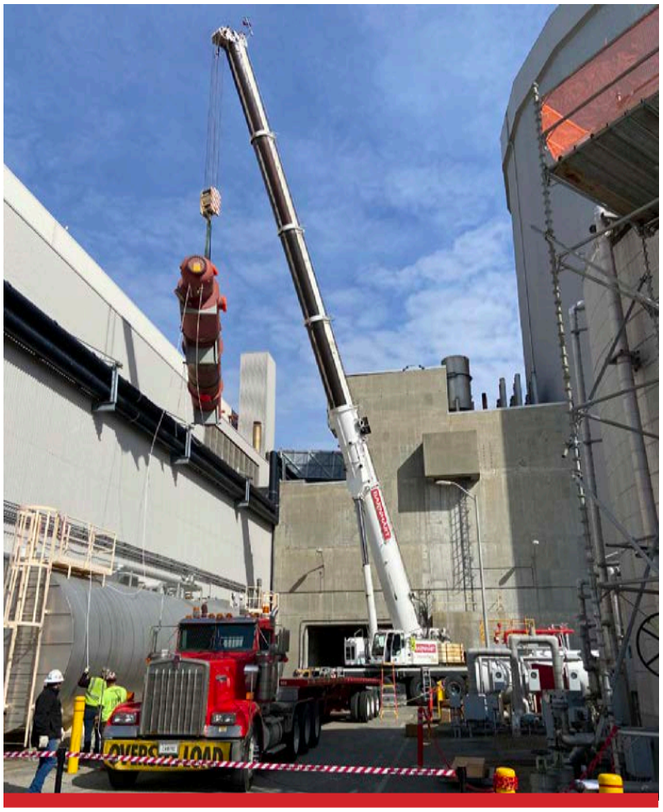
4 Despite a very condensed schedule, the generators were hauled safely to the power plant, beating the arrival of the frost laws.



1 Barnhart provided engineering, labor, equipment and materials to remove and replace two feedwater heaters (FWH) at a nuclear plant in Connecticut during a planned outage. Barnhart set up a hydraulic slide system to remove the existing heater. It was jacked up approximately 1-2 inches and set to adjustable saddles.



2 The heater was in a lower level of the plant. It was slid 56 feet until it was under the overhead hatch. The FWH was lifted through the hatch, an opening that was 60' long and 11' wide.



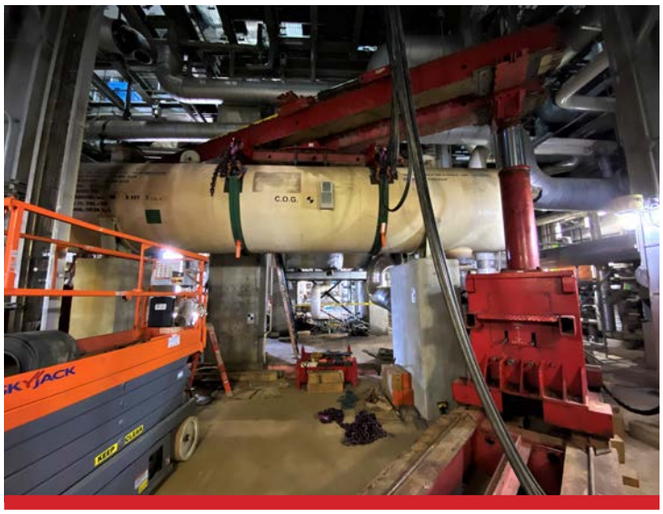
3 Barnhart used a 300-ton truck crane to hoist the vessel and set the heater on a trailer.

4 The old FWH was transported to a lot for offload and disposal by others. The process was then reversed for the installation of the new heater.

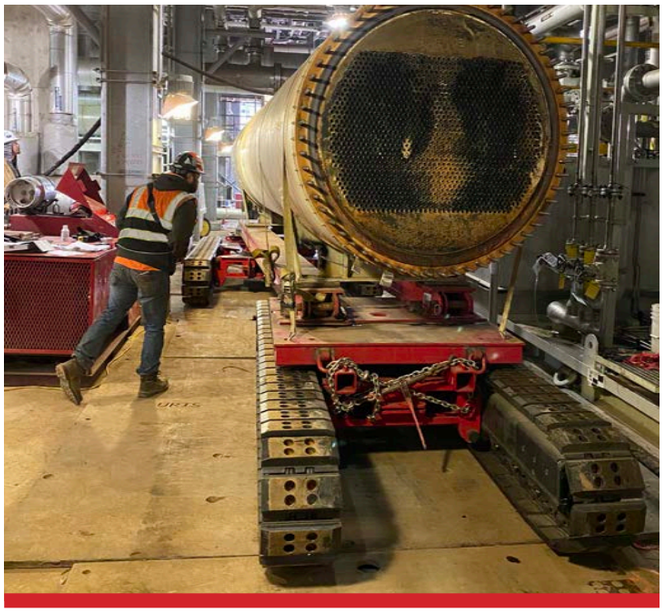
BARNHART PROVIDED ENGINEERING, LABOR, EQUIPMENT AND MATERIALS TO REMOVE AND REPLACE TWO FEEDWATER HEATERS (FWH) AT A NUCLEAR PLANT IN CONNECTICUT DURING A PLANNED OUTAGE.

