



Technologies
for
water & waste water
treatment



Our origins ... deeply rooted in process industries ...

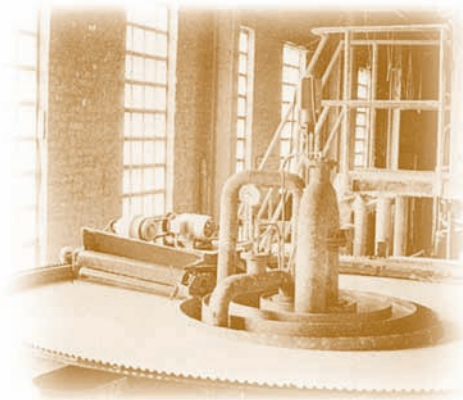
KWI designs and manufactures water and waste water treatment equipment and systems for most industrial and municipal applications. It is considered one of the pioneers of dissolved air flotation (DAF) technology and is the oldest existing DAF equipment builder in the world.

Founded over 50 years ago by Dr Milos Krofta as Krofta Engineering Corporation, the company started by building water treatment and fibre recovery installations for the paper industry. With an extensive installed base, in all continents, the name has become almost synonymous with the industry itself.

While the paper sector still forms a significant part of its business, in the last five decades KWI has developed and deployed a considerable range of water clarification equipment and technologies across multiple industries and applications. The company

has gradually evolved over the years to meet these growing markets. By the end of the 1980's it had created a dedicated fabrication facility in Austria and, more recently, an advanced R & D centre in France.

During the early 1990's Krofta Engineering changed its name to Krofta Waters Inc. (KWI) and recently a new organisation, KWI International, was formed to incorporate all of the companies, the people, the assets and the intellectual property of the KWI group. To be closer to the Austrian manufacturing and French engineering centres, new international headquarters have been established in Europe. Benefiting from this global network of regional engineering groups, marketing, sales and service divisions, KWI provides customers with research, resources, systems and support.



Vast process knowledge ...

People are the key to knowledge at KWI.

- A dedicated world-wide team ... working in different conditions, in different markets, with different applications ... all utilising and leveraging strong central R & D and product engineering ...
- Employing 50 years of innovative best practices deployed correctly each time by impressive regional engineering teams ...

- Over 35 qualified engineers supported by 95 additional technical staff working in Europe, Asia and the Americas.

KWI people provide the world's processing industries with proven solutions, expertly implemented, based on sound engineering principles, technical innovation and a creative approach to liquid / solid separation technology.

Extensive installed base ...

KWI has more than 3600 installations world-wide in a range of industries treating tens of millions of cubic metres of water and waste water per year ...

INDUSTRIES		MARKETS	
PAPER	over 1000	NORTH AMERICA	over 600
FOOD & BEVERAGE	over 2000	SOUTH AMERICA	over 300
MUNICIPAL	over 600	EUROPE	over 2000
POTABLE & PROCESS WATER	over 30	ASIA/AUSTRALIA	over 600
GENERAL APPLICATIONS	over 300	AFRICA	over 30

KWI today ... technologies for a sensitive environment ...

World-wide environmental awareness and essential legislation requires companies to operate in an environmentally responsible way. Market forces strongly reinforce this message ... end product users insist upon the finest environmental credentials. It

makes strong economic sense, therefore, to work with world-class experts to deploy technology, equipment and systems to achieve efficient, cost effective environmental goals.



Broad technology ...

KWI boasts considerable success in its field. Its commitment to fully satisfy customer demands, and its study of constantly changing market requirements, has resulted in the development of seven DAF clarification platforms, the most complete range in the market today.

Combined with extensive experience utilising complementary technologies and a wide array of technical partnerships, KWI is ideally placed to offer the most appropriate equipment and services solutions to clarification and filtration problems.

Manufacturing quality and efficiency ...

The company's dedicated manufacturing facilities and product engineering group are located in modern industrial premises in Klagenfurt, Austria. Here, all fabrication and production systems are performed strictly in accordance with ISO 9001 and ISO 14001 quality standards. Intimate cooperation between R & D, product engineering and fabrication ensures continuous improvements in product function and cost.

Research & Development ...

KWI has always been a creative company. From the original Krofta rectangular Unifloat introduced in 1947 to the highly advanced Megacell® clarifier marketed today, the group has constantly innovated. This effort has resulted in over 35 patents being awarded since the company was founded, with multiple patents pending today as KWI continues to respond to market requirements.

