

HITECH INTERNATIONAL

Water & Wastewater Technology

**Hitech
BioReactors
Limited**

HITECH INTERNATIONAL offers a highly specialised service in the field of Water and Wastewater Treatment. The company was formed in 1979, and has since been involved in many large and prestigious water treatment projects around the world, as well as providing assistance on smaller schemes. We have a broad base of expertise covering most Water and Wastewater Technologies.

HITECH provides the necessary specialist expertise for the Planning, Design, and Commissioning of Water and Wastewater Treatment Plants of all types, and in any part of the world.

Philosophy of the Consultancy Services

The Philosophy and Intent of the Design Services offered is to provide all necessary *Specialist Information and Design Input* to enable a project team of non-specialist engineers to procure and construct turnkey Water, Sewage, and Effluent Treatment works.

HITECH utilises the most advanced computer based design systems to provide an efficient and cost effective service. Unique software developed in-house is available for many specialist design activities, including Hydraulic Design of Plant, Piping and Structures: design of Activated Sludge Systems and Sequencing Batch Reactors: Reverse Osmosis Desalination design: Flotation Systems: Filter Design & Performance Projections etc.

HITECH input is specialist Conceptual Design, Primary Design, Process Engineering, Layout, Hydraulic Design, and Equipment Scheduling. Detailing is generally not undertaken by **HITECH**, but we are able to organise this as a sub-contract activity.

Refurbishment and Upgrading

We have considerable experience and expertise in the refurbishment of existing treatment facilities, to regain lost performance, or to provide an increase in throughput or treatment quality.

Municipal Water Treatment

We have filter floor designs for all configurations of Rapid Gravity Filters, including Plenum or Lateral systems, in concrete or steel tanks. We can convert from Settlement to Flotation, from Sand to Carbon, from consecutive air/ water to combined air/ water, from Manual to Automatic.

Sewage Treatment

We can increase Biological Treatment capacity by side-stream aeration at lowest cost. Add Primary, Secondary or Tertiary Treatment systems to existing works. Add Automatic Control Systems, Sludge Treatment & Drying, Ammonia Removal, Nitrate removal, Digester Liquors, etc.

Services

Process Design

A highly specialised service, utilising sophisticated CAD and Modelling Systems. Technology is available for most Water, Sewage, and Effluent Treatment processes.

Hydraulic Analysis

Hydraulic Analysis and design is carried out using computer based technology specially developed for optimum performance within the limits of a treatment facility.

Engineering Design & Mathematical Modelling

Full design of all aspects of Water Treatment Systems, including Process, Civils, Mechanical, and Electrical.

3D Modelling

Complete 3D CAD modelling of all treatment plants.

Process Control

Preparation of Control Specifications for fully automated treatment plant, with PLC coding if required.

Commissioning

Mechanical & Process commissioning & trouble-shooting.

Feasibility Studies

Theoretical or Pilot Plant based studies to determine and optimise the treatment process.

Equipment Testing & Proving

Performance Testing of Aeration Equipment to determine Standard Oxygenation Efficiency. Tracer studies to assess compliance with Performance Guarantees with respect to mixing efficiency and retention characteristics of reactor vessels & systems.

