

ENGINEERING CASE STUDY
FILTRATE DRYING PROCESS – AIR DRYER / FEBURARY 2004

1. INTRODUCTION

Developed for a biotech company that has developed unique and novel polymeric anti-microbial drugs for use in commercial animal production. The anti-microbial drugs are seen as a long-term replacement for anti-biotic drugs in animal production due to their superior bacteria-killing characteristics.

2. PROCESS DESCRIPTION

Within the state of the art Rockingham W.A. Manufacturing Facility a Filtrate Drying Process is an integral part of the manufacturing process. Two (2) Heuch **Spilt System Refrigerated Air Dryers** are designed to remove entrained moisture from a re-circulated air stream drying the filtrate.

The Filtration Section of the plant is an electrically hazardous area. The plant installation required specialist engineering to comply with the hazardous area requirements. The manufacturing facility also requires stringent controls on materials of construction where any item in the process stream is fabricated from stainless steel 316L

The process cooling demand can vary and as such the unit is required to operate with varying compressed air loads ranging from 0 to 100%.

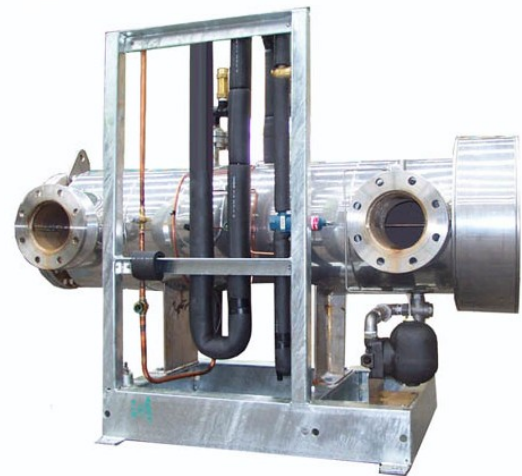


Figure 1: Stainless Steel Evaporator Module

3. PROCESS DETAILS

Refrigerant	R134A
Compressor Type	Open, Reciprocating
Evaporator Type	Shell and Tube, Hazardous Area
	AS1210 Class 3
	All 316L Stainless Steel
Refrigeration	Air Cooled, Remote Unit, safe area
Design Ambient	+4°C to +46°C

4. PLANT FEATURES

The plant features Two (2) off Custom built Remote System Refrigerated Pressure Vessels. The split system arrangement is employed to separate the refrigeration circuit. One module is designed for installation inside the electrically hazardous area and the other module to house all electrical components of the refrigeration system, which would be located outside the hazardous area.

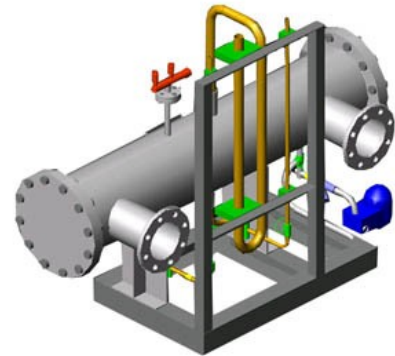
Modular Design is also employed to allow for future expansion of the process facility.

The Evaporator Module is a horizontal Shell & Tube Evaporator mounted on a galvanised steel skid base and engineered for location in an electrically hazardous area. The heat exchanger is fabricated from Stainless Steel 316L and is insulated and stainless steel clad. The exchanger is designed to cool the process air to the required dewpoint temperature in a single stage.

The Condensing Unit Module is a packaged unit that houses the reciprocating semi-hermetic compressor, liquid receiver, air-cooled condenser, ancillary equipment and instrumentation. The module is paneled for protection from the process environment.

The automated dryer operates at constant dew point (at pressure) at varying flows up to its rated capacity. An exclusive feature of the unit is the capacity control system that continuously and automatically adjusts the cooling effect to match to required 0% to 100% variation in cooling load.

The instrument control & electrical system is specifically engineered for integration into the facility's control system.



Evaporator Assembly
Engineering Development Drawing



Remote Refrigeration Unit located in a safe area

HEUCH PTY LTD *A.B.N.* 92 085 200 380
17 Friars Road, Moorabbin Victoria Australia 3189
email: cool@heuch.com.au www.heuch.com.au
Phone: 61-3-9555 7755 *Fax:* 61-3-9555 5451