

BLUETONGUE BREWERY

MAIN CONSTRUCTION COMPANY : Qanstruct
 PROJECT MANAGER : Gallagher Jeffs Consulting
 CONSTRUCTION COMPLETION : June 2010
 PROJECT END VALUE : \$120 Million



BREAKING WORLD RECORDS

The Bluetongue Brewery in Warnervale on NSW's Central Coast will be very technologically advanced, combining not just world's best practice in water and energy efficiency but also hi-tech brewing capabilities that give it a flexibility in production that will set the standard for other modern breweries.

Pacific Beverages, a joint venture between Coca-Cola Amatil and SABMiller, the second biggest brewer in the world, will not only be producing beer for the domestic market, but also for the export market as well. When the project is running at its full potential capacity, the brewery will be producing around 150 million litres of beer annually.

"Normally a brewery is set up to brew a particular kind of beer, but at the Bluetongue Brewery we are aiming to brew a wide selection of brands. These require different technologies and equipment which we have imported into Australia from various locations around the world.

Mike Shirbin, the Project Director, outlined that part of his brief was to try and localise as much of the spend as possible. To achieve this end, he says the brewery's construction was broken into seven contract packages. "We could have gone down the easy route and used an overseas company to do the lot, but we made a commitment to

use Australian companies and more specifically local contractors. We worked with AusIndustry to ensure that where possible local businesses and contractors are being given preference for the construction contracts at the new Brewery" he says.

"Five of the packages were given to Australian contractors including the water recovery plant, civil works, building works, the boilers and the refrigeration. The other requirement was that once installed and completed the brewery and its equipment will be maintained by Australian companies so there has been a lot of technology transfer to Australian contractors throughout the project.

"The construction process has placed considerable emphasis on using local contractors, from roofers to concreters. Of the Project cost of \$120m, \$40 million went to the Central Coast and Hunter region and by the end of the project we expect to have generated close to \$80 million for the national economy."

Qanstruct was the principal building contractor on the Bluetongue project and was responsible for co-ordinating all the building works in accordance with the design requirements, including hiring a number of local contractors to create employment and growth in the region.



The company specialises in industrial/commercial design and construct and has more than 20 years industry experience. It has also been recognised for its quality in construction, receiving Master Builders Association Awards for the delivery of Coles Distribution Centres across three separate states.

Qanstruct already has a close association with Coca-Cola Amatil (CCA) following the construction of its distribution facility in Mentone, Victoria.

Damien Toppi, Business Development Manager for Qanstruct says the company used its experience in-house architectural and project management team to deliver the project for Pacific Beverages' requirements with specific care towards the environment and local community's needs.

"Our environmental focus was to manage aspects of the construction process to minimise erosion, protect existing vegetation zones, fuel management, noise consideration and management of waste including recycling of construction waste products where possible," he said.

"We worked on all the in ground drainage and services, structural steel, wall cladding, concrete support structures and tanks, internal and external paving and car parking"

Qanstruct started work on the project in April 2009 with design and began work on site in June 2009 with building completion achieved in May 2010.

"When we were appointed, design for the equipment and pipe work was still in its infancy so a lot of the details had not been worked out. It was a challenge to provide a structural solution while those things were still evolving and it required us to work as a very strong team with all involved in the project to bring it all together."

Throughout the construction process, Mr Toppi said Qanstruct had around 150 employees on site, with a combination of trades including concreters, steelworkers, electricians, in ground trade waste and sewer specialists.

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WORTH EVERY DROP

When the first glass of brew flows from the tap on June 21 at the Bluetongue Brewery, the crew from the TFG Pty Ltd and Triplenine Stainless Joint Venture will be there to taste it.

After more than eight months' work installing the intricate stainless steel fermentation vats and brewing equipment that first sip of the amber liquid will let the nearly 60 staff and the Joint Venture Management realise that all the hard work has been worth it.

But their work won't be finished in June. The crew has also been on hand to install the bottling and packaging plant for the brewery.

TFG Pty Ltd started operations in July 1995 and since then has continued to provide specialised products and services to meet the particular needs of the brewery, food and beverage industry including dairies and the commercial and industrial sectors.