HITECH INTERNATIONAL

Major Water Projects

Services & References

Project	Client	Type of Plant	Capacity
Sheung Shui Water Treatment Plant, Hong Kong	Jardine/ Biwater	Production of potable water by chemical coagulation & flocculation, followed by Rapid Gravity Filtration & disinfection.	120 MLD 31.7 USMGD
Sai Kung Water Treatment Plant, Hong Kong	Jardine/ Biwater	Production of potable water by chemical coagulation & flocculation, followed by Pressure Filtration & disinfection.	12 MLD 3.2 USMGD
Tangerang Water Treatment Plant, Indonesia	Mitranava/ Biwater	Production of potable water by chemical coagulation, flocculation, clarification, followed by Rapid Gravity Filtration & disinfection.	240 MLD 63 USMGD
Severn Trent Water Draycote Treatment Plant	Ames Crosta Babcock	Production of potable water by chemical coagulation & flocculation, dissolved air flotation & Rapid Gravity Filtration & disinfection. Fully Automatic remote operation.	15 MLD 4 USMGD
Wessex Water Authority, Durleigh Treatment Plant	Water Management Purac	Production of potable water by chemical coagulation & flocculation, dissolved air flotation & Rapid Gravity Filtration & disinfection.	28 MLD 7.4 USMGD
Mobil Oil Indonesia, Arun Treatment Plant North Sumatra	Mobil Oil Engineering	Potable water plant including raw water reservoir, coagulation & flocculation, Clarification, Pressure Filtration & disinfection.	0.4 MLD 0.1 USMGD
Welsh Water PLC, Elan Valley Treatment plant	Biwater Treatment	Potable water by chemical coagulation & flocculation, dissolved air flotation, Rapid Gravity Filtration, Pressure Filtration, & disinfection. SCADA & Full Auto.	8 MLD 2 USMGD
Nassiriya Treatment Plant, Iraq	Biwater Treatment	Conventional potable water treatment plant (Hydraulic Analysis)	250 MLD 67.2 USMGD
Severn Trent Water Authority, Copley Pumping Station	Mannesman	Potable water from borehole source, marginal & super-chlorination/ de-chlorination by SO ₂ , SCADA & full Auto	7.2 MLD 1.9 USMGD
Anglian Water PLC Marham Treatment Plant	Biwater	Chemical coagulation & flocculation, clarification, followed by Rapid Gravity Filtration & disinfection. Full Auto	12 MLD 3.2 USMGD
Welsh Water PLC Mayhill Treatment Plant	Acer (Hyder)	Feasibility study—plant automation, SCADA, and telemetry, incorporating total water group: Clariflocculators, Rapid Gravity Filters, & disinfection.	2.6 MLD 0.7 USMGD
Welsh Water PLC, Court Farm Treatment Plant	Acer (Hyder)	Potable water by chemical coagulation & flocculation, Clarification, Rapid Gravity Filtration & disinfection. Rationalisation of plant, monitoring & automation.	161 MLD 42 USMGD
Welsh Water PLC Hirwaun Treatment Plant	Acer (Hyder)	Potable water by chemical coagulation & flocculation, dissolved air flotation, Rapid Gravity Filtration, Pressure filtration, & disinfection, storage & pumping. Fully Auto.	8 MLD 2.1 USMGD
Welsh Water PLC Tyn-Y-Waun Treatment Plant	Acer (Hyder)	Feasibility study Colour, Aluminium, and Manganese removal	13 MLD 3.4 USMGD
Welsh Water PLC Llyswen Treatment Plant	Birse	Chemical coagulation & flocculation, Clarification, Rapid Gravity Filtration & disinfection, monitoring & automation.	5 MLD 1.2 USMGD
Welsh Water PLC Preseli Treatment Plant	Miller Construction	Chemical coagulation & flocculation, Flotation, Rapid Gravity Filtration, Pressure Filtration, disinfection, & pumping. SCADA & full auto.	20 MLD 5.3 USMGD

HITECH INTERNATIONAL

Major Water Projects—continued

Services & References

Project	Client	Type of Plant	Capacity
Anglian Water PLC Colney Treatment Plant	Birse	Potable water by Rapid Gravity Carbon Filtration, novel floor design for automatic carbon removal.	13.5 MLD 3.6 USMGD
Anglian Water PLC Beck Row Treatment Plant	Birse	Potable water by Rapid Gravity Carbon Filtration, novel floor design for automatic carbon removal.	18 MLD 4.7 USMGD
Welsh Water PLC Llewynon Treatment Plant	Red Talon	Rapid Gravity Filter floor design PVC lateral type, air/ water wash.	120 MLD 32 USMGD
Welsh Water PLC Cantref Treatment Plant	Birse	Novel Rapid Gravity Filter floor design PVC lateral type, circular concrete tanks, air/ water wash, negative pressure bed, full auto.	30 MLD 8 USMGD
N West Water PLC Sutton Hall Treatment Plant	Birse	Refurbishment of Rapid Gravity Filters: filter floor design, plenum and lateral systems, automation, surge suppression.	120 MLD 31 USMGD
Yorkshire Water Thornton Steward Treatment Works	Birse	Refurbishment of Hopper Clarifiers, Rapid Gravity Filters: filter floor design, from lateral to plenum/ combined air/ water, sludge treatment systems, automation.	15 MLD 4 USMGD

