

CASE HISTORY

Coors Brewery, Tadcaster

End User Coors Brewery
Process Iron and Manganese removal Sand Filters, Cartridge filters, Antiscalant Dosing, Reverse Osmosis
Application Process Water, Brewing



Reverse Osmosis Skids

Introduction

A 2000m³/day Reverse Osmosis Water Treatment System had been designed, installed and commissioned by ACWA to operate at the Tower Brewery of Coors Brewers at Tadcaster. The new plant provides high quality brewing water supplies for Coors – a market leader in supplying over 60 ales and lagers. Tower Brewery is capable of producing up to 30 million gallons of beer per year.

Description	Influent Characteristics Average	Product	Concentrate
Flow m ³ /day	2 x 1250m ³ /d	2 x 1000 m ³ /d	2 x 250m ³ /d
Suspended Solids mg/l	1 - 3	Nil	<1
Conductivity (average) 2500 µS/cm	800 µS/cm	<10 µS/cm	3,200 µS/cm
pH	8	6	8.5
Temperature °C	11-13	11-13	11-13

Description

Raw water

Raw feed water is pumped from two boreholes, dosed with sodium hypochlorite for bacteriological control and fed to a 30m³ capacity break tank. This is fitted with an ultrasonic monitor that communicates water levels to a plc within the central control panel, enabling it to start and stop the supply of feedwater from the boreholes as required. From there the water is pumped through GAC Contactors, to remove any remaining free chlorine, to a second RO feed break tank.

Water is drawn on demand by the dedicated RO feed pumps (mounted on the RO skid). The feed pumps deliver the required flow of 52m³/h at 4 bar to skid mounted 5-micron cartridge filter housings

Treatment skids

Two treatment skids are provided each as below. The skids operate as duty/assist according to demand from the brewery.

Feed Pumping

Water is drawn on demand by the dedicated RO feed pump (mounted on the RO skid). The feed pump deliver the required flow of 52m³/h at 4 bar to skid mounted 5-micron cartridge filter housing. The systems are fitted with sample points, allowing the operator to carry out the occasional analysis of filtration efficiency, if required.

Scale control

A strictly controlled antiscalant dose is added after the cartridge filter to minimise the potential for calcium sulphate and carbonate scaling.

High Pressure Pumping

An inverter driven high pressure pump then feeds the membrane array. The speed of these pumps is PLC controlled to maintain a fixed flow (at variable pressure depending on prevailing conditions).

Reverse Osmosis

Each of the RO plants has a two stage process containing 8 RO vessels staged 5:3. Each tube contains 7 KMS brackish water membranes in series. Each system is designed to accept 54m³/h filtered feedwater at up to 16 bar. This is provided by the inverter driven high pressure pumps.

On each skid a concentrate control valve is positioned by the PLC in order to maintain a fixed flow of 10.4m³/h ensuring the plant operates at 80% permeate recover at all times.

Post treatment

The common permeate from flow both skids is dosed with NaOH to elevate the pH before being transferred to a storage tank approximately 200m away. No re- pumping is required as the RO feed pump is sized to overcome the 1 bar transfer back pressure to the storage tank.