26 January 2022

U.S. Environmental Protection Agency
EPA Docket Center, Docket ID No. EPA-HQ-OAR-2021-
0317Mail Code 28221T
1200 Pennsylvania Avenue
NWWashington, DC 20460.

RE: EPA-HQ-OAR-2021-0317

To Whom It May Concern:

I am writing on behalf of TRIDO Solutions LLC, a technology company that tackles methane emissions by replacing pneumatic devices and pumps with solar powered solutions.

The TRIDO team deeply appreciates that the Environmental Protection Agency is progressing forward with methane reductions in the oil and gas industry. This is an unprecedented time that calls for action, and TRIDO has been, and will continue to be part of the solution.

TRIDO has been working with oil and gas producers replacing natural gas-driven pneumatic pumps and devices with solar technology since early 2010. The team has gathered valuable information with a decade of experience from field installations, troubleshooting and refining best practices for de-mechanization of pneumatic devices and pumps. Furthermore, they would like to share a specific case study about solar-driven pump deployments in Wamsutter WY, to show that solar-driven pumps and instrument air will benefit the movement towards zero emissions and improve overall facility reliability and safety performance.

TRIDO's Bio:

TRIDO Solutions LLC, is a technology company that tackles methane emissions by replacing pneumatic devices and pumps with solar-powered pumps and air compressors. Initially designed for the Aerospace industry, TRIDO's differentiating technology is its high-efficiency motor and controller. The PMAC brushless motor draws only 10% of power than other motors used in comparable deployments. This breakthrough technology allows remote installation with high reliability at a fraction of the cost. Thus, making solar integration a reality.

The Keys to TRIDO's innovative motor technology adaptation:

1. Reduces the cost of solar infrastructure by more than half, drastically lowering the economic barriers for solar integration
2. Extends battery life; enables longer autonomous run times and reduces maintenance cycle and intervention time
3. Allows pumps and controller operations to be independent of gas production, using sustainable solar power to improve reliability
4. Eliminates onsite intervention or refueling cutting travel related emissions

5. Provides fuel cost savings and true net zero, Scope 1 emission-free-solutions, by eliminating combusting natural gas

The Case Study: Wamsutter Basin, WY

Wamsutter Basin, Wyoming, is an example of a challenging operating environment. In a region that experiences harsh winter weather, thousands of remote wells are scattered throughout. Temperatures often see -20F and below.

In the Winter of 2019, the monthly average temperature was -11 F and often dropped below -19 F. Access barriers like deep snow, drifts, and high winds created conditions that made accessing wellsites difficult, if not impossible. Hazardous travel and working conditions create safety problems and usually require costly equipment to access the sites. The enormous operational challenges brought by these harsh winter conditions, large geographic area, remote access, and wellhead equipment freezing resulted in a significant loss of production. In addition, short, cloudy winter days leave long periods without sunlight. These conditions dramatically reduce the effectiveness of typical solar energy systems.

To reduce freezing and downtime at production facilities, operators in the Wamsutter basin often use "glycol transfer heat trace systems" to circulate heated glycol through insulated piping. This process starts with a heated tank that warms glycol fluid to the desired temperature. Then a pneumatic pump pushes the heated glycol through trace-piping around the process equipment, wellhead, or tanks. As the glycol travels through the trace-piping, the heat is transferred from the glycol stream to the equipment. Typically, the pneumatic pumps that circulate the glycol are powered by "fuel gas," which is natural gas from the well. The fuel is then vented into the environment as methane. Alternatively, it can be combusted as a source for heating the glycol and then vented as CO2 into the atmosphere.

Natural gas-driven pumps are used because they are more economical than providing grid electricity to remote locations. To provide sufficient air supply for pneumatic pumps, installing generators or large-scale compressors is required. Typically, pneumatic pumps are unreliable, costly to maintain, and contribute a large percentage of the total GHG footprint on the wellsite. The use of these pumps can lead to multiple, prolonged production losses, even more so during the winter season. These conditions caused significant production loss, decreased revenue, and increased labor costs from required onsite intervention.

Based on the current 2020 EPA filing, 5714 pneumatic diaphragm pumps are installed throughout the Wamsutter Field (535-Green River Basin). Moreover, rank the region 3rd after 220-Gulf Coast Basin and 260-South Texas Basin. Importantly, these pumps are a substantial contributor to the methane emissions in the region.

In 2018 a significant asset holder in the Wamsutter replaced 250 pneumatic glycol pumps with solar-powered pumps from a vendor not to be named. Successfully, this project eliminated over 28 thousand metric tons of CO2 equivalent emission. Unfortunately, the project failed to improve well-production reliability due to many pump failures.

