

Water Specialists for the Nuclear Power Sector Adding value through quality and reliability

ovivowater.com

## Creating value in water

Ovivo is a company with technically and commercially excellent people who embody its core values. Our engineers are encouraged to challenge the status quo and to exhibit an enterprising spirit to innovate and lead our customers to a solution that offers best value. This value may be in the recovery of waste; the reuse of water; a holistic approach to water and wastewater or improved efficiency and operational costs; not just a low capital cost.

We place our engineers in easy reach of unrivalled heritage and experience and empower them to access this specialist knowledge wherever it exists globally within the company, providing a level of service that is fast, proven and accurate.

Ovivo defines its raison d'être in its vision: to create value in water. This is reflected in every aspect of our business; as we drive new efficiencies and value into the design of water and wastewater solutions. Core to this is our people; our brand humanizes and differentiates our global business; taking the emphasis away from equipment and focusing upon the "how" rather than the "what".

#### Our model

Dedicated to a model that offers global leading technology on a local basis through a network of offices across five continents, Ovivo has:

- Developed partnerships with key customers, suppliers and agents whom we work with over and over again.
- Learnt how our clients like things done, and our suppliers know how we like things done.
- Maintained local knowledge and contact through established distribution channels.





Ovivo - creating value in water through innovation, creativity and expertise in clean water, process water, wastewater treatment, wasteto-energy and water reuse markets across 5 continents.



#### It is all part of our heritage

Many of our customers, suppliers and agents have been working continually with Ovivo and its heritage brands

## Brackett Green®

#### **Kennicott®**

## Christ Water Technology®

for many years and this is key to our successess. The in depth knowledge of the issues that our customers face with water and wastewater treatment and our extensive product range enables us to offer complete flowsheet solutions either using our own in house developed technologies or those from our partners.

The fluidity of Ovivo's innovative culture, allows us to change shape to meet the needs of the sectors and to bring new efficiencies and lower lifetime costs

## "Our competitive advantage as a challenger brand."

#### **Customer service**

Ovivo concentrates very much on Aftermarket and after sales service and are looking to add value in this area too from the simple supply of spares through refurbishments to maintenance contracts.

# Our role in the nuclear sector

As we respond to an imperative, our thirst for energy, nuclear power generation is gaining ever greater focus on every continent.

Between now and 2050, the world's population is estimated to swell towards 9 billion, consuming more energy than the combined total used in all previous history. Under prevailing patterns of energy use, the results will prove calamitous.

As we recognize nuclear power is an indispensible asset to meet these needs, it would not be possible without vast amounts of water in its generation. Water heats, it cools, it lubricates, and conditions; and during phase change drive turbines; it washes away impurities. Ovivo is able to manage water use at every stage of nuclear energy production.

#### **Applications**

Ovivo through its group of companies can help with the specification and design of most of the water treatment equipment found on a nuclear power plant. Including:

#### **Cooling Water Intake Screening Systems:**

Drum or Band Type with Fish Recovery and Return.

#### **Cooling Circuit Conditioning:**

Biodegradable Mexel 432® treatment prevents biological growth.

#### **Auxiliary Cooling Circuit Treatment:**

Fully Automatic, High Capacity Backwashing Strainers. Condenser Protection:

Fully Automatic Self Cleaning Debris Filters.

#### **Condenser Tube Cleaning:**

Fully Automatic Ball type On-Line Tube Cleaning System.

#### Steam Generator Make-up systems:

Purifying seawater, surface water or potable water feed sources. A multitude of robust technologies available including, pretreatment, membrane and ion exchange based processes.

#### Condensate Polishing:

Particulate Filtration, Internal and External Regeneration based on CONESEP® technology.

#### Side Stream Filtration:

Pressure Sand Filters to limit solids in cooling systems. Wastewater Treatment:

Bespoke systems of Ovivo equipment as required.

#### **Storage Pond Water Treatment**:

Recirculation and removal of ionic impurities.

By offering the complete flow sheet of equipment and expertise in all areas we are able to reduce overall plant water consumption and running costs.

#### **Engineering Excellence**

Ovivo has experienced engineers who are fully conversant with the use of Computerised Fluid Dynamics (CFD), Finite Element Analysis (FEA) and Three Dimensional Computer Aided Design (3D-CAD). These tools and our engineer's ability to help ensure robust and reliable equipment which is seismically qualified to meet the requirements of the nominated nuclear design code. Ovivo companies have been key suppliers to the nuclear industry since its inception in the 50's (see over).

#### Safety & Environment Focussed

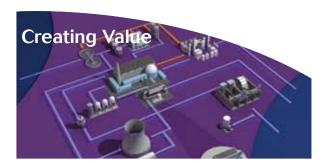
Ovivo are fully conversant with the imperatives of Safety within the Nuclear Industry. Most Ovivo entities have robust business processes that are in line with the requirements of ISO18001 for Health and Safety Management and ISO 14001 for Environmental Management. Ovivo implement robust business processes to ensure this, including the use of Design Risk Assessments, HAZOP analysis and analyse Full Method Statements, to arrive at safe procedures for safe installation and commissioning at site.

