

Innovative access solutions save time, costs in power plants

Power plants are under greater pressure to operate beyond scheduled maintenance intervals due to the high cost of downtime, growing power demand and the need to reduce operating costs. Fortunately, proactive maintenance practices extend intervals and include using data analytics to track the condition of an asset, undertaking maintenance only when needed. Risk analysis and testing methods may also show that if a defect is detected, periodic monitoring may be sufficient.

Boiler shutdown

But when large-scale access is required, maintenance contractors and plant operators need to consider the benefits of pre-planning along with diverse access solutions, especially suspended solutions, to reduce the duration and cost of a shutdown. A full scaffold build may still make sense when projects require larger crews working on multiple levels simultaneously. However, a more common scenario might have a larger crew working at higher elevations to replace superheat tubes, while smaller crews work

on the water wall, pinhole repair and burner corners. In these instances, a suspended solution can significantly save time and money.

As an example, consider the case of a 700-megawatt (MW) coal-fired facility in the upper Midwest that needed boiler tube replacement above the bullnose and replacement of one V bottom slope. By combining a suspended large area platform, or “dance floor,” at the bullnose with six to eight levels of supported scaffold above, the maintenance contractor was able to complete the turnaround 12 days ahead of schedule and save a total of 708 labor hours of erection and dismantle time. In addition, the solution allowed for simultaneous work on the water wall and in the V bottom.

Suspended access solutions have proven their value at numerous installations. For instance, a pro forma estimate for access from the bullnose and higher in a 350-MW boiler calculated that traditional scaffold installation and dismantle would require more than 9,000 labor hours, whereas a suspended solution would require less than

3,000 labor hours. In this instance, estimated savings could exceed \$300,000. And this doesn’t include the biggest benefit: Instead of 10 days for install and removal, the work was completed in six, providing four more days of power generation. Further, with 70-percent fewer labor hours and fewer pieces to move, the exposure to risk decreased accordingly.

HRSG access

Natural gas-fired power plants will generate about 35 percent of U.S. electricity in 2019. This number will continue to grow, as nearly all new large-capacity plants use combined-cycle technology. These plants are now built with suspended access in mind, as heat recovery steam generators (HRSGs) are designed with penetrations in the top and structural elements for suspension.

Because the bays in an HRSG are closely spaced, smaller suspended baskets or swing stages provide much more efficiency. Even when access is limited to a 24-inch-by-20-inch manway, a three- or four-person crew can erect a basket or

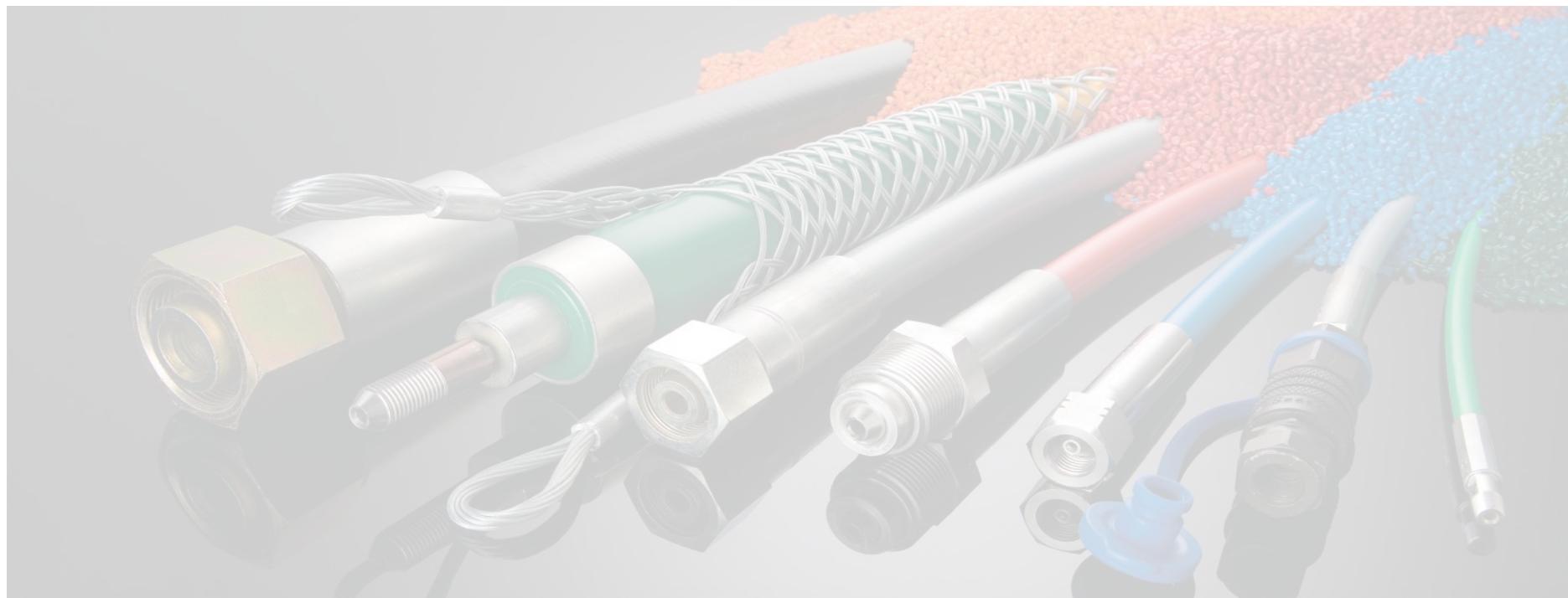
swing stage in half a shift.

Note that welding operations can safely be performed from these suspended platforms with the proper welding protection components. In these situations, a drum hoist, which wraps up excess cable below the basket, can be of great benefit and a huge advantage from a safety perspective.

Suspended solutions are also replacing full scaffolds for HRSG stacks, which are erected by stacking and welding large “canned” sections from the inside. Here, a “rigging star” fits over the top section and supports a rigid “float platform” that raises and lowers via traction hoists. After welders complete one section, a crane lifts the entire assembly off, sets the next section on top, and puts the rigging star and float platform back in place.

For both coal and gas power plants, suspended access solutions can be of great benefit, improving productivity while maintaining a higher level of safety.

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