

Lowering Costs and Improving Results of Thermal Remediation

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TRS Group (TRS) is focused on increasing the effectiveness of our thermal remediation systems and, at the same time, reducing the costs of implementation. A key component of that effort is the efficient delivery of power to the treatment volume.

Thermal remediation involves adding energy to the subsurface, raising the temperature to volatilize the contaminants of concern, capturing the vapors, and treating them at the surface. Although the process is fundamentally simple, each project requires customization to site conditions, substantial data collection and analysis, and real-time adjustments.

TRS is updating its power control units (PCUs) with an improved supervisory control and data acquisition (SCADA) system, a control platform that manages processes with large data collection and analysis requirements. Using the SCADA platform, TRS staff can build, edit, and control all process programs and collect equipment-specific data.

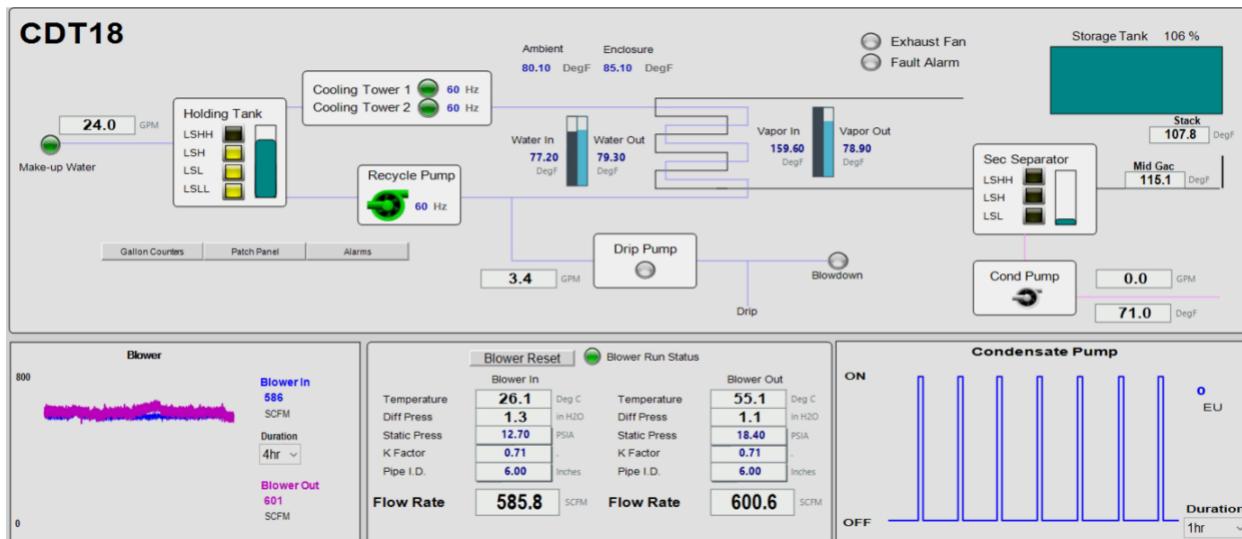


Figure 1: Data collection and display for a condenser and cooling tower system operating at a TRS site

Integration of SCADA with our field equipment allows us to collect and log data continuously. Measured parameters include power application to our subsurface heating elements, temperature throughout the treatment volume, and flow rates and temperature within the vapor recovery system. Figure 1 shows the data monitoring and display for a TRS condenser and cooling tower system. Built-in trending software allows TRS to collect and plot data instantaneously, with the ability to create graphs for any operational period.

TRS can analyze the collected data to identify trends, whether they be positive or negative, and to understand root causes. The faster we can identify trends, the faster we can improve performance, maintain schedule, and stay on budget.

Figure 2 shows the temperature of vapor entering and exiting a condenser unit. We use the data to identify system shutdowns and predict maintenance requirements for specific equipment, such as the heat exchanger.

