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Bluetongue shows why Zero is an excellent score for environmentally engineered food and beverage tanks

Major changes in the design and manufacture of large capacity industrial tanks for food and beverage applications are being driven by the demands of technologies involving zero discharge applications.

These demanding but increasingly common applications are vital to environmental and process requirements, including methane capture, biogas capture, anaerobic and aerobic process, ultrafiltration, steam and the demineralised water used for turbine cooling, for example.

A classic example in which leading tank manufacturer Tasman Tanks was involved recently was Pacific Beverages' environmentally sensitive Bluetongue Brewery, which makes more beer out of less water while using less energy . The opening of the brewery was celebrated this year with the first taste of Bluetongue Premium Lager delivered fresh off the line to celebrity guests including entrepreneur and advertising personality John Singleton and international star and former Miss Universe Jennifer Hawkins.

The \$120 million brewery on NSW's Central Coast - which will eventually have an annual capacity of 150 million litres – features a state-of-the-art water recovery plant, which targets best-practice water reuse standards. The water recovery plant also provides renewable energy for the brewery, reducing its dependence on fossil fuels.

The system – which was designed as a model for food and beverage plants globally – was installed by a partnership of CST Wastewater Solutions and Global Water Engineering (GWE), which are respectively Australian and global leaders in environmental engineering.

Tasman Tanks was selected as the tank, digester and liquid storage fabricator and constructor by CST Wastewater Solutions and Global Water Engineering (GWE) to deliver and install the storage solutions for Bluetongue.

The nine storage solutions utilize Tasman's advanced coating and membrane liner technologies, with six FBE (FUSION 7000) sealed panel tanks for unmatched coating performance and three membrane lined tanks for the most cost-effective storage solution available for the wastewater system.

The six FBE panel tanks have the most advanced coating system from Tasman Tanks affiliated group Tank Connection that also provide another global partnership between TC and Akzo Nobel the leader in powder coatings and porcelain enamel technologies. Tank D101 at Bluetongue is a 687,000 litre fully sealed anaerobic methane reactor tank. As the bacteria breaks down the organic matter within the waste water, a biogas is produced. This biogas is captured and reused as renewable energy to power the brewery boiler.

Examples of the multiplicity of tanks that may be involved in a big project including include bulk storage tanks, intake tanks, flocculation tanks, filtration tanks, mixing tanks, balance tanks, disinfection tanks, chemical tanks, settling tanks to name just a few among dozens.

Zero discharge – technically demanding vacuum and pressure applications.

Many radical advances in big tank design are coming in the area of bolted steel tanks, which have the major advantages of cost-efficient size potential (especially compared with welded) and their ability to isolate diverse liquids through advanced coatings that will not react with contents over time.

One of the major advances in zero discharge applications is fusion bonded coating systems such as those developed by the internationally respected Tank Connection group and Akzo Nobel, the world's largest powder coat supplier.

These factory-applied coatings are particularly suited to totally sealed applications where all the liquids involved in a process are retained on-site.

“As a leading Australasian tank producer – delivering more than 200 large structures a year – we are firm believers in bonded coatings such as Tank Connection’s ultimate fusion coated tank system its new generation proprietary LIQ Fusion 7000 FBE coating. This is approved for potable drinking water with NSF-61 international Standard approval. It is unmatched compared with all bolted and welded tank linings. “

LIQ Fusion is designed as an advance on glass/porcelain enamel coatings, utilizing the protective properties of an exclusive FBE epoxy powder fused to substrate with a fused external topcoat of SD Polyester. It is designed to outperform earlier systems several times over, with standard warranties on potable water storage starting at 10 years.

LIQ Fusion FBE advantages include:

- **Does not spall or crack**
- **Holiday free coating – LIQ Fusion FBE is fusion bonded to substrate surfaces to give total coverage, without blemishes or pinholes or other protective flaws, know as coating holidays.**
- **Electrostatic applied "powder-on-powder" system provides complete wrap-around on panel edges and in bolt-holes.**
- **Fusion FBE can be repaired (if required) by a documented touch up procedure.**
- **Does not require costly and potentially troublesome cathodic protection**

In addition to their use at Bluetongue, tanks incorporating such protection are also highly applicable to Alternative Waste Treatment facilities, (AWT's) a \$A450 billion per annum global industry with plants now being constructed extensively throughout Australia and Europe. These waste treatment systems utilize the latest in factory coated fusion bond systems for the bolted tank construction for the digesters and liquid storage. An AWT can have up to 9-11 tanks for the entire treatment process.

Meeting the needs of Bluetongue

Pacific Beverages – a joint venture by Coca-Cola Amatil and global brewer SABMiller – has ensured Bluetongue Brewery will boast strict environmental standards and world-class water and energy savings, says the CEO of Pacific Beverages Mr Peter McLoughlin.

“Bluetongue Brewery is designed in a modular format which allows it to grow as we do. Coupled with this flexibility are significant sustainability credentials, predominately water and energy.

Using water recovery techniques and modern design principles, we are able to target a reduction in our water usage to 2.2l / l litres of beer produced, which is amongst the best in the world and certainly well above the global average of 4 - 5 litres of water to every one litre of beer.

“Methane from this process will also power a third boiler which will reduce our energy consumption by about 15 per cent” Mr McLoughlin told the first taste launch event recently (July 29).

The future

As Australia seeks to foster its reputation as a clean, green producer of food and beverages, its major food and beverage companies will increasingly seek to incorporate technologies such as those employed at Bluetongue, says Mr Aldridge.

“Big tanks today may hold upwards of 10, 20 or even 30,000 tons of often very valuable or sensitive liquid, so it is important to understand the advances in specifying, design and protective coatings such as those used in the Bluetongue reactor. This understanding is vital to get the best performance for particular industries and applications,” says Mr Aldridge, whose company produces more than 200 large industrial and municipal tanks a year.

Tasman Tank Co is a recognised leader in the quality tank building industry, with in-house design, manufacture and installation expertise for prompt and professional performance. Each Tasman Tank is certified to all relevant codes, with independent engineers providing verification of specifications and performance. The company provides cost-effective storage solution in capacities from kilolitres (KL) to 30 megalitres (ML). Tasman Tank Co also specializes in turnkey projects as well as offering a service and refurbishment work through its dedicated Service and Refurbishment Division

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