



## YORKSHIRE WATER PLC, LEEDS

### MAIN CONTRACTOR:

ACWA Services Ltd

### INDUSTRY:

Water Utility

### DATE OF CONTRACT AWARD:

1996

### CONTRACT VALUE:

£180,000

### ACWA CONTRACT NO:

A0443



### INTRODUCTION

An air stripping plant, which removes carbon dioxide from 30 m<sup>3</sup>/hour of river water at Yorkshire Water plc treatment works in Headingley, North Leeds.

### DESCRIPTION

River water is dosed with hydrochloric acid to reduce its pH level thereby releasing carbon dioxide into the water. The acidified water is then discharged through a distributor at the top of a packed stripping column; flowing down over the whole area of random packings which form multiple surfaces for the displacement of carbon dioxide. A centrifugal fan blows ambient air into the base of the stripper, to absorb carbon dioxide as it passes upwards through the packings and discharges to atmosphere from the top of the column. The stripping column is designed to accept variations in the flow of liquid without affecting the optimum performance of the process.

Random packings used in the stripping column provide a very large surface area in relation to the volume they occupy, enabling the carbon dioxide to be stripped into the air, whilst their open structure reduces the pressure drop as it passes upwards through the column. This provides energy cost-savings through the use of relatively small fan motors and enables the use of a more compact system.

Processed water collects in the sump at the base of the stripping column, from which it is pumped directly to a lime dosing plant. A monitoring device measures the treated water level within the sump and modulates the

feedwater flow control valve to regulate the river water into the system – enabling the plant to operate continuously with varying demand from the downstream lime dosing plant.

As treated water leaves the stripping system, its pH is measured and the value is used to adjust the stroke of the dosing pumps to satisfy seasonal changes in water quality.

The plant's electrical control panel incorporates all the motor starters and inverters, together with a plc system which enables the plant to be automatically controlled and to transmit required information to the site SCADA system. A roadside filling point allows road tankers carrying hydrochloric acid to discharge safely. At this point, a local control panel provides the lorry driver with an indication of current acid stocks. Safety showers are installed, both at the filling point and adjacent to the dosing pumps.

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