



**T P T E C**

Thermal Purification Technologies

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## **THERMAL PURIFICATION TECHNOLOGIES ANNOUNCES STRATEGIC PARTNERSHIP WITH CRYSTAL CLEARWATER RESOURCES**

**SAN DIEGO, CA, USA, September 1, 2015** – Thermal Purifications Technologies Limited (TPTec), a technology development company in the water sector, and Crystal Clearwater Resources (CCR), a company dedicated to finding environmentally responsible, economic ways to provide clean, previously unavailable water to California's water supplies, have formed a strategic partnership under TPTec North America (NA), with an exclusive licensing commitment that covers North America.

TPTec North America's and CCR's first project will be a Low Temperature Distillation (LTD<sup>is</sup>) plant to treat produced water. Located near Bakersfield, California, this plant is now in the final stages of planning. When completed, it will produce 20,000 barrels per day of (clean) water from produced water coming from oil production. In a second phase the reject stream will be treated with a Low Temperature Dryer (LTD<sup>ry</sup>) thus avoiding the need to inject the reject in deep wells.

TPTec is focused on developing clean and efficient solutions for multiple applications such as cleaning seawater, brine and polluted water including separation of water and solids. TPTec uses advanced thermodynamics to build simple, robust and efficient plants that can use existing waste or low value streams to purify challenging feeds with a minimum of residual effluents. TPTec's technology portfolio includes award winning and patented LTD<sup>is</sup> (Low Temperature Distillation) and patented LTD<sup>ry</sup> (Low Temperature Drying) technologies.

The demonstration plant will integrate both the LTD<sup>is</sup> and LTD<sup>ry</sup> technologies, treating the produced water in two phases. The first phase uses LTD<sup>is</sup>, which alone can achieve a conversion ratio of some 75 - 88% depending on the feed water, allowing for recycle and reuse of much of the water – an important consideration in any location but especially so in drought - stricken California. With an additional upgrade for isolating high saline water and precipitation loops/centrifuges, the conversion can be brought up to some 90 - 92% and thus achieve ZLD-wet. With the addition of LTD<sup>ry</sup>, the remaining wet sludge will be dried thus achieving ZLD-dry and avoiding the need to dispose of the reject in deep wells.

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CCR has been researching California and other water markets and water purification technologies for over five years. CCR's water purification efforts are concentrated on oil and gas produced water as well as industrial water and desalination. CCR is currently focused on California and Texas with three demonstration plants in the planning phase that will purify produced water into potable water. The plants, which include the TPTec North America project, range in capacity from 20,000 – 200,000 barrels per day.

“CCR is very excited about our partnership with TPTec. Our management team includes people from the oil and gas industry and the water industry. With TPTec as our partner, we can cover a wide spectrum of potential water purification opportunities. We believe there are several underutilized sources of water across North America that can be cleaned economically and environmentally responsibly,” said Jeff Roberts, President of CCR. “After a thorough technology evaluation, we have chosen to work with TPTec as their technologies provide us with a unique solution that is reliable, robust and effective in producing exceptionally clean water. Their ability to go to zero discharge gives us the flexibility to work in a variety of environments. This makes the LTDis and LTDry technologies particularly suited for the needs of oil and gas operators.”

“TPTec's business model is to remain a technology developer, forming strategic partnerships with competent systems integrators, industrial partners or investors covering specific geographies and / or applications. We are delighted to partner with CCR in North America. CCR offers an ideal fit for us from a business standpoint, just as our technology provides an ideal solution for the oil and gas market,” said Espen Mansfeldt, CEO of TPTec.

The agreement with CCR represents the second such alliance in which TPTec is a party. In September 2014, Dubai-based Metito made a significant investment in TPTec as part of a strategic partnership to exclusively introduce, and help develop LTDis in markets across Asia and Africa, where the feasibility of desalination and the resources required for water and wastewater purification continues to be a challenge.

### **About TPTec**

Established in 2013, Thermal Purification Technologies Limited (TPTec) is a clean-tech start-up focusing on developing new, clean and efficient technologies for multiple applications in the water sector. The company is focused on providing complete solutions for cleaning seawater, brine and polluted water including separation of water and solids. It uses advanced thermodynamics to build simple, robust and efficient plants that can use existing waste or low value streams to purify challenging feeds with a minimum of residual effluents. Headquartered in Guernsey, Great Britain, TPTec has an operating branch in Switzerland where a focused team continues developing, refining and implementing technologies for multiple applications in the water sector. For more information, visit <http://www.t-p-tec.com/>

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