



CURRICULUM VITAE

NAME RICHARD WILLIAM HILL

NATIONALITY BRITISH

DATE OF BIRTH 2 DECEMBER 1947

QUALIFICATIONS BSc (Hons) Chem Engineering, University of Leeds, 1970
Chartered Engineer, 1977
Fellow Institution of Chemical Engineers, 1989
Member CIWEM, 1987

HISTORY

1988 - Date	Director, Whitewater Ltd.
1983 - 1988	Proposals Manager, Esmil Water Systems Ltd.
1979 - 1983	Marketing Director, Chiltern Water Treatment
1977 - 1979	Proposals Engineer, Dewplan (WT) Ltd.
1975 - 1977	Proposals Engineer, Neckar Water Eng. Ltd.
1972 - 1975	Projects Manager, Houseman (Burnham) Ltd.
1970 - 1972	Scientific Officer, Water Research Centre.



EXPERIENCE SUMMARY

WHITEWATER LTD

Consultancy services in water and wastewater treatment including site investigations, feasibility studies, system design, equipment specification, commissioning and training. Typical projects:

Review of process design for refinery water supply, Delaware City, USA a 25Mld variable salinity river water treatment plant comprising pre-treatment by lamella clarification and filtration followed by reverse osmosis to potable standards and ion exchange polishing for boiler make-up water. Client: Valero Energy

Advice and technical support to the operator on a new treatment plant for boiler make-up and cooling water including recovery using reverse osmosis and mixed bed ion exchange for CHP Plant Water Supply, Immingham, UK. Client: Ondeo

Process design review for water supplies to a new power station at Kaeng Khoi, Thailand comprising potable water, cooling water, boiler make-up water and wastewater treatment. Water source is a river with treatment by coagulation, clarification, filtration, reverse osmosis (11.5Mld) and ion exchange demineralisation (8.5Mld) Client: Alstom

Process design and specification for 100m³/h mixed bed ion exchange plant to treat RO permeate. Client: ACWa

Peer review of process design for a 600m³/h ion exchange deionisation scheme for BNFL, Sellafield. Client: WRc

Review of Contractors' designs for methanol dosing and tertiary denitrification, HAZOP study and Risk Assessment for extension to Poole Sewage Treatment Works, Dorset. Client: MWH

Process design for 4.5Mld municipal water treatment (iron and manganese removal) plant for Anglian Water. Client: Birse.

Process design and specification for 30Mld municipal water treatment plant including ozone, DAF, filtration and GAC adsorption for Wessex Water. Client: Wimpey Water.

Process design and specification for 37.5Mld municipal water treatment plant comprising chemical dosing and GAC adsorption for Severn Trent Water. Client: Tarmac Construction

Process and hydraulic design for 30Mld gravity filtration plant for Veolia Central, Chertsey WTW. Client: MWH

Process design, specification and tender adjudication for 55m³/h rinse water recovery and effluent treatment system, using ion exchange, chemical precipitation and chelating resins, for Cookson-Fukuda copper foil factory, North Shields. Client: Mott Macdonald.

Conceptual design study for water and effluent treatment for a major oil refinery in Hainan, China. Client: Foster Wheeler.

System design and specification for 260te/day plant for the disposal of industrial liquid wastes comprising transfer station and treatment system including chemical precipitation and sludge dewatering, Hartlepool. Client: Shanks & McEwan.

Process design for 400m³/day landfill leachate treatment plant using biological nitrification/denitrification in sequencing batch reactors for Cumbria Waste Management. Client: MWH

Process design for 12m³/day cupreous metal processing effluent for Delta (Manganese Bronze). Client: RPS Thompson

On-site process trouble shooting and design modifications for a 200m³/h fine chemicals production effluent treatment plant for Zeneca comprising blending, neutralisation, metal precipitation, activated sludge, final settlement, sludge handling. Client: Binnie Black & Veatch

Water management practices review and *Legionella* risk assessment for IBM. Client: Clayton Environmental.

