

# SEVERE SERVICE MAGMETERS FOR FRACKING OPERATIONS

TECO SEVERE APPLICATION METER™ (SAM)



# Flow Measurement of Extremely Abrasive Slurries

Proven in the heat of a West Texas summer, and the cold of an Alberta winter, this TECO magmeter is designed from the ground up to withstand corrosive slurries, acids, bases and solvents.



Uptime and operational efficiency are critical to oil and gas operators. Billing rates can rise upwards of \$20,000 per hour. Failure of process equipment causes long delays in fracking progress and decimates equipment budgets.

Magnetic flow meters (magmeters) installed on blenders are of particular concern. The application involves accurately measuring the flow of an extremely erosive slurry comprised of sand and frack water (a mixture of water and chemicals). Replacing failed magmeters can take up to 4 hours, and requires the shutting down of the entire frack spread.

Calling upon sixty-plus years experience in magmeter application, failure analysis, repair, and design, TECO developed several innovative features to extend longevity in fracking operations.

First, TECO developed a ceramic sleeved liner made of “magnesia partially stabilized zirconia”, a very tough ceramic used in severe-service applications that provides corrosion resistance and durability.

Second, TECO developed electrodes built from a solid tungsten carbide billet, which afford unparalleled wear resistance. Given the sand density in the frack fluid, noise reduction is critically important; so, the tungsten carbide is polished leaving a hard, smooth finish that significantly reduces noise in the electrode circuit.

Finally, TECO designed the meter as a drop-in replacement. It operates with a variety of secondaries and matches the lay length of the meter being replaced. There is no need for a new transmitter or repiping, allowing for simple retrofit of existing installations.

In 2017 TECO introduced the SAM (Severe Application Meter) magmeter as a flow meter designed specifically for hydraulic fracturing operations. By specifying SAM, operators have saved money through increased uptime; decreased health, safety and environmental risk; and reduced costs related to magmeter purchase and repair.



This TECO SAM had 500,000,000 pounds of sand flow through its core. Upon inspection, the customer found the flow tube to be looking “brand new”. The unit was put back in service and has exceeded 2,000,000,000 pounds of sand and **has yet to fail**.