

Tower Cranes

Job-Report

Modernization takes flight

EC-H cranes at Los Angeles International Airport (LAX)



LIEBHERR

The job: Heavy lifting at LAX



Liebherr's EC-H cranes set the standard for productivity in today's demanding construction environments.

The largest publicly funded construction project in Los Angeles history, the Bradley West Terminal Modernization at Los Angeles International Airport (LAX) is a marvel of logistics that required both the reliability of on-site equipment and the orchestrated efforts of the many parties involved. Through the seamless coordination of multiple contractors, the FAA and airport officials, LAX was able to remain fully functional while maintaining passenger safety.

Instrumental to the success of the project were five Liebherr EC-H tower cranes responsible for covering just over six acres of the job site. Mr. Crane out of Orange, California furnished, erected, operated and dismantled the cranes as a turnkey provider. Working together with its crane supplier, Morrow Equipment Company of Salem, Oregon, Walsh Austin Joint Venture selected one Liebherr 630 EC-H 40 Litronic and four Liebherr 550 EC-H 20 Litronic cranes, all with maximum jib length (80 meter reach) and Litronic® control.

Tower cranes were chosen for this project because space was limited and restricted. The height and placement of the tower cranes could be fixed and calculated before installation to achieve FAA approval. Even in frequent fog conditions, the equipment was always able to operate, because the cranes were static mounted and their locations known.

The five Liebherr EC-H tower cranes provided lifting coverage for more than 269,500 square feet.

"Mobile cranes were under mandatory shutdown in fog conditions, due to varying location and the difficulty in visually verifying boom height," noted Bill Wallace, lead superintendent from Walsh Austin Joint Venture. "Weather was one of the many logistical issues we needed to address prior to setting foot on the job site. Using the tower cranes gave us confidence that we would be able to maintain our schedule."

Both Austin Commercial and Walsh Construction are loyal to Liebherr cranes and Morrow Equipment Company, the largest North American tower crane rental house, so the fit for Walsh Austin Joint Venture's LAX modernization was ideal.

"We use Liebherr exclusively on our projects," said Wallace. "They are the most reliable cranes with best operation record. Morrow delivers as promised and there was zero down time on all tower cranes during this project."

Technical Data

Typ	630 EC-H 40	550 EC-H 20
Max. lifting capacity	40,000 kg	20,000 kg
Lifting capacity at jib head	5,800 kg	4,000 kg
Working radius	81.5 m	81.5 m
Hook heights		
Crane 1	36.3 m	–
Crane 2	–	37.5 m
Crane 3	–	43.3 m
Crane 4	–	60.7 m
Crane 5	–	66.4 m



The technology: Achieving safety and efficiency

Standard on all Liebherr tower cranes with Litronic®, the electronic monitoring system (EMS) that provides the control, monitoring and display for all crane functions includes modules for load moment limiting (LMB), work area limiting (ABB) and machine data analysis (MDA). The cranes used on the LAX project also feature Liebherr's patented Litronic® control system, which further enhances safety and on-site efficiency.

As on all projects, safety was a major concern at LAX. Rescue scenarios were practiced and planned to prevent disruption of flights into and out of the airport in the event of an accident or health issue with an operator.

Walsh Austin Joint Venture conducted these safety drills in conjunction with the local fire department and with airport personnel so all parties were cognizant of the safety plan. Even a helicop-

ter was used to practice one scenario of evacuating workers from the top of the cranes.

"Liebherr cranes have the highest safety level of any tower crane type," said Wallace. "Safety is very important to us on this site, with workers, passengers, ground crew and aircraft nearby at all times."

Liebherr's Safety Level 2 qualification is the result of duplicate programmable logic controls (PLCs) and redundant safety monitoring systems that are part of Litronic. Liebherr is the only crane manufacturer to utilize this precise self-monitoring system, which controls and coordinates all crane functions.

The PLC technology also enables the operator to gain an additional capacity of up to 20% by simply pushing a button for heavy lift mode (LM2). This is possible because the PLC limits the scope and speed of all functions so the total forces reacting on the structure are not exceeded. LM2 was another key reason Mr. Crane chose Liebherr. LM2 allowed the general contractor to downsize some cranes, thereby realizing rental cost savings.



Liebherr EC-H Litronic advantages:

- + High-performance drives for high load capacities
- + Modular concept with electronic monitoring system standard
- + Intelligent control system includes auto load detection and micro-speed travel movement

Over the course of the project, two Liebherr tower cranes were on site for 12 months, while the other three remained for approximately eight months.



The logistics: Keeping the job and aircraft flying

One of the most unique features of this project was the seamless cooperation between the project contractor, crane supplier, FAA, and Airport Management and Air Operations throughout the project. FAA restrictions including visibility, crane operating heights and directions, proper lighting and the importance of maintaining uninterrupted airport operation all had to be planned, proposed and agreed upon, well ahead of actual performance.

Liebherr's intelligent driveline concepts provide uncompromising reliability and job site efficiency.

Many lifts actually occurred over active gate areas inside the terminal. In these instances, signal people coordinated with the crane operators to prevent travelers and ground crew from walking under the overhead load without disruption.

"Not one delay from any perspective was experienced through-out the project duration," said Wallace. "We encountered no issues that held up airport operations or project schedules. There were 14 people dedicated to support the tower cranes with signaling and safety interface. The cooperation between all parties was excellent."

Another interesting aspect of the project was that one tower crane needed to be manned 24/7. With flights coming in and going out at all hours, the crane position was critical. In the event that the jib would swing into a restricted area at night, due to weather veining or other reasons, it would have to be immediately repositioned to the pre-selected safe area.

Randy Edwards of Mr. Crane remarked, "We employed up to 27 people directly related to the cranes on this project. That was key to our success in ensuring that the project ran smoothly."

Mr. Crane supplied all cranes for the entire project, including mobile and crawler cranes (including one LR 1300 Liebherr crawler). This turnkey approach allowed the project managers and superintendents to focus on the job, not worrying about the operation and maintenance of the cranes.

LAX is consistently ranked as the fourth largest North American airport in terms of passenger volume. The modernization project will help improve the international terminal's passenger flow and its ability to accommodate the new generation of jumbo jets.



Upon completion in 2013, the Tom Bradley International Terminal will include one million square feet of space.

Project Specifications

Size	One million square feet
Owner	City of Los Angeles
General Contractor	Walsh Austin Joint
Venture	Walsh Construction, Chicago, IL; Austin Commercial, Austin, TX
Crane Contractor	Mr. Crane, Orange, CA
Crane Supplier	Morrow Equipment Company, Salem, OR
Cranes Used	One Liebherr 630 EC-H 40 Litronic, four Liebherr 550 EC-H 20 Litronic
Crane Set-Up	Static mounted on foundation anchors using the standard Austin Commercial 4-pile concrete foundation