# Application News

## *High Shock Turbine Meter Withstands Rigors Of Hydraulic Testing*

***Industry: Industrial*** ***Service: Flow Rate/Total*** ***Fluid: Hydraulic Fluid***

### *Overview*

A tractor manufacturing facility quality checks the operation of hydraulic systems prior to tractors leaving the assembly line. The movement of hydraulic fluid is one of the inputs to test stand monitoring software. The testing cycles the fluid through expected and unexpected stress conditions encountered in the field. Improper hydraulic fluid flow can cause overheating, damaging the tractor or requiring additional fluid.


### *Situation*

The manufacturing test stand is designed to evaluate tractor hydraulic components under both high pressure and high flow. The unit's main hydraulic supply features two pumps used individually or together. Necessary circuitry allows testing of open loop variable displacement pumps and closed loop transmission pumps. The pump drive system is regenerative, and is used as the loading device for motor testing.

The test stand manufacturer determined that an accurate and reliable flow meter was needed to monitor hydraulic fluid flow under simulated field conditions. However, the test procedures involved significant pressure and flow rate spikes that could damage a standard meter design.

### *Solution*

After considering the customer's requirements, Flow Technology supplied its HS Series "High Shock" turbine flow meter for use in the hydraulic test stand. The High Shock meter is specifically designed to withstand pressure spikes that can create hydraulic shock waves. This "hammer effect" can dislodge meter internals or sheer rotor blades off other turbine designs.

The HS Series of flow meters are suitable for flow rates from 0.11-1700 LPM and pressures up to 10,000 PSIA. It can handle extreme pressure fluctuations such as those resulting from operation of a tractor discus or shovel. In this case, the High Shock meter was equipped with ball bearings due to the lubricity of the hydraulic fluid.

The High Shock turbine meter design also offered the customer the advantages of compact size, fast response time, and low cost when compared to Coriolis meters commonly used in this application.

### *System Description*

The HS Series turbine meter took up very little space when installed on the test stand apparatus. The meter was paired with the Amplifier Link, which combines a pickoff with a signal conditioner in one compact, low-weight design. Either magnetic or modulated carrier (RF) electronics are factory selectable. In the tractor manufacturing facility, the Amplifier Link provides a pulse output to the test stand data acquisition system that processes multiple flow rate factors.

### *Technical Information*

Flow Meter (Model Number): HS-2462YBULEAS4
Transmitter: S4 Amplifier Link

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