A severe winter storm in the January of 2018 put additional strain on the field's infrastructure. The storm, combined with the pump's reliability issues, accelerated a significant production decline and increased the maintenance and intervention demand (Figure 2). Analysis of field level maintenance and downtime data records indicated that the solar heat trace pumps were the leading cause of surface downtime for the 2018-2019 winter season (Figure 3).

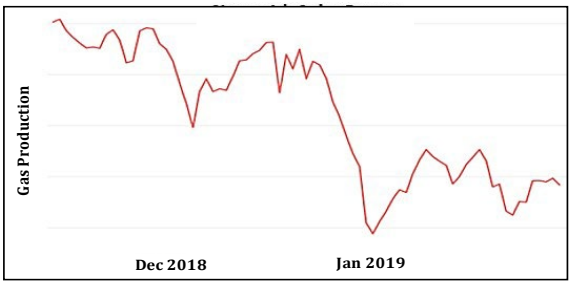
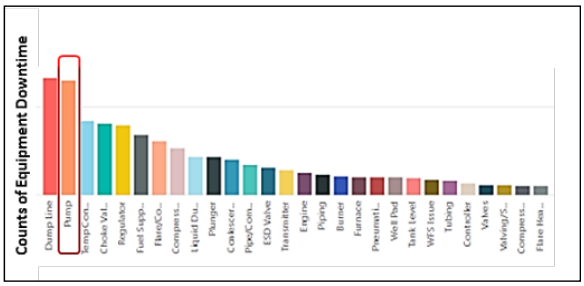


FIGURE 2: 2018-2019 GAS PRODUCTION TRENDS WITH LOCAL VENDOR SOLAR PUMPS



3: EQUIPMENT DOWNTIME MEASUREMENT (COUNT OF OCCURRENCES) FROM SITES WITH 2018 LOCAL VENDOR SOLAR PUMPS IN 2018-2019 WINTER

Referencing the control group with existing pneumatic pumps, the business performance also suffered during severe winter conditions, as show in the production and maintenance data records from the same time period. (Figure 4 and Figure 5).

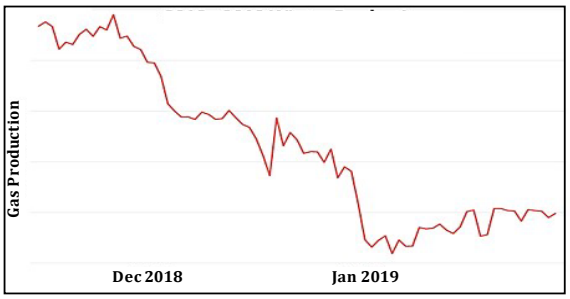


FIGURE 4: TREND OF GAS PRODUCTION FROM SITES WITH *PNEUMATIC* PUMPS IN 2018-2019 WINTER

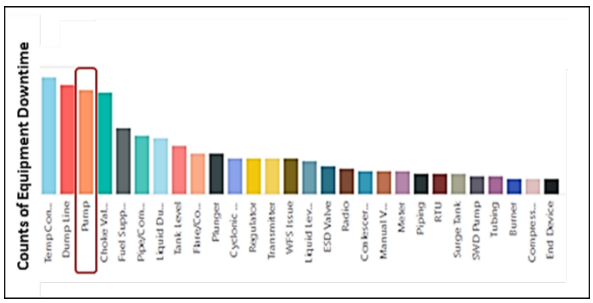


FIGURE 5: EQUIPMENT DOWNTIME MEASUREMENT (COUNT OF OCCURRENCES) FROM SITES WITH *PNEUMATIC* PUMPS IN 2018-2019 WINTER

Although their failure mechanism was well understood, it still created enormous challenges for the field staff. The downtime caused a significant loss of revenue and an increase in intervention and workforce requirements.

In May 2019, after months of effort, production was restored. Furthermore, the Wamsutter asset team conducted a thorough root cause analysis of the solar pump failures. The analysis's results and conclusions provided crucial insight and highlighted vital requirements for a successful solar-powered heat trace system.

Those requirements included longer autonomous run times in low sunshine periods and better reliability during extended constant operation. Using the learnings from this data-driven approach,

the asset team went through an in-depth search and testing process and ultimately decided to replace all the 250 solar pumps with TRIDO solar pumps.

A one-year comparison to the legacy pneumatic pumps showed that sites operating with the Trido pumps yielded a 26% improvement in production. (Figure 6). Post-recovery production levels from extreme weather conditions improved significantly. The pump run-time and reliability in extreme winter storm conditions are shown in the reduced pump servicing requirements (figure 7).

