SULZER

CASE STUDY

Sulzer grows irrigation efficiency at one of Australia's largest almond orchards

A key ingredient of many desserts and a popular snack, the reputation of almonds as a healthy food has steadily grown. This is a trend followed by the global almond market. To meet demand, growers are investing in new orchards with highly efficient irrigation systems. So, when Canally Almond Orchards needed multiple pumps to effectively meet the operating demands of its irrigation system in southern New South Wales, Sulzer axial split case pumps were the preferred solution.

"We chose Sulzer pumps for a number of reasons. Chief among them was the excellent efficiency and the low NPSHr. The range of hydraulics and the duplex impellers also ensured that these pumps were a good choice for this application."

Shane Larkin, Senior Principal Irrigation Designer at Stantec

A project bearing fruit

Developed by the Canally Aggregation in partnership with a US Agricultural Fund, Canally Almond Orchards is a 10'000 Ha development in Australia's Sunraysia region. Nine dryland cropping farms have been converted into over 4'000 Ha of almond orchards containing 1.4 million trees. To ensure adequate water supply to the tree roots, multiple pumping stations transport water from the Murray and Murrumbidgee rivers down 12'300 km of drip tube. [1]

The design for several of the irrigation systems was undertaken by Stantec, an international engineering, design, and consulting company. Designing the pump stations and carrying out system energy optimization were key aspects of the project. Pumping processes would take up a large proportion of the total energy used at the orchards, so achieving even a marginal efficiency gain would deliver sizeable compound cost savings over long-term operation.

[1] [https://gofarmaustralia.com.au/portfolio/canally-almond-orchards/]

Planting the seeds of an irrigation system

Two of the properties within the overall aggregation are known as Junction Park and Weimby. Three pump stations will deliver the required water supply, two have been built to date: the River pump station servicing both Junction Park and Weimby, and the Junction Park dam pump station. The Weimby dam pump station is yet to be constructed. Stantec calculated a duty point of 440 l/s at a head of 30 m for each of the River pumps, 233 l/s at 53 m for each of the Weimby pumps and 337 l/s at 65 m for each of the Junction Park pumps. The project called for pumps that offered long service life, excellent efficiency and a low net positive suction head required (NPSHr). With all this in mind, Stantec approached Sulzer.

A global pump original equipment manufacturer (OEM) with an unmatched pedigree, Sulzer engineers highly efficient, durable pumps for the full water cycle, including irrigation applications. With its pump manufacturing expertise, it can produce custom solutions to meet the specific needs of irrigation systems, ensuring that operators can unlock optimum performance in every application. After receiving the duty requirements and assessing the irrigation system design, Sulzer supplied a range of nine axial split case pumps from its SMD range at a highly competitive cost point.

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Top of the tree efficiency

Once installed, the pumps delivered the performance promised. Every pump supplied by Sulzer delivered efficiencies in excess of 86%. Compared to competitors, the Sulzer pumps provided efficiency improvements of between 3-5% unlocking considerable energy savings for the orchards. Meeting the other key performance requirement, the Sulzer pumps also had a lower NPSHr than other designs.

However, optimal performance can only be capitalized upon if the installed pumps offer high levels of uptime and a long service life. To ensure this, the Sulzer pumps feature robust construction and a duplex steel alloy impeller. As river water often contains sediment and other abrasive particles, it can cause premature wear on pump internals, eventually reducing efficiency and durability. However, the choice of duplex steel for the impeller will ensure extended pump reliability despite these challenges.

Putting down roots

The Sulzer pumps have provided reliability and high efficiency in operation. As a result, Canally Almond Orchards can produce its valuable crop more cost-effectively. With the development at the site continuing into 2023, operators have now planted the roots of an efficient, reliable irrigation system to secure future growth.

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