

DELIVERING A SUSTAINABLE WATER SUPPLY ON TIME AND ON BUDGET

Botany Bay Pipeline Project

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MEETING THE CHALLENGE

– CHALLENGE –

Complete the twin pipeline running beneath Botany Bay in a five month time frame, welding joints as quickly as barge operators could deliver them.

– SOLUTION –

Lincoln Electric equipment and consumables:
Invertec® 350PRO Multi-process machines
LN™-25PR0 wire feeders
Pipeliner® 6P+ and 5P
Outershield® 71MX wire

– RESULTS –

Project delivered within the required timeframe. Welding at least twice as fast as stick only method. Usually weld joints processed faster than barge operators could deliver new pipe sections.

Sydney's new \$1.9 billion desalination plant at Kurnell will deliver a reliable water supply to the ever-growing population, powered by renewable energy. The project, currently nearing completion, will deliver 250 million litres of water a day via an 18km pipeline from the plant to Erskineville in Sydney's inner west. 7.2km of twin pipe were required to run below Botany Bay to join the land pipe, a contract won by Standish Constructions.

John Standish enlisted the expertise of Lincoln Electric® to assist with developing the best welding procedure to ensure this challenging part of the project was delivered on time and on budget.

"Pure stick welding on this project was just too slow," said John Standish of Standish Constructions. "In preparing for this project, I tested one joint myself and it took ages."

Extra welding time would have meant significantly greater cost as the pipe sections were being joined on a barge, fitted with twin welding bays, impacting not only welding



Lincoln Electric Pipeliner 6P+ was used for the root runs.

operator costs, but would also have impacted on the barge operation budget.

If the project was to be completed within the required five month time frame, a different welding technique needed to be implemented. In consultation with Lincoln Electric, a process was developed where the root run was laid down using Lincoln Electric® Cellulosic all position stick electrodes, Pipeliner® 6P+, with 5P completing the hot fill and pass. This was followed by a flux-cored, gas-shielded wire



The twin pipeline sections needed to be welded as quickly as barge operators could deliver them to meet deadline and cost objectives.

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Outershield® 71Mx wire was used for the fill and cap passes, significantly improving productivity.



Lincoln Electric's Inverter® 350PRO offered the versatility, performance and robustness for the project in a compact package.

electrode - Outershield® 71MX wire - to fill out the deep weld preparation.

“This methodology was easily twice as fast as stick only,” said John Standish. “We were able to comfortably turn out one joint per hour on this X60 grade, 17.5mm thick, 1450mm diameter pipe. As it turned out, we could do joints a little bit faster than the barge operators could deliver them to us.”

“While there was some spatter associated with the wire going over the bead/hot pass, which would have been avoided by using an STT® process, the project just did not warrant it. The Outershield® 71MX was the best wire for the job. This chosen method provided excellent productivity rewards.”

The Pipeliner® 6P+ electrodes are also manufactured under lot control, important for quality assurance in this high-profile project. A certificate of test showing actual deposit chemistry and mechanical properties, as per AWS, comes

with every lot of electrodes. “The consistency of both the wire and rod was great,” said John Standish.

“Only two minor defects were discovered throughout the whole job, so we had an extremely low repair rate, and we laid the pipeline within the required timeframe,” added John Standish. Lincoln Electric® also provided support for Standish Constructions in training operators in this method, ensuring that when the project started, all operators were up to speed.

In addition to using Lincoln Electric® consumables on the project, Standish Constructions used Lincoln Electric welding equipment - engine driven machines, the Inverter®

350PRO multi-process machines, Inverter static machines and wire feeders.

Lincoln Electric's Inverter® 350PRO multi-process inverter welding machine is the most powerful portable inverter power source in its class. Complemented by a tough build, the compact machines impressed Standish Constructions throughout the project.



The X60 grade, 17.5mm pipe used for the project.



A finished weld.

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MEETING THE CHALLENGE

“The Invertec® 350PRO is very versatile, extremely robust and the reliability was excellent. We did not have a problem with the machines the whole job.”

Handling any stick, TIG, and MIG applications, utilising the optimum wave form for each welding process and consumable, combined with energy-saving inverter technology, meant optimum efficiency.

“We also ran the Invertec® 350PRO from the new Vantage® 400 engine driven welding/generator machines, both running perfectly,” continued John Standish. “It impressed a lot of people. We are looking to use the machines again on other projects.” The non-corrosive cases meant the machines were looking as good as new at the end of the project, even after being used in the marine environment of the lay barge over the five month period.

The Invertec® 350PRO plug-and-play intelligence allowed it to automatically adjust to Lincoln wire feeders and remote controls - instantly. The new Lincoln

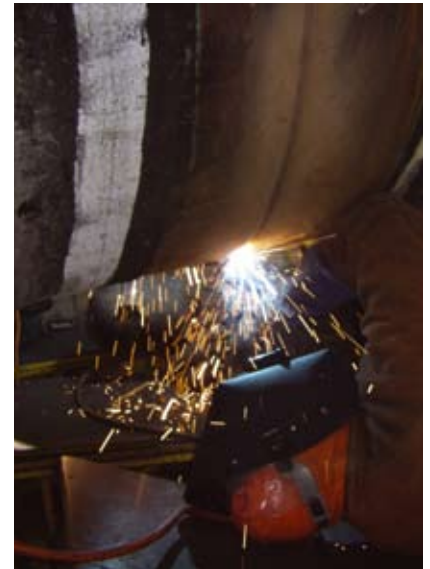


The twin pipeline being laid into Botany Bay.

Electric® LN™-25PRO wire feeders were also used on the project.

“Again the reliability of the LN-25PRO’s was impressive and the trigger lock feature was extremely helpful,” said John Standish. The user-friendly trigger lock function eliminates the need to hold the trigger throughout the weld, reducing operator fatigue.

The desalination plant is expected to deliver water to Sydney residents in the summer of 2009-10 – on time and on budget.



The LN-25PRO wire feeders offered high operator appeal with the trigger-lock function.

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