



Innovators in Motion

CASE STUDY

Pipe Modular Lift System Rises to the
Challenge and Mitigates Outage

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A midwestern utility needed to replace 48 cooling coils inside its plant. This work, along with other maintenance, was performed during the utility's regularly scheduled outage. Any schedule loss could cost the company substantial lost revenues.

To complicate matters, all materials and equipment had to be lifted 50 feet above the ground to access the building's only equipment hatch. Engineered Rigging's innovative engineers developed a customized, multistep plan to deliver a turnkey solution.

PMLS Operates in High Winds

The challenge presented the perfect opportunity to unveil Engineered Rigging's patent-pending Pipe Modular Lift System (PMLS). Unlike cranes that use below-the-hook lifting, the PMLS eliminates the hazards of suspended loads by employing a platform that mechanically raises and lowers heavy cargo via a system of structural elements. To maximize safety, the self-locking PMLS provides perfectly synchronized lifting and positive mechanical engagement of the cargo and the platform — 100 percent of the time. Its design also enables the innovative lift system to operate in winds up to 50 miles per hour, far in excess of the 20-25 miles per hour wind tolerance of cranes, and critical to keeping materials moving on windy days.



“The PMLS greatly mitigated the time for material handling,” explained Bogdan Gaita, director of projects with Engineered Rigging. “We lost zero time for material handling due to wind or inclement weather.”

This inventive approach also cut manpower in half — simultaneously saving money and improving safety by exposing fewer personnel to any potential hazards. Rather than using a crane outside the equipment hatch, the company's crews loaded heavy supplies — from the ground level — onto its Self-Propelled Modular Transporter (SPMT). “We drove the SPMT onto the PMLS platform and hit the Up button. When the platform stopped, we drove the trailer across the elevated sunshine deck and into the plant,” Gaita said. “We completely eliminated below-the-hook lifting until we were inside the building.”

Knuckle Boom Cranes Extend Lifting Capacity

Engineered Rigging continued to demonstrate its lifting and engineering ingenuity inside the plant. In addition to the PMLS, it provided three knuckle boom cranes and skilled operators to keep the utility's maintenance crews supplied with materials 24 hours a day.

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“During an outage, everyone fights for use of the polar crane. To eliminate this scheduling traffic jam, we installed three knuckle boom cranes on the building’s existing whip restraints. These cranes supplied additional lifting capacity to keep the project on schedule,” Gaita said.

Skilled Craft Manage Multiple Cranes With No Accidents

Engineered Rigging’s experienced operators managed the multiple cranes and simultaneously coordinated every lift in the tight space — never once bumping hooks or loads. To facilitate this safe, efficient multicrane operation, the company first built an identical mock-up of the whip restraint at its fabrication facility in Arkansas.

“We used the mock-up to perform a full load test and ensure that everything would fit inside the building,” explained Gaita. “The mock-up helped us validate our engineering calculations and confirm that the whip restraints were adequate to support the loads.”

All told, Engineered Rigging spent eight weeks on the project. Its 50-person crew provided 24-hour coverage — constructing the PMLS, operating the SPMT and knuckle boom cranes, and performing all outside and inside rigging and handling.

“We completed our scope of work on time and without any lost time accidents,” Gaita reported. Historically, the utility lost two to four days with each shutdown due to wind and weather. Keeping the critical path project on schedule saved the plant a significant amount of potential lost revenues.

FOR THIS PROJECT, ENGINEERED RIGGING PROVIDED:

Engineering Expertise: ER engineered the patent-pending PMLS to get all materials and equipment in and out of 50-foot high equipment hatches.

Heavy Lift & Transport Equipment: ER provided the PMLS, SPMT, and knuckle boom cranes to complete this multifaceted project.

SPMT: ER transported knuckle boom cranes, cooling coils, supplies and equipment to the PMLS. Once each load was elevated, the SPMT traversed the sunshine deck to deliver the materials into the building.

Skilled Craft: ER provided the skilled craft to erect the PMLS, install and operate the cranes, operate the SPMT, and stage materials inside the plant with zero accidents. ER’s experienced team completed the project with no schedule slips or lost time.