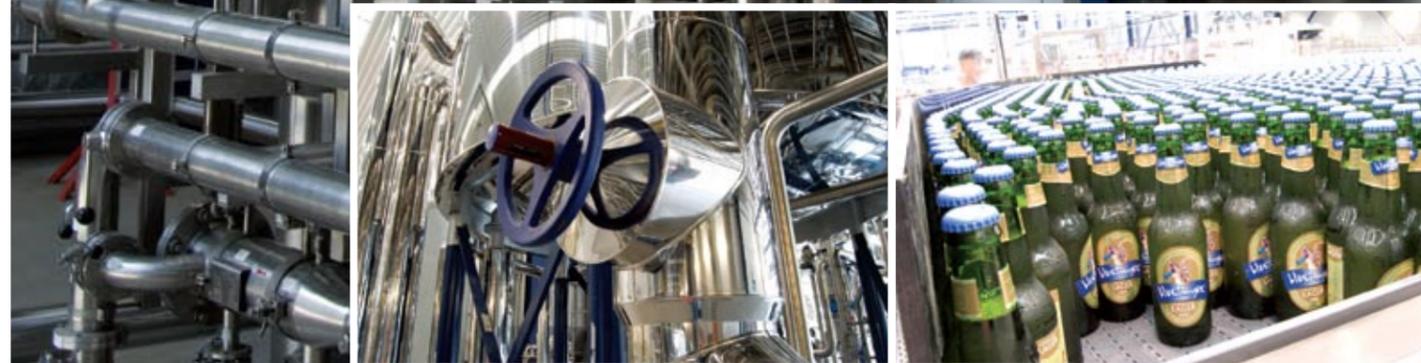
TFG Pty Ltd is at the forefront of providing total solutions integrating quality products and installation to industry.

Triplenine Stainless was formed in 2004 as a result of the strategic alliance of JPR Brooks Pty Ltd (trading as Jweld) and Achill Engineering Pty Limited and the combined resources of both these companies has seen Triplenine become one of the biggest in the design and fabrication of stainless steel process systems for the pharmaceutical, food and beverage industries.

The Bluetongue Brewery project is the first time the TFG Group and Triplenine have worked as a Joint Venture that has allowed for an efficient installation of the brewhouse, cellar and fermentation vessels, and also enabled each company to continue to service their other clients.

"On the Bluetongue project the Joint Venture installed the brewhouse, the cellar and fermentation vats as well as all vessels and equipment. In all it required about 16km of pipework,"

"As part of the job we also installed the pumps, heat exchangers, all valves, and instruments, and most of the welding was completed by specialists in sanitary welding," said Tom Moultrie, TFG Pty Ltd General Manager.



TFG Pty Ltd and Triplenine Stainless Joint Venture engaged tradesmen who meet the highest quality industry standards to meet the objective of the Bluetongue Brewery installation. As well as the sanitary welding specialists the Joint Venture partners had fitters and electricians on site, as well as a project management team.

For most of the project the partnership supplied around 50 crew and during the installation of the bottling plant that number grew to 60.

Although TFG Pty Ltd and Triplenine Stainless Joint Venture do their own manufacture of the stainless steel vessels and equipment needed in the food and beverage industry, Mr Moultrie said on this project the manufacturing was completed overseas and sent to Australia

"One of the components was the installation of 48 silos consisting of fermentation and storage vessels which were approximately 18m in height. The installation of the silos required the management of two cranes for a top-and-tail operation and we completed the installation at a rate of four per day," said Mr Moultrie.

He said the biggest challenge faced by the Joint Venture partners was the fact the project required complete installation and commissioning within an eight months' time frame which was achieved.

Justin Brooks, general manager of Triplenine Stainless said working on Bluetongue with TFG Pty Ltd had worked out well and as two of the only companies that specialise in this type of work he said it made sense to collaborate.

TFG Pty Ltd and Triplenine Stainless are both accredited members of ASDDA.

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ANOTHER STEP TOWARDS SUCCESS AT THE BLUETONGUE BREWERY

Millenniumair has been evolving its expertise since 1990 and the Bluetongue Brewery was another step in its evolution as one of Australia's leading air-conditioning specialists.