1 Barnhart was hired to remove and replace a gas cooler at a chemical plant in Iowa. There were many obstacles along the path including overhead pipes, steel columns and concrete footers. The crew did a site walk to help devise a plan.

2 A method was devised using a Slide/Swivel Rigging Device (SSRD) consisting of a pair of slide tracks supported at each end by gantries with a sliding "trolley" containing a swiveling rigging point. The crew performed a mock-up to test their theory before going into the plant.

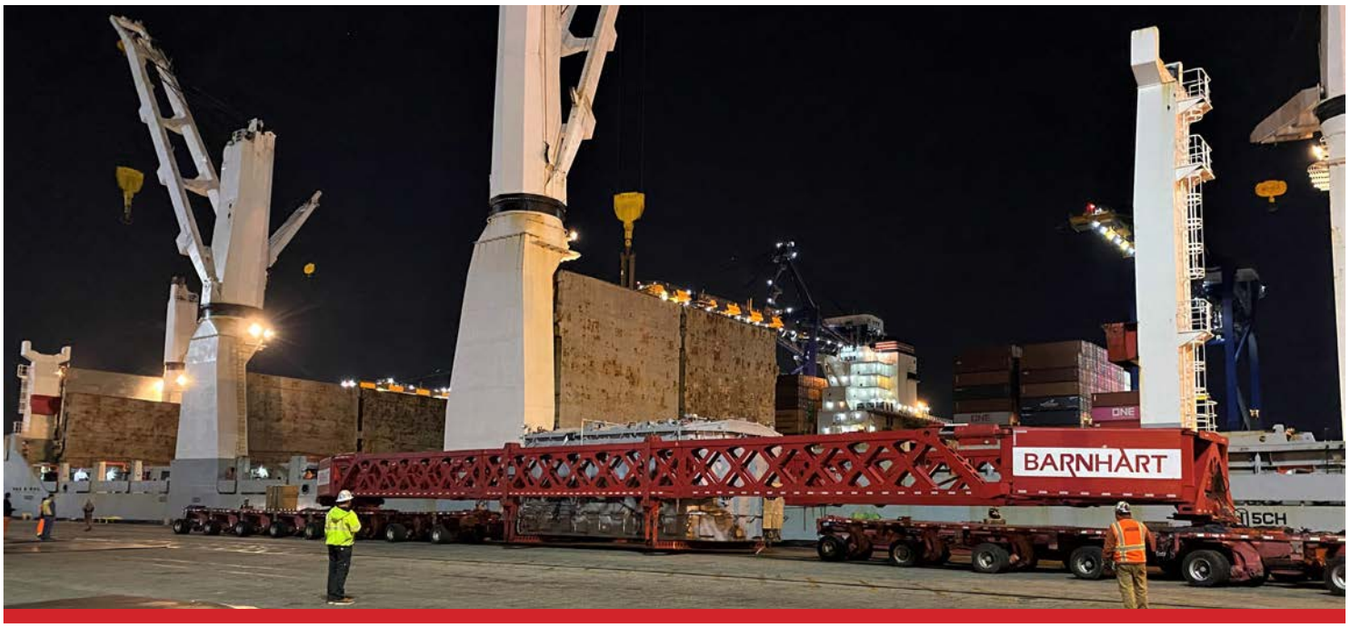


3 The vessel was 32' long with roughly 3 feet of clearance on three sides. From the top of the vessel to the overhead piping was just 2'6" of clearance. It sat on 6' concrete piers. The SSRD was set up with the gantry tracks offset 45 degrees.