KWI's regional engineering teams are ready to match customers' specific needs with its wide experience and technology database, to create an innovative and efficient solution unique in the industry.

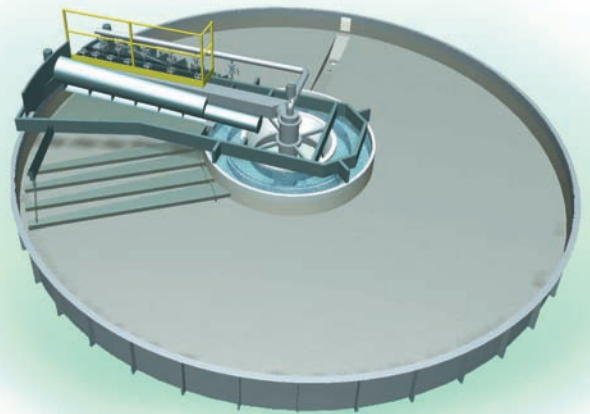
Primary treatment ...

Primary treatment involves the physical separation of suspended and colloidal material from a water or waste water stream. In many cases it may also involve chemical coagulation and flocculation to enhance removal efficiencies. The combination of physical-chemical treatment incorporating dissolved air flotation clarification is one of KWI's specialities.

This technology is currently used in food processing plants and dairies, where fats, oils and greases must be removed, in paper production effluent, in industrial effluent treatment, and in municipal effluent before biological treatment ...

The choice of both process and equipment will depend on the application. KWI has a large installation database at its disposal and this, along with the possibility of running pilot plant simulations, laboratory tests and analysis, enables the best combination

KWI SUPERCELL™



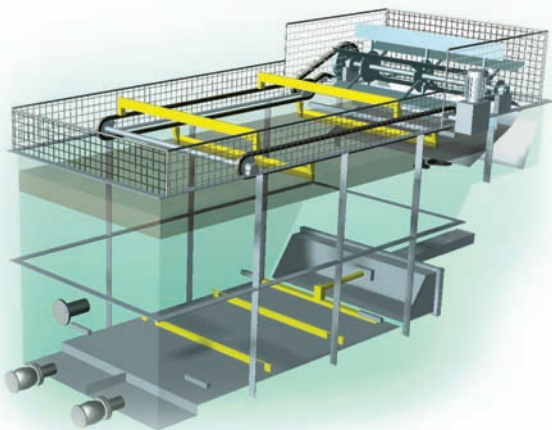
Tannery



Environmental protection - fish processing oil recovery



KWI UNICELL™



SediCone™ calcium carbonate recovery



KWI MINICELL™



Minicell™ installation

Biological treatment ...



Activated sludge plant

Biological treatment systems reduce polluting materials in waste water streams by utilising micro-organisms. This well established technology is also capable of removing organic constituents such as ammonium, phosphorous, etc.

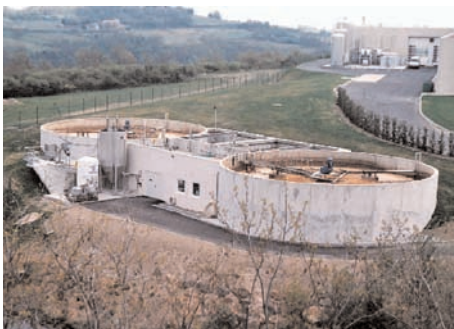
Today's regulatory pressures require effluent plants to perform better than ever before. Many industries have traditionally relied on primary treatment processes only for their waste water treatment. This has performance limitations and may not remove sufficient amounts of polluting material to a suitable level to meet discharge consents or allow water recycling.

KWI biological treatment systems are designed generally for particular cases of industrial effluent treatment where conventional solutions are not applicable or are inappropriate.

Combinations of primary physical-chemical pre-treatment and continuous bioreactors or SBR systems have been successfully used in many difficult cases.



Sequential batch reactor (SBR) - rubber manufacture



SBR plant, cheese factory



Surface aerator



SBR plant, vineyard

Biological sludge clarification & thickening ...



Biological sludge thickening, dairy



Biological sludge thickening, municipal plant

Sometimes traditional settlement clarification after the bioreactors can be quite difficult and unstable. The reason for this varies - high concentration of salts in the effluent, particularly 'light' biomass, de-nitrification in the secondary clarifiers, sludge bulking or a host of other reasons.

