Re-thinking traditional fixed infrastructure

Traditionally, the construction of permanent electrical infrastructure has been thought of as just that, permanent. It's constructed using time consuming and site labour intensive bricks and mortar construction techniques. But does it need to be? What if fixed infrastructure was in fact relocatable? What benefits would this bring to infrastructure projects?

Typical Applications

Surface and underground mines typically employ relocatable power equipment. They do so to accommodate the dynamic nature of a mine site, where the electrical system must move, regularly extended and be rapidly deployed as mining progresses. This equipment is invariably relocatable, compact and relatively high voltage. In addition, it's designed for transport with minimal disassembly and reassembly with an aim to streamline site works.

A typical relocatable substation used in above ground mining applications

Non-Typical Applications

We've seen this type of relocatable and rapidly deployable power equipment becoming used in a range of non-typical applications. At Australia's two largest solar farms in Broken Hill and Nyngan, Ampcontrol completed 117 identical power conversion skids housing control panels, inverters and transformers.

Using the rapidly deployable model these electrical skids were fully manufactured and assembled at Ampcontrol's workshops before being transferred to site as complete units. This resulted in significantly simplified onsite works and ensured the skids could be delivered at a rate of four per week.

Power conversion skids being manufactured in Ampcontrol's workshops

Power conversion skids installed at the solar farms

Due to the dynamic nature of their environment, the tunnelling industry is familiar with rapidly deployable power equipment during the construction phase. It is not however typically used for permanent electrical infrastructure within tunnels post construction.

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Westconnex, Australia's largest infrastructure project, recently implemented this rapidly deployable style of infrastructure for their 46 Electrical Equipment Rooms (EERs). The EERs all included a transformer, switches, circuits and communication systems but were all individual in design, dependent on location and requirements.

These EERs were manufactured in Ampcontrol's Tomago NSW workshops before being transported to the Sydney tunnelling site at a rate of two rooms per week.

Westconnex was the first tunnelling project in Australia where EERs were manufactured offsite and installed directly into the tunnel, compared to the traditional method of building them in-situ. This approach resulted in significantly reduced and simplified civil works, and faster installation with fewer people underground.

EERs being delivered and installed in the Westconnex tunnels

The final Westconnex EER leaves Ampcontrol's workshop

The Benefits

Manufacturing in a dedicated workshop enables many variables to be easily controlled, ensuring a safer, better cost controlled and time managed build.

Safety improvements

- Minimal staff required for underground siteworks, installation and commissioning
- Construction managed offsite in a controlled environment where risks can be better managed

Cost control

- Manufacturing efficiencies are gained through modularised repeated assemblies, designed specifically for a workshop environment

Time management

- Fast install and commissioning
- Manufacturing, transport, installation and commissioning can all happen simultaneously ensuring project construction continues unimpeded by siteworks

Rapidly deployable relocatable equipment for fixed applications is a viable option for a variety of industries and applications. Ampcontrol is expertly positioned and experienced in the design, manufacture, testing, installation and commissioning of this type of equipment across typical and non-typical applications.