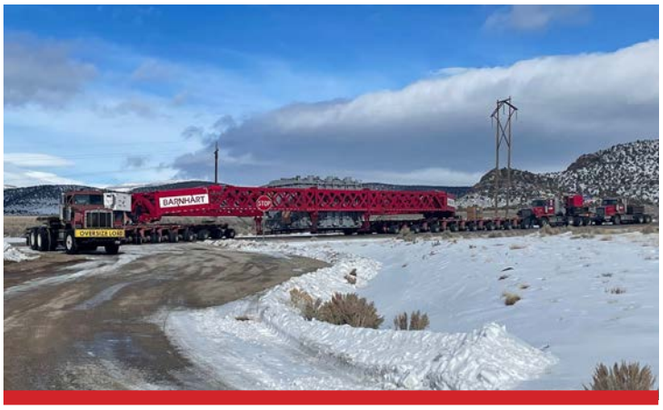
4 It was then transported on two SofTracs, which are 12' long polyurethane crawler tracks and a carbody. The system's low height profile and maneuverability made it ideal for the job.

5 The SofTrac carriers brought the old vessel out and the new one in. The process was then reversed to replace the cooler. The project was awarded an **SC&RA Job of the Year**.



1 Barnhart was tasked with transporting a 485,500-pound transformer from the Pasha Terminal in Los Angeles to a substation outside of Ely, Nevada, a distance of over 500 miles. The transformer was 35'2" long, which required the use of Barnhart's GS-800 girder transport system. The team received the transformer from ship's hook and secured the cargo.

2 The girders of the GS-800 had 5 feet of vertical lift to raise and lower the load, which came in handy on a long transport. Its axle spacing was compliant with the regulations of West Coast departments of transportation (DOTs). Barnhart arranged escorts, obtained 12 city permits, three county permits and two state permits and worked with DOTs and utility departments along the route.



3 The convoy weighed 992,175 pounds and could only average 20-25 mph. On bridges, it was restricted to 5 mph with no other vehicles. Some mountain passes were taken at 3 mph. The last 7 miles of dirt road had to be plowed twice due to snowfall the night before.

4 At the site, the transformer was offloaded onto a 500-ton slide system to be rough-set on the pad. Despite temperatures that were single-digit during the process, the job finished ahead of schedule.

The Decatur team unloads a fuselage and moves it into a building at an aerospace company in Alabama.

Barnhart utilizes the Movable Counterweight Cantilever System to rearrange components inside a facility in Decatur.

DECATUR, ALABAMA

In 1992, Barnhart's Decatur, Alabama, branch had the distinction of being the first branch to open outside of the company's home office of Memphis. Since then, Barnhart has grown to more than 50 branches.

The branch opened with just a few employees and four cranes, the largest of which was a 125-ton Linkbelt HC238 lattice boom truck crane. Like Barnhart, Decatur has grown and flourished over the years, becoming a full-service branch that is now home to 48 employees and a fleet of 14 cranes, including a 365-ton Liebherr LTM1300 6.1.

The Decatur branch specializes in the following services:

- Crane Service
- Rigging Service
- Specialized Rigging
- Heavy Hauling
- Nuclear Heavy Lift and Rigging
- Plant Construction and Maintenance
- Engineered Heavy Lift and Hauling Solutions

Its primary service area is metropolitan Huntsville and other regions of north Alabama, from Muscle Shoals to Birmingham. Central Tennessee and parts of Kentucky are also part of its footprint. The branch is also able to service customers in other areas of the United States through an extensive national network of branches.

With an experienced crew operating first-class equipment, Barnhart's Decatur branch is ready to serve your needs.

Barnhart's Decatur branch has served the area for 30 years.

A 350-ton crane replaces a crystallizer vessel during an outage at a chemical plant.

Temporary trunnions allow for rigging attachment points at specific locations along the length of the vessel.

Trunnions help protect the shell of the vessel during the upending process.

Trunnions can be adjusted to meet a variety of situations and diameters.

Temporary trunnions were used in the removal of this scrubber because its head lugs were corroded and unusable.

TEMPORARY TRUNNIONS

TEMPORARY TRUNNIONS ARE A HANDY TOOL IN BARNHART'S EQUIPMENT ARSENAL. THEY WERE DESIGNED TO HELP WITH LIFTS WHERE THE VESSEL OR EQUIPMENT DOES NOT HAVE ATTACHMENT POINTS.

Barnhart has a variety of sizes, ranging from trunnions capable of supporting 45,000 pounds up to larger vessels in the 300,000-pound range. A 45,000-pound temporary trunnion set is capable of fitting vessels as small as 2'10" in diameter up to 7'6", while the 300,000-pound version accommodates vessels 6' in diameter up to 24'.

Here are a few advantages of the temporary trunnion:

- Increases safety and efficiency on lifts in removal of older vessels with limited or no lifting points.
- Allows for rigging attachment points at specific locations along the length of the vessel (can be conducive when tailing/upending).
- Provides vessel rigging location flexibility.