Although all modern industrial facilities require robust air-conditioned environments a world-leading brewery like the Bluetongue project required Millenniumair to combine its expertise not just in the manufacture and installation but also in design to ensure the strict environmental standards were met.

"Air-conditioning technology in the 21st century is a more precise science than previously. Industrial and commercial systems need to provide our clients with an environment that meets their exacting specifications for factors such as temperature, humidity, purity,

and odour," said Allan Holt, Millenniumair Director/Design and Estimating Manager.

"Millenniumair offers only the latest technology, materials and practices to its clients. Air-conditioning impacts the environment in many ways."

"As well as making living space comfortable, the systems we design seek to optimise energy efficiency and operate in harmony with the environment."

Mr Holt said the complexity of the project as well as the logistics required to complete it were challenging but Millenniumair's in-house resources met the contemporary design requirements.

"We provide turnkey solutions for clients that include the latest computer design tools, including CAMEL load estimation. On this project we worked with a consultant mechanical engineer to help with the design," he said.

"Design works comply with Australian standards, and industry codes of practice, including environmental sustainability." The system for Bluetongue was also manufactured by Millenniumair at its Hallam factory in Victoria, using the latest technology, equipment, methods and materials to ensure that all components were produced strictly to specification.

The project took five months to complete and required eight staff from design through to installation.

millenniumair

"To ensure every project is completed to the client's satisfaction, a senior project manager is appointed to oversee every aspect of the project. Our installers have an average of 20 years experience in all aspects of the mechanical services industry – from small to large. No project is handed over until full commissioning and balancing is complete, and operation and maintenance manuals have been compiled," Mr Holt said.

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NOT YOUR AVERAGE PLUMBING COMPANY

CB Commercial Plumbing Pty Ltd isn't your average plumbing company. Sure they do the types of jobs that regular commercial plumbers take on – industrial drainage and waste systems – but the Sydney-based outfit also specialise in those plumbing jobs that require finesse and expertise like the Bluetongue Brewery project.

The company is a partnership between Peter Cormack and Simon Bridge. Cormack had been operating as a hydraulics contractor in Victoria for more than 20 years and seven years ago, with Bridge onboard, expanded the business into Sydney where CB Commercial Plumbing Pty Ltd has become known as a specialist in jobs that require high quality work and attention to detail.

The Bluetongue Brewery project didn't just require a normal industrial waste system but one that could deal with the alcoholic waste the brewery will produce.

And for that the 10 tradesmen onsite for the three-month installation needed more than 1.5km of HDPE trade waste pipe work. The project also required 1.2Kkm fire service and domestic water ring main.

On top of this CB Commercial Plumbing Pty Ltd supplied approximately 180 stainless steel sumps which function as a catchment space for spillages throughout the brewery.

"They are stainless steel because the application which they will be used for requires a high strength durable, non corrosive material, and it is rare to have so many installed in one job," he says.

"For trade waste we used a type of pipe which is known as HDPE (Brand Gebrit supplied by Reece plumbing supplies), which like the stainless steel was chosen because of its high strength, durable, non-corrosive qualities and can deal with all the industrial drainage requirements such as oil and petrol, as well as the by-products of beer manufacture."

Bridge says because of the intricacies of the job, deadlines were stringent as the waste system for specific beverages had to be delivered at specific times.

As well as the Bluetongue Brewery project, CB Commercial Plumbing Pty Ltd has worked on a series of specialised industrial projects including the Aldi Distribution Centre in Prestons, Bev Chain/Tooheys Distribution Centre in Auburn, the Unilever Cold Storage in Minto and Hooker & Cockram project for the Elizabeth MacArthur institute of agriculture laboratory stage 1 and 2.



EYE CATCHING DESIGN

The staircase and balustrade in the Bluetongue Brewery aren't just an addition to add to the already eye-catching design of the project – they're also there to function as a safety feature in the world-class facility.

Command Contracting Engineering from Campbellfield in Victoria constructed the stainless steel balustrade and the glass infill panels in the balustrades for the facility.

Although not one of its bigger jobs, the manufacture of the components was highly specialised and required Command Contracting Engineering to work closely with architects and design engineers to ensure that measurement and installation were exact.

"We probably did about 100m of the balustrade. It's quite a specialised field," said Eric Magiris, director of Command Contracting Engineering.

