Haywood & Jackson

Revitalising The Railway: A Case Study on the Refurbishment and Transformation of Life Expired Lineside Buildings

Challenges

Principal Supply Points (PSP's) and Uninterruptible Power Supplies (UPS's) are both pieces of critical rail infrastructure required to maintain the rail service. These steel container type structures house high voltage electrical and signalling equipment, however a large majority of these lineside buildings on the network have come to the end of their serviceable lives.

Suffering from exposure to the elements, there are visible signs of corrosion to the roofs, the walls, and the doors of these structures, resulting in water ingress into these buildings.

At A Glance

- **Live electrical infrastructure**
- **Exposed corroded sections**
- **Water ingress**
- **Failing ventilation systems**

The cost to replace just one of these buildings with a new unit would amount to hundreds of thousands of pounds. This is due to the cost of a new building, the associated signalling design to reroute the cabling, moving the electrical equipment to the new container, and removal and disposal of the old units. Due to the amount of these buildings on the network, it is not viable to replace all these failing assets with new. Network Rail, who own and operate the equipment, wanted to explore the option to refurbish these buildings to extend the useable life of the assets, rather than the costly endeavour to replace them with new.

The biggest challenge being, how do you refurbish a life expired building and extend its life without the need to put in a bi-yearly maintenance programme to prevent the original parts of the structure falling foul to the elements?

Solution

The solution is Haywood & Jackson, who have been a trusted provider to the rail industry for over 25 years and have a deep understanding of the UK rail rules, regulations and legislation.

We enaged with the client to undertake survey's of various buildings in differing locations and produced a comprehensive schedule of replacement sections and parts. These were then formulated into a design for each building, based on its own specific requirements, to satisfy Network Rail's engineering assurance requirements.
Working with our extensive and trusted supply chain partners we were able to identify a product supplier used by the Ministry of Defence called Therma-Light. Speaking to the inventor and working with him to refine the product offering we were able to offer Network Rail a paint system which, if correctly applied, had a 25-year guarantee.

Solution

Through the use of graphene within the paint system, it creates a chemical bond with the surface material preventing moisture from getting between the paint and the surface and forming rust. This feature also allows for graffiti to easily be removed.

Once the engineering assurance was agreed with the Network Rail DPE and they were satisfied with the proposed design and that our solution had removed the need to introduce a maintenance regime, we set about a programme of works to deliver the improvements.

In most instances we identified areas of severe corrosion to the buildings which had allowed water and vermin into the structures. The ventilation systems had failed, and due to the remote locations of some buildings, vegetation had begun to reclaim the area and return it to a wild habitat.

We worked to clear the vegetation and repair the ventilation systems to keep the container interiors warm and dry. For the outer shells which had corroded beyond repair, these sections were surface prepped to St2 and treated with rust inhibitor and primed in preparation for new steel sections. We fabricated the new sections off site, which were formed to suit the existing trapizodial profiles of the buildings and fixed them with rivets. In some instances the container doors had seized and were no longer usable. These were cut out, removed from site and replaced with new. Once the structures were again strong and sound, we turned our attention to extending the life of the containers by preventing further corrosion through the use of the Therma-Light paint coating system.

At A Glance

- **Surface preparation to St2**
- **Over plating repairs**
- **Innovative painting system**
- **New doors & guttering systems**

Outcome

Once finished the containers looked like new. The finishing touches of new signs and labels, working ventilation systems, and the health hazards from vermin droppings and leaking roofs removed, they were now safe to be accessible to Network Rails maintenance & signalling teams.

With the structural improvements we made and the addition of the new paintwork solution, we could then offer Network Rail an additional 25-year guarantee on the life expectancy of these structures, presenting a huge saving in both operational time and cost.

"Haywood & Jackson were awarded contracts to refurbish approximately 13 PSP's & UPS's steel container type buildings that house safety critical lineside equipment between 2021 & 2023. All works were collaboratively planned between H&J and NWR. All works were delivered as remitted to NWR standards and to assurance lifespan. The before and after works pay testament to H&J and to the level of detail they went to meet NWR requirements for this work, each PSP & UPS was successfully handed back to NWR Asset department who were delighted with the finished article on each site."
- Will Tilleke - Network Rail - Works Delivery Manager

Can we help you?

If you need an agile, flexible, knowledgeable, and experienced solution provider to help keep your critical infrastructure operating, get in touch today to discuss how we can help solve your problems.