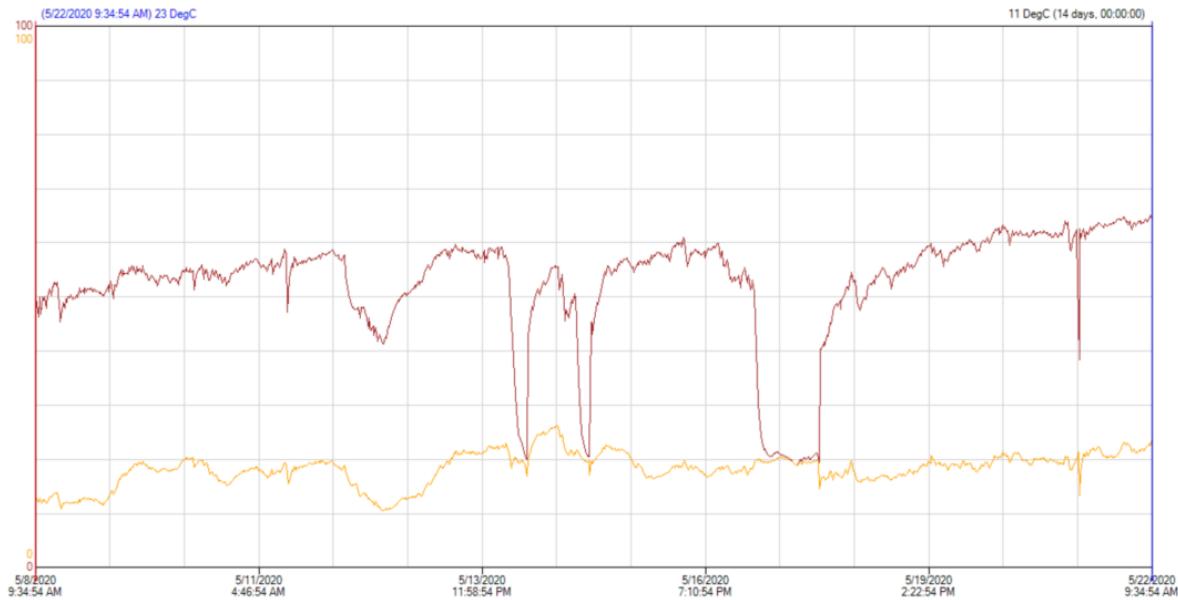


Figure 2: Temperatures of vapor influent (red) and effluent (orange) from a condenser at a TRS site

As mentioned above, efficient power delivery is a key component of a successful thermal remedy. Instrumentation used on our electrical resistance heating projects allows us to hydrate the electrode/soil interface automatically, as shown in Figure 3. This process improvement leads to a more efficient remediation, as we target areas that need attention in real time.

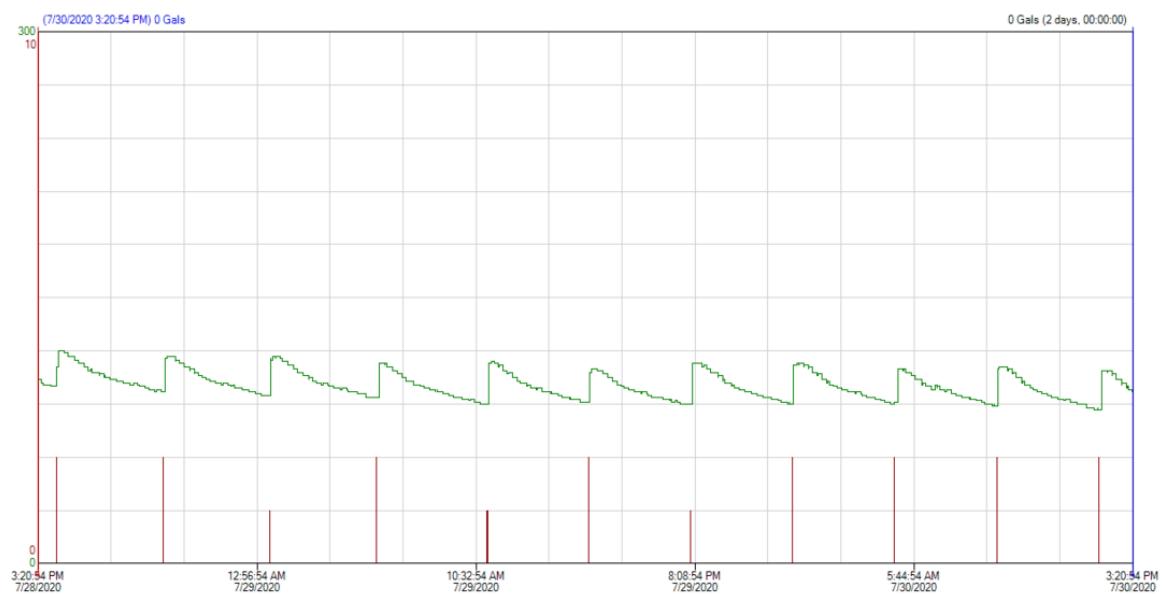


Figure 3: Power application of an individual electrode (green) overlaid with water delivery to the same electrode (red).

TRS plans to expand our SCADA platforms to include the continuous monitoring of every heating element, which will enable us to improve the performance of our heating systems. Our research and development group will use the data to enhance our HeatWave™ model, enabling us to better predict system performance. Already, SCADA has reduced site labor, has improved power delivery, has increased method effectiveness, and has lowered the cost of thermal remediation.