"The builder had drawn up what they wanted on the site and we then had to measure for the staircase and build it to those specifications. The steel was bought and we manufactured it to the design."

The balustrade was installed on both sides of the staircase, along the walkway in the brewhall and along a second walkway around the brewing tanks.

"As well as the safety aspects of the balustrade it is also a feature of the design," Mr Magiris said.

The project took around a month to complete with four employees working onsite for installation.

"There were safety factors to consider during the installation, and our staff are specialists in welding. Our crew in Melbourne made the balustrade, while we also manufactured the posts, which had to be bought in separately, with the top rail and welded onsite."

Command Contracting Engineering also did some structural steel work in the waste water treatment plant, more specifically the RO building roof structure and staircase with platform, two canopies F101 and C101, and an access stair with platform to a rectangular concrete tank.

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THE REFRIGERATION SPECIALISTS



As one of Australia's premier refrigeration specialists, Gordon Brothers was well equipped for handling the unique requirements needed on the site for Blue Tongue Brewery. The company, part of the Hastie Group, is a leading provider of refrigeration systems for a range of industries, and after establishing itself in 1917, now operates throughout Australia and the UK.

Gordon Brothers worked in conjunction with Germany's Ziemann to design and supply an efficient, state-of-the-art refrigeration plant to meet all of the process cooling loads of the plant which are world's best practice and environmentally a cut above any that had been installed in Australia – or around the world.

The plant design incorporates the latest technologies developed by Gordon Brothers over its many years of working with breweries throughout Australia and the world.

One of the most innovative concepts in the Blue Tongue brewery is the installation of screw compressors - one dedicated to water chilling and liquid ammonia subcooling and the other for cooling the fermenters directly using pump recirculated ammonia. Pumped ammonia is also used for cooling glycol to -4C through welded plate heat exchangers. The ammonia and glycol systems are reticulated throughout the brewery providing cooling at the various process loads.

As part of the contract a number of beer to glycol heat exchangers were also supplied with glycol recirculation loops used to prevent freezing of the product by setting glycol temperatures at a level consistent with keeping the product outlet temperatures to their

specified level. Chilled water is also used for wort cooling and deaerated liquor cooling for the brewery to help maintain high efficiencies by keeping compressor suction temperatures high. Gordon Brothers also installed two large evaporative condensers that are used to supply a single liquid receiver and liquid ammonia for thermosiphon oil cooling of the compressor sets.

The design had to take into account the brewery's plan for expansion and the future need for another compressor and condenser. In keeping with the need for environmental efficiencies, each compressor has been fitted with variable speed drives allowing a speed range of 1000 rpm to 3800rpm to give maximum flexibility to manage the large variation in loads which occur when the brewery is in operation.