Investigation into scaling and microbial fouling problems on a 180m³/h brewery RO and remineralisation plant for nitrate removal from brewing liquor. Client: Interbrew UK.

Investigation into microbiological problems in a contact lens factory purified water system for Essilor, Manila. Client: MWH Singapore

Process design check for 300m³/h UF-cation-anion-mixed bed demineralisation plant and 300m³/h condensate polisher for oil refinery in China. Client: MWH

Feasibility study for re-use of treated urban wastewater for cooling tower make-up at an energy-from-waste centre. Client: London Waste

Performance review of a central renal dialysis water system at Letterkenny General Hospital, Ireland. Client: PEI

Investigation of 30Mld DAF plant performance and specification for modifications at Nantybwhc WTW. Client: Dŵr Cymru Welsh Water.

Process and hydraulic design for 1.7Mld ground water treatment plant at Guernsey Airport. Client: Trant Construction.

Investigation into boiler feed ion exchange demineralisation plant performance problems at Qatar Petrochemicals. Client: WRc.

Visiting expert for technical training (ion exchange and membrane technology) of water treatment engineers in Shanghai, China. Client: United Nations Industrial Development Organisation.

Assessor and Project Monitoring Officer for several UK Government funded development projects. Client: Technology Strategy Board

Provision of bespoke technical training courses for clients including Koch Membranes, Yorkshire Water, PCI Membranes, Corby Power, Hanovia, SCI IEx2012.

Expert Witness sludge processing plant failure. Client: Barlow Lyde Gilbert

ESMIL WATER SYSTEMS LTD

Overall responsibility for the operation of the Company's Proposals Department including process design, cost estimating, tender preparation and contract negotiation for major UK and overseas projects. Typical projects:

15m³/h purified water system for liquid pharmaceutical products manufacturing. Client: ICI Pharmaceuticals (Zeneca).

20m³/h three stream ion exchange deionisation system for boiler feed at AWE Aldermaston. Client: Property Services Agency

40m³/h ion exchange deionisation plant as an extension to an existing plant at a pharmaceuticals factory. Client: Rhone Poulenc

50m³/h 18MΩ.cm ultrapure water plant for semiconductor manufacture incorporating reverse osmosis, ion exchange, ultrafiltration and ultraviolet. Client: NEC Semiconductors.

65m³/h treatment of oily wastewater from a produced water re-injection system at Wytch Farm using dissolved fuel gas flotation and centrifuges. Client: BP Petroleum Developments

200m³/h boiler feedwater ion exchange deionisation plant for a sugar refinery. Client: Tate & Lyle.

215m³/h potable water supply and 25m³/h boiler feed water for explosives factory in Thailand. Client: Nobel Explosives

240m³/h refinery effluent treatment using API separators, chemical oxidation, dissolved air flotation and activated sludge. Client: Thai Oil Refinery Co.

500m³/h oil refinery effluent treatment plant in Greece using the BP Process. Client: Petrola Hellas.

700m³/h oil refinery effluent treatment plant at Uran, India using plate interceptors, sand filters and high rate biofilters. Client: ONGC

DEWPLAN GROUP LTD

Initially employed by Dewplan (WT) as a Projects Engineer with responsibility for system design, equipment specification, cost estimation, preparation of proposals and contract negotiation for large industrial water purification schemes in the UK. Transferred to Chiltern Water Treatment division with responsibility for management and marketing of products including ion exchange, reverse osmosis, ultrafiltration and microfiltration. Typical projects:

Ion exchange/reverse osmosis system for production of 1000l/h of apyrogenic water for pharmaceuticals manufacture. Client: Wellcome Foundation, Dartford.

1000l/h reverse osmosis plant for a central renal dialysis water supply system. Client: Cromwell Hospital, London.

