

Optimized water and nutrient delivery

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Sulzer pumps provide high efficiency irrigation for almond orchards

Water and nutrients are vital to plant growth, so delivering them in the most cost-effective and efficient way is essential for a successful agricultural business. At an almond orchard in Australia, Sulzer has provided crucial pumping systems for an integrated filter and fertigation installation to ensure energy and maintenance costs are kept to a minimum.

Almond orchards, like many agricultural systems, require precise irrigation and nutrients to secure optimum productivity. In countries like Australia, where water is a very precious resource, delivering it as effectively as possible is an important goal. Furthermore, in an industry where margins are tight, minimizing energy usage and operational costs are also crucial, and this is where Sulzer was able to deliver significant benefits.

Improving yields

The almond orchard had developed a plan to improve irrigation and nutrient delivery because the existing arrangement was impacting crop health and yields. The investment was aimed at a comprehensive irrigation solution that would address the water management challenges and optimize productivity.

A leading irrigation specialist, Irribiz, was contracted to deliver the project, which entailed the construction of three pumping stations over a two-year period. Energy

efficiency and reliability were the top priorities, so Sulzer was commissioned to supply 16 horizontal split case pumps.

The filter and fertigation pumping stations are designed to extract water from an adjacent storage reservoir, filter it, add carefully calculated nutrient levels and transfer it to the distribution network that supplies the orchards. Based on the data provided by Irribiz, Sulzer selected the SMD 300-435 centrifugal water pump as the optimum choice.

The exceptionally low net positive suction head required (NPSHR) value of this pump makes it ideal for water abstraction, while its optimized hydraulics offer higher efficiency over a wider flow range. In addition, by specifying the same model across all three pumping stations, the required spare parts inventory to be held on-site was minimized.

Planning ahead

The design of each pumping station included interconnected mains and redundant pumps to allow planned maintenance to be completed without affecting the performance of the system. Sulzer's support for the project was crucial in delivering class-leading efficiency for the 16 pumps installed across the three pumping stations.

Designed from the ground up, each location had a concrete base laid before the pumps were fitted, with the building constructed afterwards. Sulzer assembled the pumps and motors on custom base units before shipping them to the sites. The simple operation of craning the pumps into position reduced the overall construction time. The first installation employs five pumps, with the other two are equipped with five and six pumps respectively.

The suction and discharge pipework was designed by Sulzer for optimum efficiency and manufactured, along with all the other pipework, by Irribiz. The design of each pumping station also included lifting apparatus for easy maintenance operations in the future.

Optimized performance

All the pumps were optimized for their application in terms of flow, head and efficiency. Head was nominal around 50 m, while flow varied from 260 l/s to over 1'100 l/s and efficiency was well above 87%. In combination with the Premium Efficiency motors, each pumping station has been designed to minimize running costs while achieving enhanced irrigation management.

A spokesperson for Irribiz commented: "Irribiz has been extremely satisfied with Sulzer's SMD pumps in our almond orchard development schemes. Sulzer has been a trusted partner throughout this project."

Sulzer's solution offered unmatched effectiveness in water management, which has resulted in improved crop health, increased productivity and low energy costs. The integrated control system provides a comprehensive and user-friendly platform for remote control, monitoring, and troubleshooting.

The class-leading efficiency achieved by Sulzer's pumps has enabled the almond orchard to optimize irrigation schedules and maximize resource efficiency. The partnership with Irribiz empowered the customer and delivered a tailored irrigation solution, allowing their business to grow.

Image captions:

Image 1: The SMD 300-435 centrifugal water pump was the optimum choice for Irribiz.



Image 2: Sulzer delivered 16 pumps installed across the three pumping stations

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About Sulzer

Sulzer is a global leader in fluid engineering and chemical processing applications. We specialize in energy-efficient pumping, agitation, mixing, separation, purification, crystallization and polymerization technologies for fluids of all types. Our solutions enable carbon emission reductions, development of polymers from biological sources, recycling of plastic waste and textiles, and efficient power storage. Our customers benefit from our commitment to innovation, performance and quality through our responsive network of 180 world-class manufacturing facilities and service centers across the globe.

Sulzer has been headquartered in Winterthur, Switzerland, since 1834. In 2022, our 12'900 employees delivered revenues of CHF 3.2 billion. Our shares are traded on the SIX Swiss Exchange (SIX: SUN).

For more information, visit www.sulzer.com

Press contact:**Sulzer Pumps**

Joelle Rabelle, Global Digital Content Coordinator, Water BU

Tel: +44 (0)1293 558169 Fax:

Web: www.sulzer.com

E-mail: joelle.rabelle@sulzer.com

Address: Sulzer Pumps Wastewater UK Ltd, 5th Floor Astral Towers, Betts Way, Crawley, West Sussex, UK.

PR agency:**DMA Europa Group**

Brittany Kennan

Tel: +44 (0) 1905 91747

Web: www.dmaeuropa.com

Email: brittany@dmaeuropa.com

Address: Progress House, Great Western Avenue Worcester,
Worcestershire, WR5 1AQ, UK