CHALLENGE

TO DRASTICALLY REDUCE RISK ASSOCIATED WITH WORK AT HEIGHT DURING CANOPY ASSEMBLY

Canopy assembly at ground level

Artelia has led a step change in canopy construction methodology in 12 countries throughout Europe. By moving from a canopy built at height to assembly at ground level, Artelia has reduced workers' risk exposure while working at height by 95%.

Challenge

Major oil companies such as Shell, ExxonMobil, Lukoil and Total have selected Artelia International to provide Construction Management services to their fuel retail business.

A key challenge is to provide much improved safety, coupled with tools for reducing risk exposure and lowering risk levels during construction.

The construction of fuel retail stations involves managing high-risk activities, including "work at height". With more than 500 fatalities in the construction industry in Europe during 2011, this activity is considered to be a key focus.

On average, Artelia is responsible for the Construction Management of more than 2,000 fuel retail stations worldwide each year. Standard canopy construction requires 560 working hours at height. Changing to ground level assembly therefore presents a great opportunity to reduce exposure to working at height, but the solution needed careful exploration to identify and eliminate other possible safety hazards.

The Artelia Solution

Building a canopy at ground level and raising it into position, as opposed to building at height, drastically lowers the time spent working at height.

Therefore, it was felt that this would be of great assistance in achieving the aim of zero injuries on site.

However, within this solution, the process of bolting a canopy to the columns needs to be done under a suspended load which remains an 'at risk situation'.

With further investigation, a process was developed to eliminate this risk. The canopy load bearing plates would rest on top of the column load bearing plates, meaning that the crane lifting chains were not actually holding the load.
This solution solved the 'suspended load' risk but another risk still remained. It was identified that in the event of a strong gust of wind prior to the canopy being bolted to the columns, it was possible for the canopy to be blown sideways. This had the unacceptable potential for impact and crush injuries to workers whilst installing the fixing bolts. With this in mind, the solution was modified to introduce spigots on the canopies with corresponding sockets on the columns which prevent this lateral movement.

This technique was successfully tested on 3rd September 2009 at a fuel station on the Kenilworth Road, Balsall Common, UK. Following the success of this trial, Artelia decided to deploy the solution worldwide. Reluctance by contractors to change from traditional methods proved to be a constraint to deploying this solution.

Artelia's Project Management teams overcame this reluctance by explaining the methodology, sharing best practices and developing a culture of team work.

Outcomes and Key Benefits

From a financial perspective, the outcome of the new methodology is 'cost neutral'. Additional material cost is offset by a reduction of the duration that 'work at height' equipment is required on site and by the increased speed of carrying out the installation.

From a HSSE perspective, the results from this particular innovation are outstanding. The total man hours required to work at height on canopy installations has been reduced by 95%, almost eliminating workers being exposed to this key safety risk. This outstanding result is reinforced by adding signage to canopy at ground level as well.

Considering that a high percentage of incidents on construction sites involve work at height, this technique is a major step forward and can only aid our goal of zero injuries on site.