

Girders Get the Green Light

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Workers position the undulator girder next to the support pedestals using an electric pallet jack. Photo by Brad Plummer.

(PhysOrg.com) -- The temperature is now stabilized at a mild 68 °F (20 °C), support pedestals are in place and aligned, the paint is dry and physicists are moving in. That's the scene in the Linac Coherent Light Source Undulator Hall, where the last items on the civil construction punch list are being checked off. Last week, after extensive monitoring and testing of the air handling system, workers began moving in crates containing the heavy, precision-aligned steel girders that will support the LCLS undulators.

"It's a pretty big milestone, getting these things in here," said Mike Zurawel, SLAC area manager for the Undulator Hall.

Girder installation marks the latest step toward completion of the LCLS

construction project, which began in 2006. Situated inside a tunnel leading from SLAC's Research Yard, the 300-foot long, climate-controlled Undulator Hall will house arrays of magnets used to produce X-rays from a beam of accelerated electrons. The undulator magnets will rest atop the 33 specially designed girders now being installed.

The girder assemblies are more than sturdy mounting stands for the undulators. Designed and built by collaborators at Argonne National Laboratory, the girders also support the vacuum chamber that carries the electron and X-ray beams, as well as the adjacent quadrupole steering magnets, diagnostic equipment and a sophisticated leveling system to monitor the position of the girder assemblies.

Crates housing the six-foot, 2,600-pound girders are unwieldy to maneuver, but SLAC's Mechanical Fabrication department simplified the problem with a custom-built swivel plate and wheeled dolly system. The swivel plate couples with an electric pallet jack positioned under one end of the eight-foot crate, with the aluminum dolly placed beneath the other end. The system enables workers to move the crates through a tight maze of shielding corridors leading into the Undulator Hall. Once the crate is in position, workers use a hand-operated gantry crane to hoist the girder into place atop the support pedestals.

As next steps, another team will install and adjust the girders in preparation for undulator magnet installation, which should begin early next year.

Provided by SLAC, by Brad Plummer

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