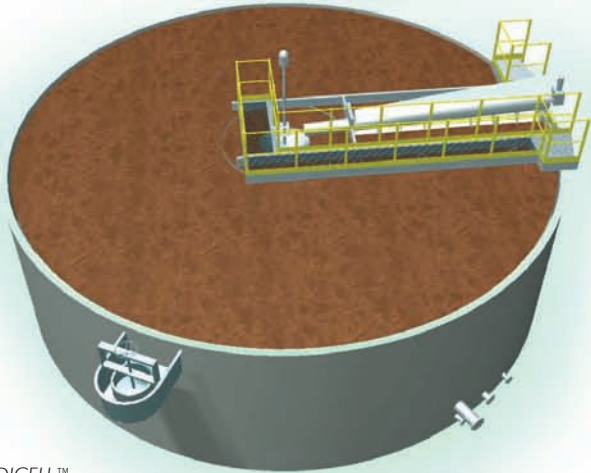
Dissolved air flotation is a good alternative to sedimentation in these cases. It allows the use of significantly higher biomass concentration in the bioreactors saving construction costs, volume and, therefore, space.

Excess biomass is also removed in the form of sludge in the biological treatment stage to allow further biomass growth. The thickening of this sludge before de-watering is another common application for DAF technology.

KWI's Sedicell™ clarifier is designed primarily for biological sludge clarification and thickening applications. Combining settlement and flotation, a specific hydraulic design and sludge recovery facility allows a deep sludge blanket to be built up for optimum clarification and better sludge thickening. A floated sludge consistency of up to 6% is currently achieved with small amounts of flocculant being only occasionally used to cover peak hydraulic and solids loadings.



Sludge thickening



KWI SEDICELL™



Biobuffer backwash water clarification and sludge thickening

Fine clarification & water polishing ...

Tertiary treatment or 'polishing' applications are more and more necessary to improve final effluent quality after biological treatment for either discharge or recycling. Phosphorous precipitation and additional 'hard' COD removal is also a growing need.

The KWI Klaricell™ clarifier removes fine suspended solids utilising flocculation, dissolved air flotation clarification and double media sand filtration in one unit, ensuring the highest efficiency coupled with economical and simple operation.

For smaller flows, KWI also supplies the KS-Filter™, a continuous back-washing gravity sand filter using an airlift pump to lift dirty sand from the bottom to the sand washing chamber at the top.



Tertiary effluent, irrigation



KWI KS - FILTER™



KS - Filter™ industrial tertiary effluent

Potable & process water clarification ...

Traditional methods of producing potable and high quality process water involve separate primary clarification and filtration stages to remove organic and inorganic contaminants.

With the KWI Klaricell™ clarifier, both can be combined in one compact unit and successfully employed for municipal or industrial use, especially in cases where high suspended solids concentration in the raw water occur. This is the case when surface water containing algae or other organic and inorganic materials, giving occasional or permanent turbidity, is treated.

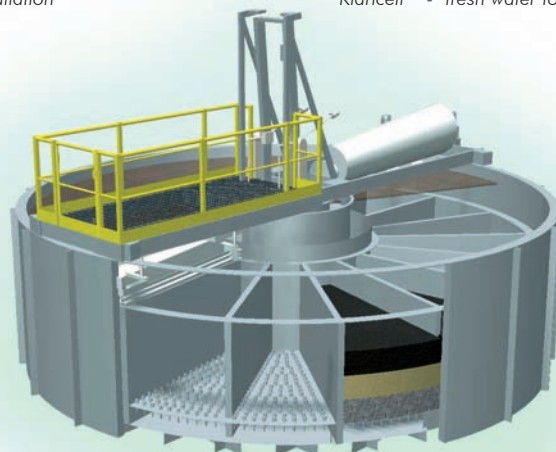
The combination of DAF clarification, with the capacity to remove significant amounts of solids, along with fine double media sand filtration, giving excellent filtration quality in a single clarifier, is a reliable and economical solution for these applications.



Potable water installation



Klaricell™ - fresh water for paper mill



KWI KLARICELL™

Process applications ...

KWI is strategically placed to serve process industries world-wide, with its equipment and systems becoming, in many cases, an integral part of the production cycle. Typical process industry applications include petrochemical, rubber manufacture and plastics recycling, paper and board manufacture, non-wovens, and many, many more.

Petrochemical industries generally have specific requirements concerning equipment quality and particular manufacturing procedures, whilst rubber and plastics industries are often located in dry countries with poor water resources. They require significant recycling of raw materials from their effluent.

