**IE expo China 2017 Innovation Forum/ TAG China:**

***The most cutting edge water technologies for the advancement of environmental protection in China***

**Hosted by Isle Utilities**

**IE Expo China, Shanghai**

**Session 2: Thursday May 5th | 14:00-15:30**

**Location: Innovation Forum in the Innovation Pavilion**

***Chairman:*** *Annelies Schenk – Director Isle Utilities*

***Jury:***

* *Gijsbert de Bruin- CEO CHC Group*
* *Maarten Roos – Managing Director R&P China Laywers*
* *Tbd*

**Agenda**

**14:00    Introduction by Isle Utilities Annelies Schenk**

**14:05 Kick off by Launch Factory 88 Gijbert de Bruin**

The roadmap of investing in innovative environmental technologies that want to gain a competitive advantage in the Chinese market.

**14:15 Biocleaner    Dennis Tee**

The BioCleaner system sets the bar of microbial water treatment system to a whole new level. It employs a unique modular and portable system that enables a single step process to eliminate odour, sludge, ammonia, nitrogen and phosphorus. Using no chemicals, their Bio Safety Level 1 microbes always provide good results with a risk free impact to the environment.

The BioCleaner uses a GREEN patented microbial media and delivery system to treat all kinds of organic waste found in industrial applications, residential waste and natural water ways. This technology makes it more impervious to system upsets and shocks common in many water applications. This system does not require regular refills or dosing as it reproduces microbes rapidly for better water quality.

BioCleaner’s consistency in delivering outstanding results and use of very low carbon footprint, boosted by its ease of use and convenience, has gained trust and loyalty among their growing number of partners to provide clean and sustainable water.

BioCleaner的系统将微生物水处理系统的标准提高到新的水平。它采用独特的模块化和便携式系统，使单步骤过程能够消除异味、污泥、氨、氮和磷。不使用化学品，BioCleaner系统达到1级生物安全水平，在为用户提供良好处理结果的同时对环境无威胁。

BioCleaner使用绿色环保的微生物媒介和输送系统来处理工业、生活废水和天然水渠中的各种有机污染物。绿色媒介和输送系统的应用使得BioCleaner系统不易受到常见的系统故障的影响。该系统不需要频繁地补充媒介，因为所采用的微生物能快速再生。BioCleaner系统凭借其易用性、便利性、高效性和低碳性已获得越来越越多顾客和伙伴的信任。

**14:30   Aquastill Jeroen Dijkstra**

Membrane distillation is the process in which pure water is separated from contaminated water (salt water for example) by means of evaporation through a membrane. The porous membrane’s used in membrane distillation are typically hydrophobic (it repels water in liquid form) and due to the hydrophobic nature it only allows gasses to pass through the membrane pores. Water vapour is a gas, so for water to pass through the membrane it must first evaporate into water vapour. Hence in the process of membrane distillation water is separated from contaminants by means of evaporation through the hydrophobic membrane pores.

The process of membrane distillation is driven by a vapour pressure difference that is the result of a temperature difference. To create this temperature difference one side of the membrane contains hot water and the other side contains cold water. The (contaminated) side from which evaporation takes place is referred to as the “hot side”. On the other side of the membrane (where water vapour that has passed through the porous membrane is cooled for condensation) is referred as the “cold side”. The evaporation of water consumes heat energy, as water evaporates through the porous membrane heat energy is subtracted from the “hot side” lowering it in temperature. After passing though the porous membrane the water is then condensed at the cold side.

The process of membrane distillation is commonly used in the temperature range of 10 - 85 degrees Celsius. Combinations with many different heat sources are possible. The process of membrane distillation can be used in a large variety of applications, the most common applications are: Desalination; Decentral (small scale) desalination; SWRO brine concentration; Renewable energy desalination; Hybrid systems with other membrane systems; Concentrating of (chemical) solutions

膜蒸馏技术结合膜和蒸馏法将纯水与污染水分离的过程。膜蒸馏法中使用的多孔膜是疏水性的（排斥液体形式的水），因此，它仅允许气体通过膜孔。水蒸气是一种气体，因此水通过膜首先将其蒸发成水蒸气过膜而留下污染物。

膜蒸馏的过程由蒸汽压差驱动（温度差的结果），而为了产生温度差，膜的一侧含有热水，另一侧含有冷水。发生蒸发的（污染）一侧被称为“热侧”，另一边（通过多孔膜的水蒸气冷凝）被称为“冷测”。水的蒸发消耗热量，当水通过多孔膜蒸发时，热能从“热侧”减少从而帮助降低水温。

膜蒸馏工艺适用于10-85摄氏度的范围内，使得许多不同温度的热源组合成为可能。同时它可用于各种应用中，如：海水淡化，浓缩（化学）溶液，可再生能源净化。

**14:45 Utilis Ltd. Charles Wan**

Utilis Ltd., an Israeli Company that operates from its offices in Rosh Haayin, Israel (close to Tel-Aviv), developed a unique technology for leaks detection in fresh-water networks. Using the same technology used to look for water on other planets, Utilis analyzes satellite imagery to detect leaks. The result? Leak detection that covers thousands of square kilometers at once, and can trace leaks within a less than 50 meters’ radius buffer, saving significant resources associated with finding leaks with current tools.