FIGURE 6: TREND OF GAS PRODUCTION FROM SITES WITH SOLAR PUMPS IN 2019-2020 WINTER

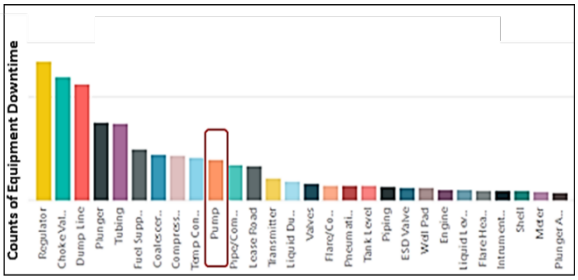


FIGURE 7: EQUIPMENT DOWNTIME MEASUREMENT (COUNT OF OCCURRENCES) FROM SITES WITH SOLAR PUMPS IN 2019-2020 WINTER

The significant production increase after Jan 2020 severe weather shown in Fig. 6 was attributed to the Trido pumps superior mechanical reliability and exceptionally low power consumption. Only 2 out of 250 pumps installed required intervention, which is less than 1% of solar pumps installed.

During this same time, wellsites with pneumatic pumps faced challenges during the 2019-2020 severe winter. Production recoveries continue to be problematic after winter storms, and pump failure remains a major issue (Figures 8 and 9).

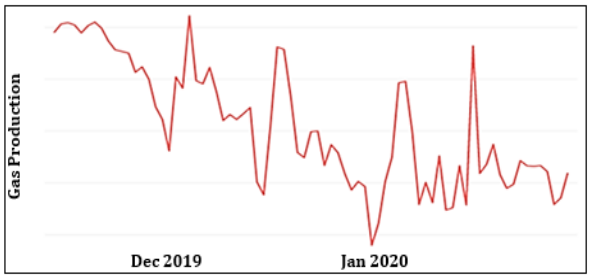


FIGURE 8: TREND OF GAS PRODUCTION FROM SITES WITH *PNEUMATIC* PUMPS IN 2019-2020 WINTER

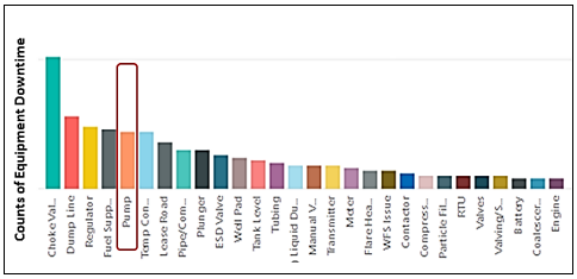


FIGURE 9: EQUIPMENT DOWNTIME MEASUREMENT (COUNT OF OCCURRENCES) FROM SITES WITH *PNEUMATIC* PUMPS IN 2019-2020 WINTER

The Wamsutter case study illustrates two important points:

1. Zero vent transition on pneumatic systems have close implication for production reliability and can detrimentally impact a company's performance.
2. When done right, renewable solution integration provides a sustainable and independent power source that improves overall business performance with a secondary positive impact on safety and the environment.

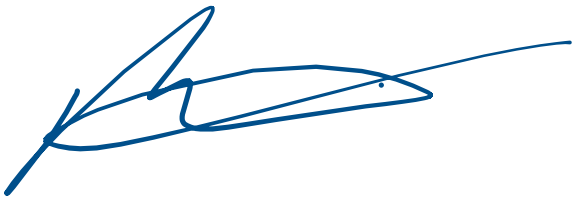
TRIDO successfully promotes affordable and innovative solutions to address emission reduction and has deployed solar-driven pneumatic pumps and air compressors in WY, CO, OK, TX, and LA. TRIDO's customers have collectively expressed that they care about the environmental impact of producing oil and gas but need safe, affordable solutions. TRIDO will continue to supply innovative solutions to operators empowering them toward net-zero.

In summation, TRIDO strongly supports reducing methane emissions in the oil and gas industry. The team believes in leveraging innovative technology from the aerospace and renewable energy sectors to tackle this massive crisis. They also understand that solutions need to be economically feasible easily integrated. The Wamsutter case study exemplifies that operator have reliable technology at their disposal with TRIDO Solutions in their pursuit of net-zero.

TRIDO's team would love the opportunity to meet with EPA to discuss lessons learned from the case study and share their experience from thousands of deployments across North America.

Please reach out at (720) 519-7225 or ru.schaefferkoetter@tridosolutions.com for any help we can offer

Sincerely,



Ru Schaefferkoetter
President and CEO
TRIDO Solutions LLC