

**High Efficient Cooling Tower**

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| Description of Technology   |                                   | Energy Saving Opportunity   |   |
|---|-----------------------------------|---|---|
| <p>The Cooling Tower harnesses hydraulic energy to drive a hydro-turbine, which turns a fan shaft and fan blades on the unit. A sufficient amount of air flow is generated by this mechanism to cool water flow supplied to the turbine to the optimal approach to the saturation (wet bulb) temperature of the air. This cooling is done by draining the return water out of the hydro-turbine into a spray nozzle assembly which distributes the water evenly across the section of film fill. The air flow generated flows upwards in a counter-flow fashion, exchanging heat with the water across the film fill. The water then drains back into the existing tower's basin.</p> | Sector(s):                        | <input checked="" type="checkbox"/> Residential   | <input checked="" type="checkbox"/> Commercial & <b>Industrial</b>  |
|   | Applicability Criteria:           | Industrial application  |   |
|   | Efficiency Improvement:           | Electricity Savings   |   |
|   | Energy (%) Savings Potential:     | Highly variable   |   |
|   | Demand (%) Reduction Potential:   | Highly variable   |   |
|   | <b>Strengths</b>                  |   | <b>Weakness</b>   |
| <ul style="list-style-type: none"> <li>significantly impact a Power Plant's ability to produce maximum electricity at minimum fuel usage</li> <li>Lowering cost of operation in the peak power usage periods of summer months.</li> <li>Ability to export more power to the grid</li> <li>GCT operates with no supplied electricity, instead it uses the hydraulic pressure of the water supplied to the unit to generate air flow</li> </ul>   |                                   | <ul style="list-style-type: none"> <li>Niche market and limited market potential (power plants, refinery, heavy industrial sector)</li> </ul> |   |
| Third Party Analysis/<br>Previous MTAC Reviews  |                                   | Suppliers Known<br>to MTAC  | MTAC Status   |
| <p>A pilot test is done at CITGO in Louisiana by the manufacture Bechtel has conducted a feasibility study of GTS at Diablo Canyon in CA.</p>   |                                   | <p>Green Cooling Tower Solution</p>   | <p>Acknowledged to have energy savings potential and referred to individual PA for their own EE program consideration</p> |
| <b>Market Development Issues</b>  |                                   |   |   |
| Cost:   | Average \$116/GPM(from GCTS)      |   |   |
| Market Risk and Barriers:   | Niche market base                 |   |   |
| Time to Market:   | Currently on market               |   |   |
| Simple Pay-back: (Years)  | 3-5 years(base on the pilot test) |   |   |
|   |                                   |   |   |