Petrochemical plant



Effluent treatment and water recycling project, rubber manufacture



Denim dyeing plant effluent treatment

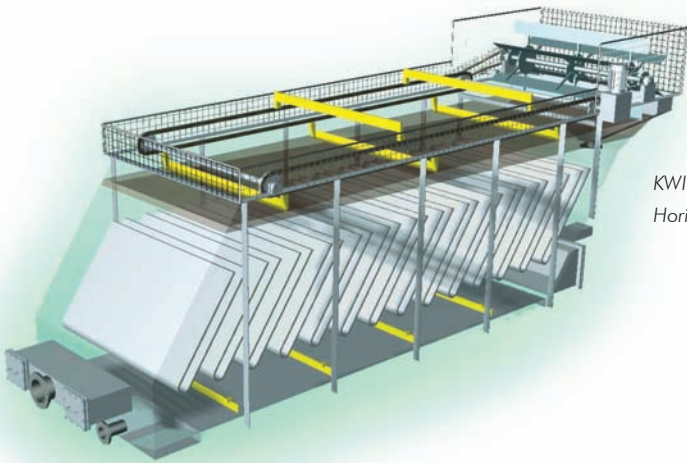


Non-wovens high pressure needle spray water recycling



Megacell® - coal dust recovery, power station

... paper industry ...



KWI MEGACELL®
Horizontal

Paper industry experts with extensive knowledge of this specialised process provide solutions to system and effluent treatment problems created throughout the paper making process.

Individually treated short loops in the paper mill generally achieve the best improvements in terms of raw material and fresh water cost savings and include such areas as :-

- paper machine whitewater
- paper machine deinking wash water
- reject streams
- raw water
- press filtrates
- TMP filtrates

Other paper industry applications for KWI systems and equipment include :-

- Deinking plant
- Pulp manufacture
- Non-woven products



Megacell® - tissue deinking



Vertical Megacell® MCV20
operating on washer filtrate
in newsprint mill

Supercell™ - effluent treatment



KWI MEGACELL®
Vertical



Vertical Megacell® MCV80.4 -
board mill



Supercell™ - tissue machine,
white water

Engineered process solutions ...

KWI doesn't just install equipment ... it installs guaranteed engineered solutions to water and waste water treatment problems. Its customers' needs are always individual and often unique.

Its comprehensive range of equipment provides a strong technology core, whilst its R & D group working with process and project engineering form a total solution team that ensures the most appropriate

approach to each and every challenge.

This specialised team has capabilities ranging from process consulting to developing customised equipment. It provides complete project engineering including process selection, purchasing, construction and commissioning management, and a full range of installation services, to guarantee plant conformity and process verification.

Turnkey project, paper



Pressurisation, ADT installation



Turnkey drinking water project - with lamella settlement and sandfiltration

Deinking washwater clarification



Surface aerator showing floats

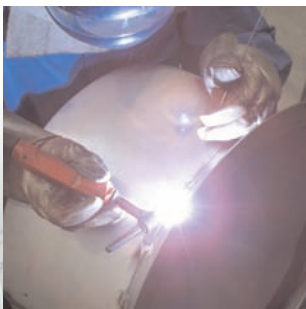
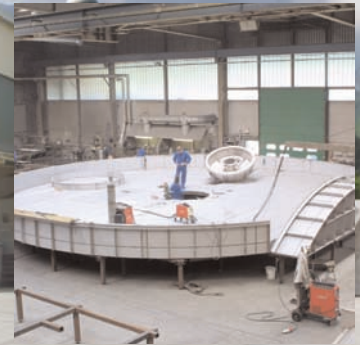
Manufacture, installation & commissioning ...

KWI provides technology and builds equipment and systems on a global basis. Its major manufacturing and fabrication plant, of over 4000m², is situated in Austria. Here a team of over 40 expert engineers and manufacturing specialists combine the best of both traditional and digital production skills allowing the simultaneous construction of many plants with short delivery times.

Continuous research and development programmes at KWI help it remain at the forefront of innovative technology for today's water and waste water treatment. The Austrian plant also maintains fabrication and test facilities for the many prototypes designed by the R & D group.

Additionally, its engineering capacity allows it to offer a comprehensive service facility for both its own and other suppliers equipment. Maintenance, downtime repairs, fabrication of tanks and vessels, machinery alignment or general engineering services can all be provided through its global network.

KWI spares, too, are held at various locations throughout the world to enable essential service and wear parts to be shipped to customers without delay.





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