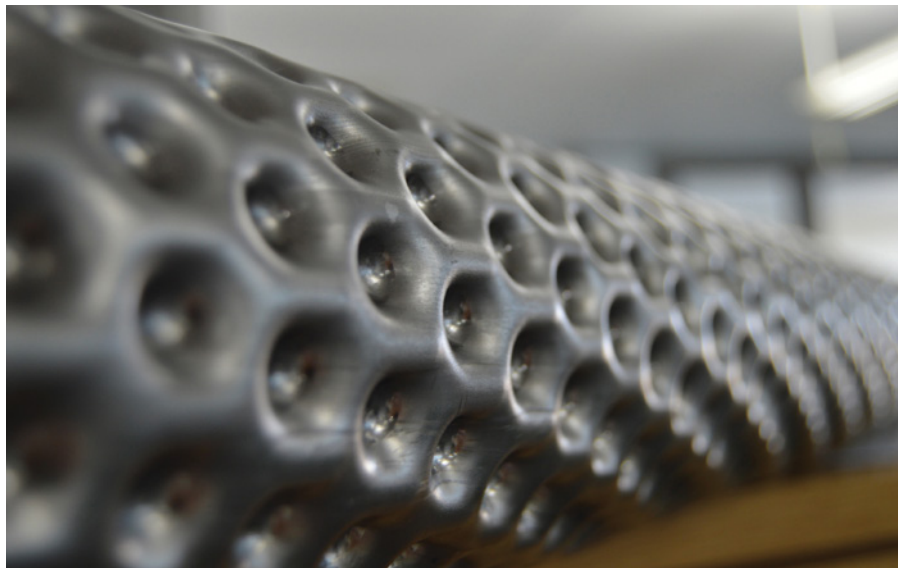


New dimple tube technology for improved heat exchangers

A newly developed dimple tube technology – developed and patented by Bosch Projects (Pty Ltd) – is set to transform the production capacity of vacuum pan heat exchangers.



Dimple Tube technology – developed and patented by Bosch Projects (Pty) – is set to transform the productivity of shell and tube heat exchangers.

A newly developed Dimple Tube technology from Bosch Projects increases the heating surface area of an existing vacuum pan by 15% and improves the turbulence and heat transfer characteristics, compared with smooth walled tubes. Vacuum pans are used in the sugar industry to boil syrup and increase sugar concentration, which triggers the formation of sugar crystals.

“Bosch Projects’ research and development initiative designed and developed this advanced Dimple Tube technology to optimise equipment productivity - reducing batch pan cycle time, improving pan floor capacity and reducing operational costs,” explains Darius Bezuidenhout, Bosch Projects Sector Manager for Sugar Equipment.

“Although this technology has been developed for process equipment within the sugar industry, the new design provides a cost-effective alternative to the conventional means of increasing equipment capacity and improving energy efficiency in various other sectors where shell and tube heat exchangers are used.

“The design of Dimple Tubes is compatible with existing equipment for retrofit applications, which means that simple and inexpensive upgrades are possible, with minimal/zero vessel modifications.

“The original concept has been developed,

analysed and tested for over three years, through rigorous engineering processes and tests. An in-house automated manufacturing system, coupled with a stringent quality management system, ensures high levels of product customisation, quality control and consistency.”

Integrating Dimple Tubes into batch and continuous vacuum pans improves evaporation rates, the heat transfer coefficient, energy usage, massecuite circulation, and crystal quality and exhaustion, while reducing pan cycle time and improving processing capacity.

As part of the company’s extensive testing

programme, this technology was installed into an existing batch pan and has been operational for three seasons. Separate laboratory test results showed an increase in evaporation rates of over 50% at the start of batch vacuum pan cycles and over 20% towards the end of batch vacuum pan cycles. This means an overall batch vacuum pan cycle time improvement of over 30% was achieved, which significantly enhanced pan floor capacity.

Another benefit is a slight decrease in graining volume, unlike the increase in graining volume that is normally found with competing technologies. Lower graining volume reduces initial thermal inertia at the start of the pan cycle, which significantly improves overall pan floor performance.

Bosch Projects integrates engineering technology and project management to provide customised solutions in diverse industries. These sectors include sugar and ethanol, power utilities and materials handling, commercial and industrial projects.

The Bosch Projects team works closely with its technology partners and fabricators globally, to ensure manufacture of all equipment adheres to stringent international quality standards and exact design specifications. The company has an extensive network of offices in Africa, South and Central America, Australia and the United Kingdom.

The company also has technology partners in the Southeast Asia region and the USA, as well as agents in several regions across the globe.

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In laboratory tests, Dimple Tube technology results showed an increase in evaporation rates of over 50% at the start of batch vacuum pan cycles and over 20% towards the end of batch vacuum pan cycles.