Coopers Brewery

Galvanizing Brews Long-term Success for Coopers

Coopers Brewery in South Australia is the largest privately owned brewery in Australia and has been run by the Cooper family since 1862. Due to their ever-increasing success, the Cooper family recently invested in a $65 million development of their existing facilities at Regency Park in Adelaide.

The objective of the development was to construct a purpose built in-house maltings production plant. The new facility includes six barley and six malt silos measuring 25m high and 8m in diameter, each capable of holding 500 tonnes of barley or malt.

Coopers say that at full capacity, the maltings would produce around 54,000 tonnes of malt a year and give Coopers full control over an important raw material.

Coopers will use approximately 17,000 tonnes of the 54,000 tonnes of malt a year in its operations, with the balance sold to a range of domestic and export customers. This includes independent brewers looking for reliable malt supplies.

The 13,000m^2 plant, considered the most technically advanced in the world, was officially opened in late November 2017 by His Excellency, the Honourable Hieu Van Le AC, Governor of South Australia.

One of the main considerations for Coopers Brewery was the impact the new production facility would have on the immediate surrounding area. The development of the current site, including the silos, is located on the fence line of one of Adelaide's busiest east-west transport links in a mixed residential and commercial area. Aesthetics were a major factor for the Cooper family.

Particular care and attention was given to the aesthetics of the building, which was constructed by South Australian building firm Ahrens Group. The malting equipment was sourced from the world's leading malting and milling technology provider, Buhler, headquartered in Switzerland.

The project represents the largest single investment in Coopers' 155 year history, eclipsing the $40 million cost of the Regency Park brewery in 2001. The maltings is entirely self-funded and will create an additional eight jobs.

Galvanizing the Silos

Historically, all silos erected at the Coopers Brewery had been painted in a three coat system. However, given the volume and expense of ongoing maintenance and remedial works, paint was removed from the scope of works; an alternative had to be found. Stainless steel was ruled out immediately due to its prohibitive cost. Hot dip galvanising was deemed to be the most appropriate and cost effective coating system both during installation and over the life of the assets.

In total, approximately 340 tonnes of galvanizing was carried out by Korvest Galvanizers. This included all the silo support structures, which included support bases that extended upwards into an exo-skeleton surrounding the silo itself, formed from pre-shaped galvabond panels.

All the silo roofs and hopper bases were double dip galvanized in conjunction with the support structures. The silo roofs were comprised of eight individual flat triangular segments, measuring 4.5m x 3.5m. The hopper bases were comprised of 12 individual curved triangular segments, measuring up to 4.5m x 3.5m.

Double dipping of the approximately 200 asymmetrical shapes that formed the roof and hopper segments proved to be a huge technical hurdle. Each item that required double dipping was typically fabricated as a frame comprised of material including 180 PFC, 125 x 75 UA and plate up to 16mm, which was then completed with a covering of 6.5m^2 of 3mm fully welded patchwork plate with flat bar bracings welded to the underside of the plate.

Given the multiple thicknesses of the materials utilised, the temperature differentials that would be caused by double dipping was likely to distort the sections and significantly reduce their dimensional stability.

Korvest Galvanisers overcame this issue, managing not only to keep the sections straight with minimal loss of form, but also optimising the quantity of items dipped.

Korvest achieved these positive outcomes by implementing improved material handing techniques (including placement of the double dip lines), as well as strict quenching protocols. The first double dip was inspected by the client immediately after galvanizing and authorised for release to site.

Whilst there was some very minor rippling on the 3mm plate, every double dipped panel was installed on-site without any dimensional stability issues. It was noted during installation that all minor rippling would be resolved once each silo was filled with barley.

Other Project Challenges

Initial Design

Challenge: The initial design of the double dip roof and hopper segments made it impossible to undertake galvanizing due to the overall dimensions of the pieces.

Solution: After working with the customer, the product was re-engineered into smaller segments to allow double dipping of approximately 200 items.

Economic Viability

Challenge: Each dip had to be economically viable for both the galvanizer and the customer.

Solution: Material handling was overcome by devising new internal process controls that ensured consistent dipping could be achieved.

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Logistics

Challenge: The site had a very small footprint and very little storage, but there was a very strict fabrication and erection timeline for each silo.

Solution: A holding storage area was set up at the galvanizing yard as well as a 'just in time' schedule. This scheduled included daily and weekly meetings with the site supervisor to determine the correct order of galvanizing.

PROJECT TEAM

Owner: Coopers Brewery

Architect: MPH Architects

Project Manager: Tom Bullock (Coopers Brewery) and Cameron Ainslie (Ahrens)

Main Contractor: Ahrens Group

Steel Fabricator: Ahrens Group

Hot Dip Galvanizers: Korvest Galvanisers