Ultrapure water system to supply 5000l/h of 18MΩ.cm quality water for semiconductor manufacture and recovery of rinse water. Client: IBM, Hursley.

Ion exchange deionisation plant to supply 5000l/h of water for whey processing: Client: Express Dairies, Ruislip.

Ion exchange deionisation plant to supply 5000l/h of water for cosmetics manufacture: Client: Avon Cosmetics, Northampton.

Iron removal and ion exchange plant to supply 15m³/h of deionised water for paint manufacture. Client: ICI Paints, Stowmarket.

Ultrapure water ion exchange system to supply 15m³/h of 18MΩ.cm quality water for video disc manufacture and recovery of electroplating rinse water. Client: Thorn-EMI, Swindon

45m³/h ion exchange deionisation plant to produce 0.1µS/cm quality water for power station boiler feed. Client: Reed Paper Group, Darwen, Lancs.

NECKAR WATER ENGINEERING LTD

Design and sales responsibility for a wide range of municipal and industrial water purification schemes in the UK and overseas. Activities included process and plant design, cost estimation, equipment specification, commercial terms and contract negotiation. Process experience in clarification, filtration, flotation, ion exchange and deaeration. Projects included a four village water supply scheme for Benue State, Nigeria.

HOUSEMAN (BURNHAM) LTD

Initially responsible for on-site development testing of chemical scale and corrosion inhibitors for boilers and cooling systems. Additional activities included technical sales backup, general trouble shooting and commissioning of ion exchange plant - softening, dealkalisation and demineralisation. Later responsible for the operation of the Company's plant division including proposals, contract execution, general management and in-house training.

WATER RESEARCH CENTRE

Design, construction and operation of pilot plant including experimental programme planning, evaluation of results and reporting.

EXTRAMURAL

1980 - 1995	Visiting lecturer Cranfield University
1995 - Date	Recognised Teacher Cranfield University
1997 - Date	Visiting Fellow Cranfield University
1996 - Date	Visiting lecturer at UNESCO-IHE, Delft
1997 - Date	Visiting lecturer University College London
2010 – Date	Visiting lecturer Brunel University
1989 - 2003	Secretary of Institution of Chemical Engineers Water Subject Group.
2002 - 2006	Chairman of the Institution of Chemical Engineers Membership Committee.
2006 - Date	Inspector, British Accreditation Council (independent further & higher education)

PUBLICATIONS AND PAPERS

- 'Biological Oxidation of Ammonia in River Waters' SWTE, 1972.
- 'Industrial Water Treatment - The Way Ahead' IChemE London 1977.
- 'Ion Exchange' (Chapter) in 'Handbook of Water Purification', Lorch (Ed), McGraw Hill 1981.
- 'Water in the Pharmaceutical Industry' Manufacturing Chemist May 1981.
- 'Removal of Silica from Water' Chemistry in Britain Dec 1982.
- 'Monitoring High Purity Water Quality' Process Water Symposium 1983.
- 'DIRO - A New Application of Existing Technology' The Chemical Engineer Dec 1983.
- 'Water Treatment for Steam Power Plant' IMechE Symposium, 1985.
- 'High Quality Water' The Chemical Engineer December 1987.
- 'A Purified Water Installation' IChemE Symposium Manchester 1987.
- 'Water Treatment Systems' IChemE Symposium, Stevenage 1988.
- 'Prescriptions for Purity' (with D A Stewart) IChemE Conference Cranfield 1989.
- 'Solving Water-side Problems' (with G S Solt) IMechE Symposium London 1990
- "Water Quality Measurement And Validation" IChemE Conference Cranfield, 1995.
- "Water Quality Monitoring for USP23" JPAG Conference July 1996
- "Water – Utility or Feedstock?" European Pharmaceutical Review, 6 1 (2001)
- "Slowing Down the Technological Race" European Pharmaceutical Review, 7 1 (2002)
- "Engineering Money - Financial Fundamentals for Engineers" (with G Solt) Wiley, 2010