Major Desalination Projects

Buwayb Desal Plant Saudi Arabia	Ames Crosta Babcock	Desalination of deep aquifer by Reverse Osmosis, including: cooling towers, lime softening/ clarification, rapid gravity filtration, RO desal, disinfection, & pumping. Fully auto.	60 MLD 15.8 USMGD
Jeddah Water Reclamation Plant Saudi Arabia	Ames Crosta Babcock	Treatment of sewage to potable water standards by Bacteria bed, extensive pre-treatment including Ozone, followed by RO desalination & disinfection.	30 MLD 7.9 USMGD
Majma'ah Desal Plant, Saudi Arabia	Hydranautics	Desalination of deep aquifer by Reverse Osmosis, including: cooling towers, lime softening/ clarification, pressure filtration, RO desal, de-gassing, disinfection. Fully auto.	4.4 MLD 1.2 USMGD
Lanzarote II Desal Plant, Canary Islands	Ames Crosta Babcock/ Cadagua	Seawater Desal System comprising Beach Wells, Pressure Filtration, Cartridge Filtration, RO Desal, followed by carbonation & re-hardening. Turbine energy recovery.	7.5 MLD 2 USMGD
Mykonos Desal Plant, Greece	Invent / Metek	Seawater Desal System comprising Beach Wells, Pressure Filtration, Cartridge Filtration, RO Desal, followed by carbonation & re-hardening. Turbine energy recovery.	1.2 MLD 0.3 USMGD
Syros Desal Plant, Greece	Invent / Metek	Seawater Desal System comprising Beach Wells, Pressure Filtration, Cartridge Filtration, RO Desal, followed by carbonation & re-hardening. Turbine energy recovery.	1.2 MLD 0.3 USMGD
N W Hutton Oil Platform, North Sea, UK	Ames Crosta Babcock	Seawater Desal System, including Pressure Filtration, Carbon Filtration, Cartridge Filtration, RO Desal, followed by Post-treatment facilities	50 M3/D 13,000 GPD
Iraqi National Oil Co Basrah, Zubair, Rumailah, Iraq	Ames Crosta Babcock	3 schemes: Desalination of River Water by Reverse Osmosis, including: Pressure Filtration, Cartridge Filtration, de-gassing, RO desal, disinfection.	3.8 MLD 2.9 MLD 1.9 MLD
United Nations IDO Electronics manufac- ture, North Korea	Pollution Control	Ultrapure water for washing Micro-circuits: system includes Pressure Filtration, Cartridge Filtration, de-gassing, RO desal, ion exchange polishing.	50 M3/D 13,000 GPD

