

The Case of the Missing Carbon Dioxide

By Terry Clark

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A Chemical Company was having trouble with their storage tanks at the train depot off-loading station. The railroad company was telling A Chemical Company that they were unloading "X" amount of Carbon Dioxide. The truck drivers claimed they loaded "Y" amount and distributed the full "Y" amount. The "X" and the "Y" amounts were not equal.

There wasn't anyone at the depot station to track the amount unloaded by the railcars, nor the amounts picked up by the transfer trucks. A Chemical Company needed a solution that was economical, relatively maintenance free, and accessible from remote locations.

The tank sizes were problematic due to thermal expansion. Thermal expansion would have created a side loading on any standard load cell employed. This side loading would have generated erroneous readings. Obviously, this was not an answer.

The system we designed took the thermal expansion into account by elongating the mounting hole between the tank and the tank frame. This subtle solution prevented the tank expansion from affecting the accuracy of the load cells.

The system National Scale Technology designed used load cells that were tolerable of imperfect loading, highly accurate, and constructed from stainless steel to be more withstanding of the elements. The load cells were run to a Smart J-Box that provides easy access to the load cells. The GSE350 digital indicator provided a local readout, which was not usually necessary, but allowed for easier calibrations. The signal was then sent by RS232 to a host computer that acted as a server for a remote connection via the Internet.

Software for the host computer was designed to act as a host that can be accessed, controlled and configured by the client software from any authorized computer via the Internet. The host computer software allows the authorized user to set multiple e-mail alerts based on the high or low weight parameters. These emails can be sent to up to three (3) different locations. The software also allows A Chemical Company the flexibility to take an automatic reading at a predetermined time interval throughout the day.

The above system gives A Chemical Company the ability to view the weight readings of the above tank at any time, from any location via the Internet. This makes it easier to track how much Carbon Dioxide is being loaded and unloaded; "X" and "Y" will now always be equal. This will reduce waste, increase profitability and minimize paperwork; everything they wanted our system to do for them and more!

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