

Sustainable and Environmentally-effective processing solution for JBS Australia



CLIENT

JBS Australia Pty Limited is a division of JBS, Brazil's largest multinational in the food sector, and the world's largest meat company. JBS Australia has an extensive presence along the eastern seaboard, with a number of domestic and globally recognised brand names including AMH, King Island Beef, Royal, Swift Premium, Tasman Meats and Tasmanian Premium Beef.

OBJECTIVES

JBS Australia's objective was to create an environmentally sound hides processing facility, allowing them the ability to process hides in-house and continue to meet their ever increasing supplier demand. This required redesigning their entire process from the ground up.

A significant design consideration was the use, storage and recovery of salt as this has traditionally created an adverse environmental impact. Wiley was contracted to design, engineer and construct the new facility.

CHALLENGES

- A swift result - Fast tracking everything— design and documentation, development and building approval, mechanical engineering, construction and commissioning
- Meeting all the environmental requirements of JBS Australia and the Department of Environment and Resource Management (DERM)
- Implementing new services to the existing infrastructure, without disrupting current operations
- Designing all aspects of the facility to deal with the highly corrosive salt environment
- Storms and bad weather throughout construction
- Meeting the requirements of concerned local council.

SOLUTIONS

Advice

- A critical path project style employing “just in time” management to keep all the project elements fast tracking and meeting a fixed time schedule. Including: design and documentation, mechanical engineering, procurement, approvals, development and building approval.
- Provision of a target sum price
- Brief for the Brine evaporator prior to tendering to ensure it could meet the desired processing rates.

Design

- Meet the facility design capacity of 6,000 hides per day, a 600 hide per hour design rate for conveyors, fleshing and palletising
- All materials and design elements were analysed and specifically selected to deal with the highly corrosive salt atmosphere
- Inclusion of a post-tensioned concrete floor within facility, which removes the need for floor joints that are easily damaged by forklifts, makes maintenance easier, reduces surface cracking and lasts longer than traditional concrete floor slabs. This design gives less opportunity for brine to seep into the ground and water table
- A fire-engineered solution to meet all statutory and regulatory requirements
- Ensured the maximise noise level of 40 decibels at the site boundary is met.

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Engineering

- Meet the facility design capacity of 6,000 hides per day, a 600 hide per hour design rate for conveyors, fleshing and palletising
- Design, procurement, installation and commissioning of all aspects of the plant, including:
 - Brine evaporator to remove excess water created during the curing process — one of seven (7) of its kind in the world and the only one in the southern hemisphere
 - Gas fired boiler 3.5MW to provide heating requirements for the evaporator
 - Cooling tower 2.8MW with a water feed of 172m³/hr to provide cooling to the evaporator
 - 2 fleshers allowing back to back fleshing to optimise throughput, improve safety and minimise labour
 - Class A environmentally acceptable recycled water used for all wash down, filling of raceways and toilets
 - Bio-filter used to deodorise waste air from the evaporator
 - Paddlewheels to circulate water and the hides in the raceways
 - Blowers to create aeration in the raceways for circulation and hides floatation
 - Overhead chain conveyors to transport the hides
 - Fleshings transportation augers at fleshers to feed to fleshing pumps
 - Palletising stainless steel tables with scales for folding and weighting hides
 - Presses to flatten pallets and further reduce brine
 - Pallet racking 5 deep x 4 high, hot dip galvanised steel construction.

Construction

- Earthworks and site preparation — removed vegetation, cut and fill to form pad for building
- Foundations — reinforced concrete pad footings and bored piers
- Floors — reinforced concrete laid to falls with additive to protect concrete from corrosion from the brine water
- Structural steel — hot dip galvanised steel portal frames, rafters cranked to form curved roof. Steel used is designed for use within 100m of breaking surf
- Roofing — colorbond ultra fixed to zam purlins to avoid salt corrosion with gutters and downpipes powder coated stainless steel
- Walls — horizontal precast panels with colorbond ultra sheeting on zam girts
- Metalwork — guard rails, walkways, handrails, stairs, louvers and platforms
- Raceways — 8 x 200KL brine raceways, reinforced concrete and sprayed with waterproofing membrane.

PROJECT RESULT

The new JBS Australia hide processing facility is world-class, innovative, environmentally-effective and sustainable and is designed to survive in a highly corrosive salt atmosphere. Easy to operate and maintain, this quality facility is also cost-efficient as it continues to function and evolve throughout its lifecycle.

This project was awarded the 2010 Master Builders Association Brisbane Housing and Construction Award for Innovation in Environmental Management.