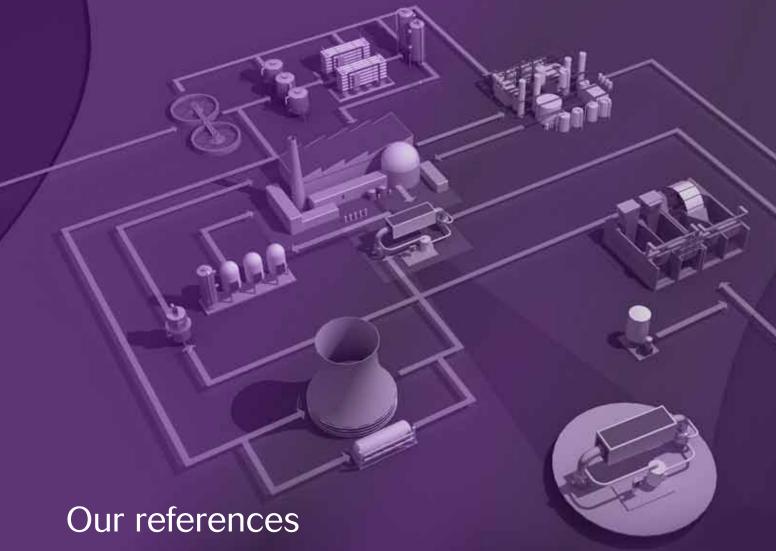
#### **Quality Focussed**

Ovivo entities pride themselves on a robust quality culture with most operating quality management processes in line with the requirements of ISO 9001 to ensure timely delivery of equipment compliant with the relevant standards and requirements. Local quality control is implemented wherever we manufacture in line with thoroughly documented Quality Plans. Material traceability and document control systems support a right first time, every time ethos of operational excellence and constant improvement.

#### **Nuclear Standards**

Ovivo have worked with the various required standards for Mechanical and Electrical design be they safety related or not. We have experience of supplying equipment to meet international technical requirements of ASME III, RCC-M/RCC-E and various national regulatory requirements such as the Finish STUK codes.





| Reactor | Cooling | Water |
|---------|---------|-------|
|         |         |       |

Hinkley Point B UK 1968 1971 Heysham I UK 1980 Qin Shan Nuclear China

1980 Torness UK Ling Ao I China 1997

Boiler Make Up 1958 Berkeley UK 1960's Hunterston B UK 1960's Kahl Germany 1961 Dungeness A UK

1963 Oldbury UK 1970's Gösgen Switzerland

1970's Gundremmingen B+C 1970's Heysham II UK

1973 Hartlepool UK

1980's Hunterston B UK

1980's Isar II Germany

1980's Leibstadt Germany

1980's MHK, Coburg Germany

1987 Sizewell B UK

Leibstadt Switzerland 2006

Beznau I Switzerland 2007 2008 Beznau II Switzerland

#### **Condensate Polishing**

1960's Hunterston B UK

1963 Oldbury UK 1970's Heysham II UK

1970's Isar I Germany

1970's Leibstadt Switzerland

1970's Loviisa II Finland

1970's Mühleberg Switzerland 1970's Philippsburg Germany

1970's Würgassen Germany

1980's Brokdorf Germany

1980's Daya Bay China 1987 Sizewell B UK

1988 Wylfa UK

Würgassen Germany 1994

Leibstadt Switzerland 1997 Ling Ao I China

1998 Beznau II Switzerland

#### **Cooling Water Intake**

HMS Vulcan UK 1957 1958 Berkeley UK

Hinkley Point A UK 1958 Hunterston A UK 1958

1960's Sellafield UK

Dungeness A UK 1961

1961 Sizewell A UK

Oldbury UK 1963

Wylfa ÚK 1963

1966 Dungeness B UK 1967 Dounreay UK

Hinkley Point B UK 1968

Hunterston B UK 1968

1969 Hartlepool UK

1970 Doel Belgium

Heysham I UK 1971

1971 Ko-Ri Korea

Hartlepool UK 1972

1978 Koeberg South Africa

1978 Ko-Ri Korea

Koeberg South Africa 1979

Winscale UK 1979 HMS Vulcan UK 1980

1980 Torness UK

1985 Calder Bridge UK 1987 Sizewell B UK

Indian Point USA 1989

1994 Pickering OPG Canada

1994 Salem USA 1996 Maine Yankee USA

1997 Ling Ao I China

Quad Cities USA 2001

2003 Lungmen Taiwan 2004 Cooper USA

2004 Olkiluoto III Finland

2005 Ling Ao II China 2005 Olkiluoto III Finland 2006 **Oyster Creek USA** 2008 Diablo Canyon USA

### Cooling Water Make Up

and Treatment 1970's Leibstadt Switzerland

1980's Isar II Germany 1960's Hunterston B UK

1962 **Dungeness A UK** 

Oldbury UK 1963

Hinkley Point B UK 1968

Heysham I UK 1971

1973

Hartlepool UK

#### **Effluent Treatment**

1958 Berkeley UK 1960's Hunterston B UK

1961 Dungeness A UK

1963 Oldbury UK

Hinkley Point B UK 1968

1970's Mühleberg Switzerland

Heysham I UK 1971

1973 Hartlepool UK

#### Pond Water Treatment

1958 Berkeley UK

1960's Hunterston B UK 1961 Dungeness A UK

1963

Oldbury UK Hinkley Point B UK 1968

1970's Heysham II UK 1970's Hunterston B UK

1970's Mühleberg Switzerland

1971

Heysham I UK Hartlepool UK 1973

1980 Torness UK

#### **Reactor Water Treatment**

1970's Brunsbüttel Germany

1970's Isar I Germany

1970's Krümmel Germany

1970's Leibstadt Switzerland

1970's Loviisa I Finland

1970's Mühleberg Switzerland 1970's Philippsburg Germany

1970's Würgassen Germany

1980's Gundremmingen

B + C Germany

1980's Leibstadt Switzerland 2005 Olkiluoto III Finland

Flamanville France

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