

CO₂ liquefaction – ammonia refrigeration

Air Liquide, Australia

Origin Energy operates an onshore natural gas processing plant, taking gas from the offshore Bass gas fields. The gas contains significant CO₂, which is separated, compressed by a compressor also supplied by RE, and this “waste gas” from the gas plant is then further processed by Air Liquide to produce food-grade CO₂ for the eastern Australian market. The refrigeration unit liquefies the CO₂ as well as chilling the process water for dehumidifying the raw incoming feed gas to the plant.

- 629 kW liquefying CO₂ at -27°C and 327 kW side load chilling water to +7°C
- Two-stage screw compressor, Mycom 2520LLC
- Flooded shell & tube evaporator liquefying CO₂
- Open flash economiser with flooded plate exchanger chilling process water
- Air-cooled fin-fan condenser & oil cooler

The unit is installed outdoors in a remote location. However, due to the quiet rural environment and nearby farms, sound level requirement is less than 72 dB(A). To achieve this stringent sound level, RE designed and supplied acoustic attenuation, not only to the compressor and pipework but also a ventilated enclosure containing the 650kW induction motor. The noise control techniques have proven extremely effective whilst still enabling good access for maintenance.

The system operates under wide load variations all year round, from 100% to 0% capacity. The air-cooled condenser fans are controlled by VSD providing close control, reduced noise and valuable energy savings at low loads.

Success was borne from close collaboration with the client at the plant concept stage for the integration into the overall plant design.

Ongoing after-sales client support is being provided through training, maintenance, spares and technical support.



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