Trunnions help protect the shell of the vessel during the upending process. They can also be used on flat-sided pieces with the addition of shims, and for vertical lifting as well as tailing operations.

This capability proved to be invaluable in a project for which Barnhart was hired to remove and replace a 20,000-pound scrubber at a chemical plant in Arkansas. The scrubber needed to be tailed from vertical to horizontal for hauling. The old scrubber's head lugs were unusable due to corrosion and other factors. No tail lug was present.

Temporary trunnions were successfully used to tail the scrubber, which was then set to cribbing before being loaded to a trailer.

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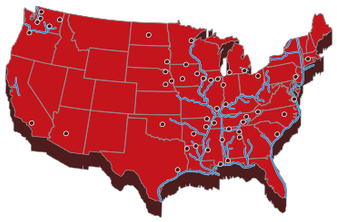

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- DECATUR, AL | FULL SERVICE
- GADSDEN, AL | FULL SERVICE
- MOBILE, AL | FULL SERVICE
- BLYTHEVILLE, AR | FULL SERVICE
- EL DORADO, AR | FULL SERVICE
- LITTLE ROCK, AR | FULL SERVICE
- PHOENIX, AZ | RIGGING & TRANSPORT
- LOS ANGELES, CA | RIGGING & TRANSPORT
- MIDDLETOWN, CT | FULL SERVICE
- CEDAR RAPIDS, IA | FULL SERVICE
- DES MOINES, IA | FULL SERVICE
- MASON CITY, IA | FULL SERVICE
- CHICAGO, IL | RIGGING & TRANSPORT
- EAST MOLINE, IL | FULL SERVICE
- LADD, IL | FULL SERVICE
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- FOWLER, IN | FULL SERVICE
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- COLUMBUS, MS | FULL SERVICE
- JACKSON, MS | FULL SERVICE
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- MANDAN, ND | FULL SERVICE
- CANTON, OH | FULL SERVICE
- COLUMBUS, OH | FULL SERVICE
- OKLAHOMA CITY, OK | FULL SERVICE
- PORTLAND, OR | FULL SERVICE
- PHILADELPHIA, PA | RIGGING & TRANSPORT
- CHARLESTON, SC | RIGGING & TRANSPORT
- SIOUX FALLS, SD | FULL SERVICE
- CHATTANOOGA, TN | FULL SERVICE
- JACKSON, TN | FULL SERVICE
- KINGSPORT, TN | FULL SERVICE
- KNOXVILLE, TN | FULL SERVICE
- MEMPHIS, TN | FULL SERVICE, SERVICE CENTER, HEAVY LIFT TERMINAL
- HOUSTON, TX | RIGGING & TRANSPORT
- CHESAPEAKE, VA | FULL SERVICE
- KENT, WA | FULL SERVICE
- MT. VERNON, WA | FULL SERVICE
- RICHLAND, WA | RIGGING & TRANSPORT
- SPOKANE, WA | FULL SERVICE
- WOODINVILLE, WA | FULL SERVICE
- SUPERIOR, WI | FULL SERVICE

BARNHART EQUIPMENT

ALTERNATIVE HEAVY LIFT
- MODULAR LIFTING TOWER
- PULL-UP GANTRY
- HYDRAULIC SLIDE SYSTEM
- JACKS & RAMS
- 4-POINT GANTRY SYSTEM
- STRAND JACKS
- MODULAR HOISTS

TRANSPORTATION SYSTEMS
- DUAL LANE TRANSPORTERS
- GOLDHOFER PSTE
- HYDRAULIC DOLLY SYSTEMS
- BARGING
- RAMPS AND TEMPORARY BRIDGES

MARINE HEAVY LIFT
- DERRICK CRANE – MISSISSIPPI RIVER
- BARGE CRANE – GULF COAST
- BARGE CRANE – GREAT LAKES
- HEAVY LIFT TERMINAL – GREAT LAKES
- HEAVY LIFT CRANE – HOUSTON

TELESCOPIC BOOM CRANES
- FROM 7 TONS TO 650 TONS

LATTICE BOOM CRANES
- CRAWLERS FROM 100 TO 1,800 TONS
- TRUCK CRANES FROM 115 TO 800 TONS
- RINGER CRANES FROM 360 TO 1,800 TONS

OPERATED CRANE SERVICE
- OVER 450 CRANES
- LATTICE BOOM TO 1,760 TONS
- TELESCOPIC BOOM TO 600 TONS
- FULL TURNAROUND SERVICES
- NATIONWIDE NETWORK OF CRANE BRANCHES