CRCES™ CARBON REDUCTION CLEAN ENERGY STORAGE - INDUSTRIAL PROCESS WATER REDUCTION AND ELIMINATION

The largest industrial energy waste is unused heat. Not only is it our largest energy waste, but OPEX is increased to expel waste heat. Current systems require an excessive amount of land, chemical use, and large quantities of water. Even with a profitable program for conservation, managers do not have the authority or incentive to implement them. Upper management and investors are the individuals who need to support change for real progress to start.

When it comes to waste heat in the industrial sector, we have been finding ways to recover it for over fifty (50) years. Systems have been implemented to minimize waste in most large loss situations, but even with these improvements the number one industrial waste is still heat with water not far behind.

Today, the value of water to society is changing. We have been trying to conserve water, and cooling tower systems do a pretty good job, but still consume millions of gallons per year in hundreds of facilities. The average single cooling tower, roughly 20' x 20' in area and approximately 25' tall, consumes 40,000,000 gallons of water per year if fully utilized. The referenced amount, multiplied by the thousands of cooling towers, gives some idea about the amount of water consumed in the industrial sector associated with waste heat.

In some locations water has a

different value to society and even a different cost footprint. However, the big challenge is no one wanting to change.Management would rather stay on course with what they have been doing versus something new. There is little incentive and often no management authority to implement the change needed to occur to reduce or eliminate excessive water consumption. Real change will start by giving managers the authority and incentive for beneficial change.

I will be the first one to say, we do not fully understand water use, conservation, or the drivers for reduction or elimination of water from industrial systems. We understand the global need for conservation of energy and for over thirty (30) years AT&V has implemented technology focused on just that. Waste heat recovery is the space where our technology works best, and it just so happens that cooling towers are built to get rid of waste heat. If your company is looking for an option to reduce or eliminate water consumption associated with process systems or cooling towers, there is a solution. The bad news is it requires change. The good news is it is profitable and forward thinking.

AT&V's CRCES™ process takes low quality waste heat and aggregates it to be used in Long Duration Energy Storage (LDES) systems. Initially designed to utilize low temperature thermal solar panels, it became evident the process worked well enough that low quality process waste heat was also of value. Often cooling tower water is very low-

quality waste heat and additional sources must be aggregated to improve the quality of the process. Each project must stand on its own based on the flow and quality of water and resources available to develop an overall program.

Drivers associated with implementing CRCES™ for water conservation include:

- A green initiative versus green wash
- Rising energy cost for Long Duration Energy Storage (LDES)
- Additional revenue sources for the waste heat provider
- Reduction/conservation/elimination of water consumption

RELEVANT NEWS ARTICLES

- Long-Duration Energy Storage to get $350M from Department of Energy
- California's Long Storage Call Shines Spotlight on Support Gaps
- US Sets Another Record for Quarterly Energy Storage Installation Figures
- Corre to Deploy 320 MW CAES Long-Duration Energy Storage Facility for Eneco in Netherlands
- Lithium Battery Pack Prices go up for First Time since BloombergNEF began Annual Survey

RELEVANT CRCES™ TECHNOLOGY ARTICLES

- Tomorrow's Battery Today
- For a Greener Tomorrow
- Tomorrow's Battery Today Newsletter (Vol. 1)
- Tomorrow's Battery Today Newsletter (Vol. 2)
- Tomorrow's Battery Today Newsletter (Vol. 3)
- CRCES™ Frequently Asked Questions

MOVING FORWARD

Put CRCES™ to the test. Send us your RFQ for water conservation with performance specifications and the CRCES™ team would be glad to review the application and recommend a CRCES™ design for best fit.

Contact us at green@at-v.com.