

Transformation to the Factory of the Future via Organic Solvent Nanofiltration...

.....the future has arrived !



20th Century



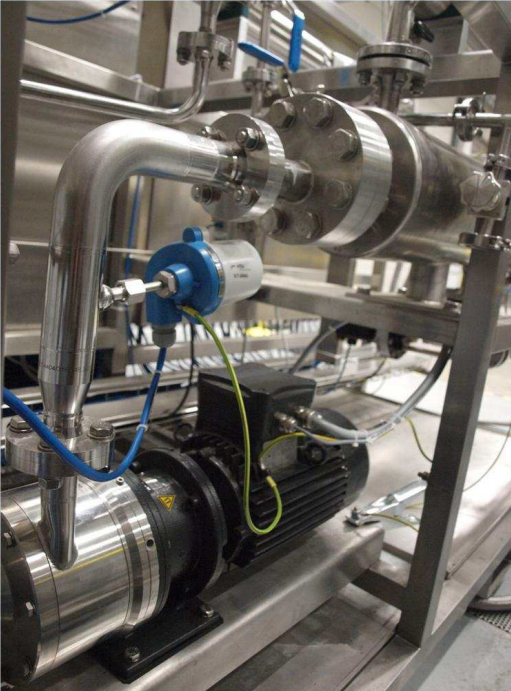
21st Century



- 80% less energy intensive
- Minimal Carbon Footprint
- Flexible Retrofit Design
- 90% less Waste

- Lower Capital Investment
- No Chemical Reactions
- Increased Capacity & Efficiency
- Continuous Production Cycle
- Highest market specifications





GKA Technologies can help deliver a competitive edge.

With 30 years experience in the solvent refinement industry, we provide a flexible and robust alternative solution to your distillation process

Factory of the future

GKA Technologies (GKAT) offers a new groundbreaking process which will create a paradigm shift in the future of Chemical/ Pharmaceutical processing and recycling.

We have been conducting organic solvent nanofiltration (OSN) trials for the past 4 years, and have developed a new process which will reduce selected solvent impurities to the levels of parts per trillion (ppt).

It is anticipated that this new process will redefine the future of Chemical/ Pharmaceutical manufacturing for the foreseeable future.

Pilot Plant

A custom designed pilot plant, with a flexible retrofit design, has been built to demonstrate the benefits of this new process.

Process parameters have all been optimised to produce a product with cost benefits greater than 80% compared to existing technology.

Substantial cost savings are realised in areas such as energy, labour, waste, productivity and capacity. The data generated to verify these claims was produced using industrial scale membranes.

The modular design of the process delivers an unlimited increase in capacity, with a direct correlation between membrane surface area and permeate flow rates. At low capital cost, the end user could increase capacity 10 fold by simply increasing the membrane surface by a commensurate factor.

The table on the following page demonstrates the effectiveness of achieving the highest available market specifications (<0.1ppb) with 35 metals.

The flexible process design will accommodate a retrofit into an existing distillation facility, thereby operating alongside the existing technology rather than making it redundant immediately.

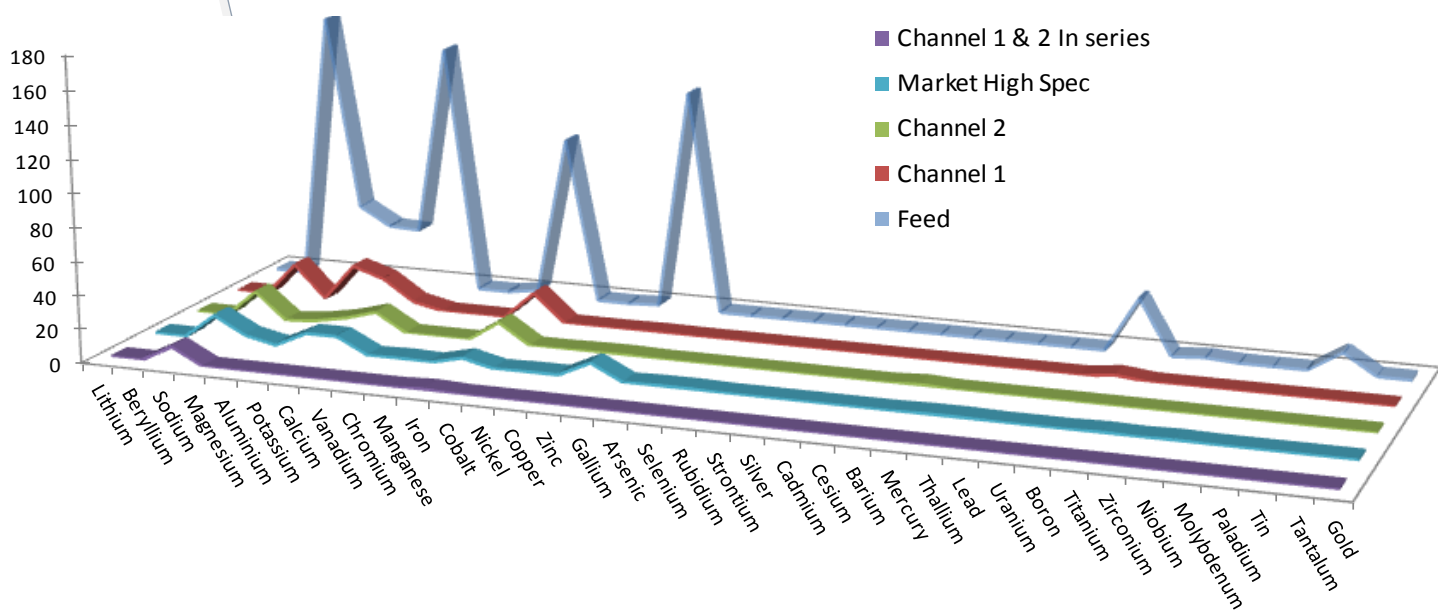
We are looking at the factory of the future, where space, waste, energy and labour are all cut by a factor of 80%, allied to exponential capacity increases.