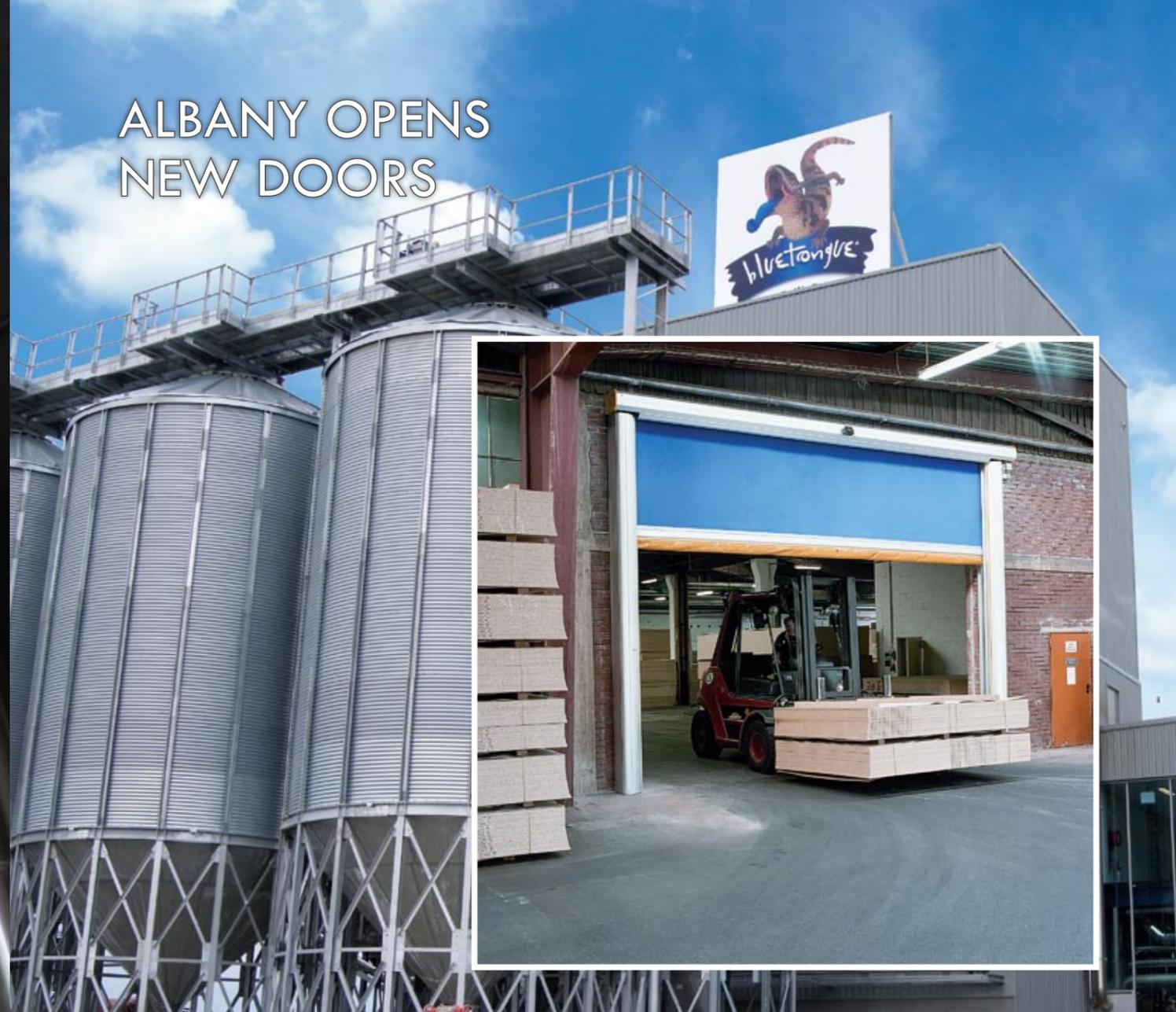
Variable speed drives were also fitted to the condenser fans with smart condenser control using ambient wet bulb temperatures to set condensing temperatures. A powerful PLC control system manages all of the control functions for the refrigeration plant with optimisation of the system giving low power consumption. On completion this will set the standard for design of refrigeration systems for breweries.

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ALBANY OPENS NEW DOORS



The high performance RollTex doors installed by Albany Doors at the Bluetongue Brewery not only provide the brewery with one of the most advanced high performance door systems in the world, but also a safety standard that is world's best practice.

Albany Door Systems' High Performance Doors are engineered to withstand the harshest of environmental conditions. The doors are constructed of strong, long-lasting fabrics, and durable steel and/or aluminium mechanical components. The company is Australia's leading manufacturer for the supply and installation of high speed doors to the Australasian market.

"The doors at Bluetongue Brewery are made from a polyester mono-filament coated with PVC. They are tensioned and balanced precisely and the beauty of that is that they can be disengaged from the motor at any time and operated by hand in the case of an emergency," says Les Davies, Albany Doors product and marketing manager.

"These doors will run at three metres a second which means when something like a forklift comes into the enclosed area the door will go up and come back down again very quickly to ensure no dust, dirt or rubbish can penetrate that area."

Albany Doors installed five doors in the brewery which took two specialised electricians around two weeks to complete.

"The doors were manufactured overseas and each is produced specifically for individual sites. They are measured to within three millimetres and each takes around a week and half to manufacture," says Mr Davies.

"One of the challenges on this project was that the door openings were much wider than normal, and they have a lot of safety aspects incorporated in them which are unique to Albany Doors. This means that we have to have specifically trained electricians for the installation to ensure the special control systems are correct and working at their optimum."

ALBANY DOOR SYSTEMS

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