Utilis uses microwave aerial imaging – taken from satellite mounted sensor– to spot leakage in subterranean drinking water networks. Drinking water is detected, by looking for the particular spectral signature typical to drinking water. Eventually, the user is presented with a leaks graphic report overlaid on a map with streets, pipes and leak size estimation.

For processing these images Utilis uses its patented in-house developed algorithms, the system uses essential physical parameters, such as geological, meteorological, and hydrological factors. After calculating and adjusting distorting factors, the information is intersected with the piping infrastructure layout and the system indicates locations of potable water underground leakage.

UTILIS以德列斯是一家以色列公司，其自主研发了一项独特专利的自来水测漏技术。以德列斯应用该高瑞科技技术来检测地面上从管网漏失浪费的自来水，每幅卫星影像覆盖范围高达3500平方公里，并且可在50米的半径范围跟踪到地面上的漏出的自来水。应用这技术可节省当前查漏的人力劳动力成本。并且不须要安装任何测漏硬件、为自来水公司整个管网提供高校率的泄漏报告！

那么，这领先的高瑞科技是如何运作的呢？

首先，使用卫星遥感器的空中微波反射地面成像，来发现地下自用水的泄露讯号。检测自用水特定的光谱。再引用专利技术进行分析计算，以及将人为的建筑物剔除，从而更清晰的找到漏水位置。

最后提交地面漏水位置3D彩图报告，报告中会详细显示漏水位置坐标及街道名称，地面人员可以用这份报告更快更精准的找到漏水点并排查补修。

**15:00 Nanostone Brian Wise**

Nanostone Water’s CM-151TM ceramic ultrafiltration membrane module is the next generation membrane for water treatment. It comprises near-inert ceramic materials and specifically selected non-ceramic materials in a unique design and world class manufacturing technology to provide the most reliable, robust, and easy to operate membrane with the lowest total cost of ownership compared to other membranes. CM151 membranes are designed to eradicate common membrane operational problems (fiber breakage, short life / high annual replacement costs, sensitivity to conventional pre-treatment and cleaning chemicals, declining productivity over time), while offering simpler operation and an improved life cycle cost (low Capex and longer life). CM151 life cycle costs are similar or better than polymeric MF/UF. This is achieved by implementing: (1) high volume production; (2) a patented segmented monolithic structure and; (3) a novel low temperature, nanotechnology ceramic design which offers significant manufacturing improvements over traditional ceramic manufacturing.

Treating effluent from biological waste treatment process enabling reuse of industrial waste water effluent in CTX, Oil Refining, and Chemical refining industries. The Nanostone CM-151 ceramic membrane provides excellent pretreatment to the downstream RO process in these difficult applications. An Example project is a 130 m3/hr system treating waste water effluent at a chemical refinery in Qinghai China to pretreat the RO membranes. The system was commissioned in November 2016 and operates at a stable operating flux of between 130-170 liters per hour per square meter (LMH) with an average transmembrane pressure of < 1 Bar and a cleaning frequency of > 30 days. The water quality out of the Nanostone CM-151 ceramic membrane meets RO feed water quality requirements including Silt Density Index (SDI) < 3 and Turbidity < 0.1 NTU.

Nanostone 的水CM-151 TM 陶瓷超滤膜组件是新一代水处理膜。该过滤膜采用近惰性陶瓷材料和独特设计的非陶瓷材料，并通过世界一流的制造工艺制成。CM151膜致力于消除常见膜操作时存在的问题，如：纤维断裂，对常规预处理和清洁化学品的敏感性和随着时间推移效率下降。因此与其他水处理膜相比较，该膜更可靠和坚固，并且该膜的使用操作简单，使用生命周期长。CM151膜价格低廉，其生命周期成本与聚合物MF/UF相似或更好。这是通过实施：（1）大批量生产；（2）自主研发分段整体式结构；（3）一种新型低温纳米技术陶瓷设计（其与传统陶瓷制造相比，具有显著的制造改进）. CM151膜处理CTX，石油冶炼，化学炼制等工业中的废水并使得这些废水可再利用。完成这些复杂的应用后，CM151陶瓷膜为下游RO工艺提供了出色的预处理。该膜与2016年11月投入运行，目前应用成绩稳定在130-170升/小时/平方米，平均跨膜压力小于1Bar, 清洁频率为每30多天一次。

**15:15    Closing     Isle Utilities**