

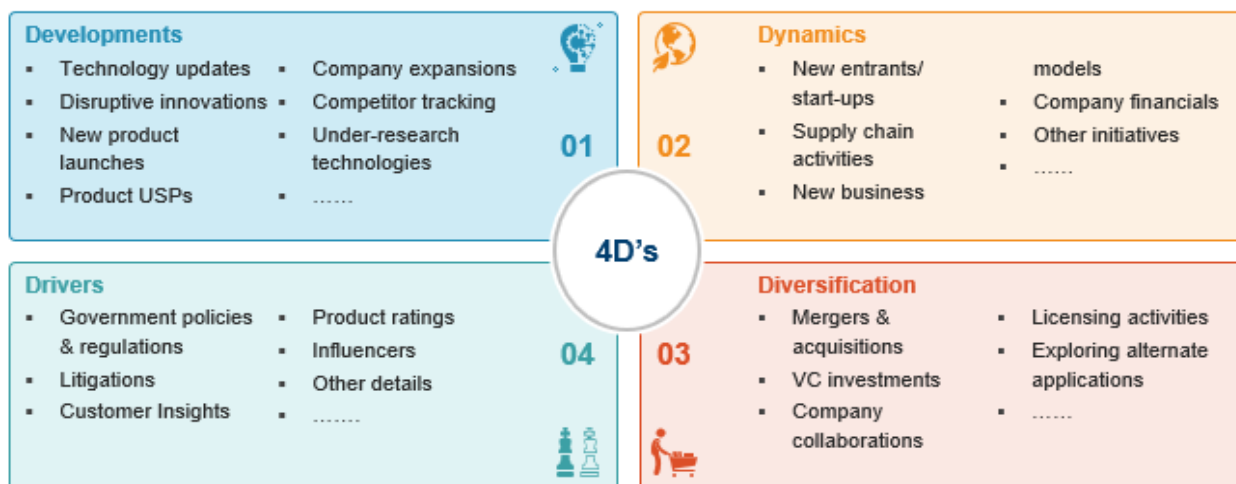
INTELLOTRACKER

Zero Liquid Discharge

April 2023



ARANCA'S QUARTERLY SECTORIAL UPDATE ACROSS FOUR DIMENSIONS....