Reap the benefits

- Lower Capital costs
- Lower Energy requirement
- Smaller carbon footprint
- Increased capacity
- Increased efficiency
- Reduced waste
- No catalysis/chemical treatment
- Reduced manufacturing footprint
- Retrofit design
- Highest quality product

Pilot Plant Results							
Measured in Parts per billion (ppb)							
Metal Species	Feed	Channel 1	Channel 2	Channel 1 & 2 In series	Market low Spec	Market medium Spec	Market High Spec
Lithium	1	0.1	0.1	0.100	50	10	0.5
Beryllium	1	0.1	0.1	0.100	n/a	10	0.5
Sodium	163.6	20.1	16.2	<10**	50	25	15.0
Magnesium	46.6	1	0.5	0.100	50	10	5.0
Aluminium	35.8	22.8	2.2	0.100	50	10	1.0
Potassium	34.9	16.8	5.7	0.100	50	25	10.0
Calcium	149.6	4.2	11.1	0.100	50	25	10.0
Vanadium	1	0.1	0.1	0.100	300	30	0.5
Chromium	1	0.1	0.1	0.100	20	5	1.0
Manganese	3.8	0.1	0.1	0.100	10	1	0.5
Iron	99.4	16.8	12.4	<1**	50	10	5.0
Cobalt	1	0.1	0.1	0.100	20	5	0.5
Nickel	1	0.1	0.1	0.100	10	1	1.0
Copper	2	0.1	0.5	0.100	10	1	1.0
Zinc	134.3	0.4	0.6	0.100	50	25	10.0
Gallium	1	0.1	0.1	0.100	50	10	0.5
Arsenic	1	0.1	0.1	0.100	5	1	1.0
Selenium	1	0.1	0.1	0.100	n/a	1	1.0
Rubidium	1	0.1	0.1	0.100	n/a	1	0.5
Strontium	1	0.1	0.1	0.100	10	1	0.5
Silver	1	0.1	0.1	0.100	20	5	0.5
Cadmium	1	0.1	0.1	0.100	20	5	0.5
Cesium	1	0.1	0.1	0.100	n/a	1	0.5
Barium	1	0.1	1.1	0.100	20	5	0.5
Mercury	1	0.1	0.1	0.100	n/a	1	1.0
Thallium	1	0.1	0.1	0.100	n/a	1	1.0
Lead	1	0.1	0.1	0.100	50	10	0.5
Uranium	1	0.1	0.1	0.100	n/a	1	0.5
Boron	33.9	2.3	0.1	0.100	10	1	0.5
Titanium	1	0.1	0.1	0.100	20	5	1.0
Zirconium	2.35	0.1	0.1	0.100	300	30	0.5
Niobium	1	0.1	0.1	0.100	n/a	1	1.0
Molybdenum	1	0.1	0.1	0.100	300	30	0.5
Paladium	1	0.1	0.1	0.100	n/a	1	0.5
Tin	13.23	0.1	0.1	0.100	50	10	0.5
Tantalum	1	0.1	0.1	0.100	n/a	1	0.5
Gold	1	0.1	0.1	0.100	20	5	0.5

** Limit of detection of ICP-MS for this element



About GKA Technologies

GKAT is a research and development company with a unique background in the area of nano porous membrane separation technology as it applies to 'process intensification' in the Pharma/Chemical manufacturing industry.

A concentrated R&D programme over the past 4 years has led to a major breakthrough in the Purification of electrochemical grade solvents, achieving impurity levels down to ppt (parts per trillion) through a nano based separation technology.

This new process has been tested and verified at pilot plant level and is designed to create a paradigm shift in the future production/purification of all products in the Pharma/Chemical industry, with emphasis on high purity and commercial grade solvents



Savings of up to 80% in energy, labour and waste coupled with an exponential increase in capacity have been verified, and the pilot plant is currently available for demonstration purposes. GKAT will continue its programme to achieve process intensification through solvent resistant nanofiltration

Find out more

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Patent Pending