HITECH INTERNATIONAL

Major Wastewater Projects

Services
&
References

Project	Client	Type of Plant	Capacity
Arabian Gulf University	Dontaire	Two stream Extended Aeration Activated Sludge Plant employing Fine Bubble Diffused Air	520 M3/D
Neath Co Council Ynysarwed Treatment Plant	Birse	Treatment of minewater for canal discharge. Iron & manganese removal by aeration and precipitation, lamella clarifiers, sludge treatment by centrifuge	3.2 MLD
Glaxochem Ltd Cumberland	Simon-Hartley	Effluent treatment plant to treat Pharmaceutical waste by lime/ ferric treatment, settlement, and sludge pressing.	1.2 MLD
Severn Trent PLC Redditch STW	Simon-Hartley	Three stream activated sludge plant, fully automated, Diffused Air, with Dissolved Oxygen blower control	50 MLD
Welsh Water PLC Leominster STW	Acer (Hyder)	Feasibility Study: Inlet screening, settlement, bacteria bed filters, final settlement, & storm overflow.	21 MLD
NOSWA Kirkwall WwTW	Pierse	Novel SBR system: complete design, supply, and install contract	9 MLD
Welsh Water PLC Llanfoist STW	Acer (Hyder)	Feasibility study, plant monitoring, conventional activated sludge system. Process automation & Telemetry.	8.6 MLD
N West Water PLC Barrow STW	Miller	Major sludge treatment centre, inc: inlet screening, sludge mixing/ balancing, belt thickeners, membrane sludge press.	129 MLD
N West Water PLC Blackburn STW	Miller	Major sludge treatment centre, inc: inlet sludge screening, mixing/ balancing, belt thickeners, membrane sludge press.	250 MLD
Welsh Water PLC Cog Moor STW	Hyder	Integrated inlet works with flow diffusion, screening, storm weirs, & grit removal, inc full hydraulic design. Complete works P&IDs and control philosophy.	195 MLD
Severn Trent PLC Sutton-in-Ashfield STW	Christiani & Nielsen	Extended aeration plant, surface aeration, 4-zone system providing nitrification/ de-nitrification: Tertiary Rapid Gravity Filters, sludge handling systems.	17 MLD
Yorkshire Water PLC Hull STW	YWE JV	Major new works inc: pumping station, inlet works Lamella Clarifiers, 8 Reactor Jet Aeration SBRs, extensive sludge treatment/ thickening, digestion, dewatering, drying.	172 MLD
Yorkshire Water STW Calder Vale WwTW	Harbour & General	New activated sludge plant, inc sewage lifting station, anoxic contacting, aeration systems and FSTs	74 MLD
Southern Water PLC Lion Point Sewage System	Christiani & Nielsen	High lift sewage pumping system incorporating Grit Removal, Screening, Disintegrators, Storm screening, Storm water holding and pumping - <i>disguised as a Bandstand!</i>	6.8 MLD
N of Scotland Water Lerwick Stornoway Kirkwall	Christiani & Nielsen	Primary Treatment and sludge thickening/ dewatering systems, Storm Flow treatment and pumping	10 MLD 17 MLD 34 MLD

HITECH INTERNATIONAL

Major Wastewater Projects - Cont.

Services
&
References

Project	Client	Type of Plant	Capacity
Robin Hood Airport Doncaster	Naston Ltd	Pumping and screening, Hitech Advanced BioReactor system, tertiary Carbon Filtration	2 MLD
Zanzur WwTW Libya	CD Bissell Engineering Ltd	Complete refurbishment of primary and secondary treatment plant, & tertiary rapid gravity filters	10 MLD
Yorkshire Water Withernsea WwTW	Harbour & General	Four zone activated sludge plant, inc anoxic contacting, aeration systems and FSTs	6 MLD
Al Abyad WwTW	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	2,500 Population
Khalayf WwTW	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	2,500 Population
Bint Bayyah WwTW Libya	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	5,000 Population
Ar Raqabah WwTW Libya	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	2,500 Population
Ar Qaraya WwTW Libya	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	2,500 Population
Al Fujayj WwTW Libya	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	2,500 Population
Garagara WwTW Libya	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	2,500 Population
Burayk WwTW Libya	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	2,500 Population
Germah WwTW	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	2,500 Population
Arayfa WwTW Libya	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	5,000 Population
Al Hatiyah WwTW Libya	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	5,000 Population
Obari WwTW Libya	CD Bissell Engineering Ltd	Pumping and Screening, Hitech Advanced BioReactor System, UV disinfection, sludge drying	10,000 Population

HITECH INTERNATIONAL

Major Wastewater Projects - Cont.

**Services
&
References**

Project	Client	Type of Plant	Capacity
Lyondell Petrochem Houston TX	C D Bissell Engineering	Petrochemical plant effluent. Pre-treatment followed by activated sludge system and clarifiers	11.5MLD
Army Barracks Tripoli	C D Bissell Engineering	Conventional extended aeration activated sludge system - Screening, aeration, settlement, UV disinfection, drying	2,000 Population