DEVELOPMENTS

Technology/ Innovations		The water Expo has showcased compact and smart sewage treatment plants with a capacity of 2 kilo liters to 70 kilo liters a day and real time monitoring and alerts feature. <i>Source: The Hindu</i>
Technology/ Innovations		Aquafortus is planning to develop the plant for treating hypersaline brine that uses non-thermal, zero-liquid discharge recovery and crystallization approach and it will use 90% less energy than the traditional thermal-based evaporation brine desalination technology. <i>Source: MRT</i>
Technology/ Innovations		The researcher has developed a simple and easy-to-manufacture evaporator, also called a crystallizer, using 3D printing. The micron-sized voids formed during 3D printing provided abundant water transportation channels inside the crystallizer. <i>Source: MDPI</i>
Technology/ Innovations		The researcher has developed a system for a zero-discharge integrated process composed of pre-physicochemical – oxalic – hydrolytic & denitrification – oxalic – post-physicochemical (A/O/H/O/A) biological, pre-processing, membrane, and end-processing units to treat coking wastewater. <i>Source: Elsevier</i>
Technology/ Innovations		The patent discloses the method for removing the contaminants from liquid. A concentration gradient across the semipermeable membrane is maintained by electrolysis of the liquid that can drive forward osmosis process for the efficient removal of contaminants. <i>Source: Patent</i>
Technology/ Innovations		The study discloses the method to achieve near zero liquid discharge for textile waste. Two stage ceramic membrane filtration consumes less chemical and helps to recover caustic solution which can be reused directly. <i>Source: Research Square</i>
Technology/ Innovations		The research is based on a physically-anchored hydrophilic layer on the surface of a microporous polypropylene fibre membrane. GOSP/PP membrane produced high quality permeate with great potential for using membrane distillation towards zero liquid discharge. <i>Source: Elsevier</i>
Technology/ Innovations		The primary focus of the patent is a zero liquid discharge water treatment system that uses a primary evaporator, blower motor, and heat exchanger to produce precipitated solid waste as opposed to concentrated brine as a waste stream. <i>Source: Patent</i>
Technology/ Innovations		The method is related to the treatment of waste generated from manufacturing operations like Printed Circuit Boards Fabrication (PCB FAB), General Metal Finishing (GMF) using a zero liquid discharge system. <i>Source: Patent</i>
Technology/ Innovations		The patent discloses the wastewater treatment system that yields continuous zero liquid discharge (ZLD). It includes pre-treatment of wastewater, ultra-filtering of the pre-treated wastewater, to yield treated water (with monovalent ions) and a concentrate. <i>Source: Patent</i>
Technology/ Innovations		The research evaluates the levelized water cost for distributed solar desalination integrated with energy storage and brine management. It shows that solar-thermal energy is economical compared to PV for coupling to desalination and zero-liquid discharge processes. <i>Source: iScience</i>
Technology/ Innovations		The research is based on the recovery system for fresh water from hydrogels through photothermal conversion generated by irradiation with near-infrared light-emitting diode (NIR LED) light onto croconaine dye-doped silica nanoparticles. <i>Source: Polymer Chemistry</i>
Technology/ Innovations		The research is based on the comparison of the accuracy of predictions for water permeability under various types of draw solutions using conventional models and AI-based models as it provides timely and cost-effective solution. <i>Source: Elsevier</i>





DIVERSIFICATION




Licensing Activities		The Energy and Resources Institute signed the TADOX® Technology and Trademark License Agreement with Dew Projects and Chemicals, for the commercialization of TERI's patented wastewater treatment technology for Zero Liquid Discharge. <i>Source: Company Website</i>
Mergers & Acquisitions		Aquatech and FTS will work together to deliver advanced water treatment technology and process solutions in key markets, including brine mining, lithium and critical minerals, inland desalination, and minimal/zero liquid discharge (MLD/ZLD). <i>Source: Company Website</i>
Mergers & Acquisitions		Gradiant has acquired Advanced Watertek, a leading original equipment manufacturer (OEM) and service provider for membrane-based water and wastewater treatment systems. <i>Source: Company Website</i>
VC Investments		Aquafortus, a water technology company, raised \$17M in Series A1 funding to work on non-thermal, zero-liquid-discharge recovery and crystallization approach. <i>Source: Company Website</i>



DRIVERS

Others		Telangana State Pollution Control Board (PCB) has directed industries to submit a time-bound action plan within three days for decontamination of soil and achievement of zero liquid discharge. Source: Times of India
Government Policies		An award scheme for Common Effluent Treatment Plants (CETPs) has been launched by Rajasthan State Pollution Control Board (RSPCB). To treat water, CETPs are established for treatment plants (ETP) with Zero Liquid Discharge (ZLD) facilities. Source: Times of India

SOLUTION PORTFOLIO – TECHNOLOGY RESEARCH & ADVISORY

 IP Strategy	 Technology Intelligence	 Growth & Strategy
How best can we proactively manage and monetise our technical knowhow / intellectual property?	How best can we keep abreast of technology trends, competitor activity and headwinds / tailwinds in our domain?	Which technologies do we invest in? How do we ensure quick wins? Speed to market?
<ul style="list-style-type: none"> IP Portfolio Analysis IP Monetisation IP Valuation Prior Art Searches 	<ul style="list-style-type: none"> Competitor Benchmarking Tech / IP Landscapes Technology Watch Market Analysis / Trends 	<ul style="list-style-type: none"> R&D Strategy Roadmaps Technology Scouting Open Innovation Product Development



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