



NuSONICS DIVISION

MESA LABORATORIES, INC.

Rolling Oil Solutions

Instrument

Measurement of total rolling oil solutions concentration using NuSonics Division Model 86 Sonic Concentration Monitor (SCM).

Introduction

The maintenance of rolling oil solutions is critical to the proper function of a rolling mill coolant system. Effective control of the concentration of the rolling oil solutions will influence the quality of the rolled product.

Over the years, steel and aluminum companies throughout North America have been using Mesa Laboratories, Inc., NuSonics Division SCM units to measure concentration of oils in rolling solutions. The SCM unit has eliminated the need to perform periodic manual testing of rolling oil solutions concentration. Because the measurement is on-line and continuous, the user always has current and accurate concentration data available.

Conditions

The SCM will typically measure total oil concentrations from 0 to 12 Volume %. The rugged design of the HSX/T sensor assembly permits the SCM unit to operate over a wide range of conditions. Operating temperatures above 200° F and pressures greater than 500 psig pose no problem to this technology. The HSX/T probe assembly has no moving parts in contact with the rolling oil and is maintenance and trouble free.

The SCM measures the speed of sound through the rolling oil solution, as well as its temperature. These measurements are converted to rolling oil concentration, typically in Vol. %, via factory developed calibration curves. Since most mills use custom oil blends, each rolling oil is evaluated and a calibration curve developed at the factory prior to installation. All Model 86 SCM units are shipped factory calibrated to the user's oil type, concentration and temperature range. This eliminates field calibration and provides an SCM ready for service.

The accuracy of the Model 86 SCM will depend on the oil type used. In general, synthetic or emulsion technology based rolling oils can be more accurately measured than the dispersion type oils, but the effect of variations in tramp oil content on accuracy may vary. These considerations are handled on a case by case basis.

Installation

The standard rolling oil application incorporates the NuSonics Model 86 SCM with HSX/T probe assembly mounted on a 2" 150# ANSI rated flange. The probe assembly is installed by the user on a riser mounted on a 2" or greater process line. The SCM transmitter is mounted in a NEMA 4X enclosure.

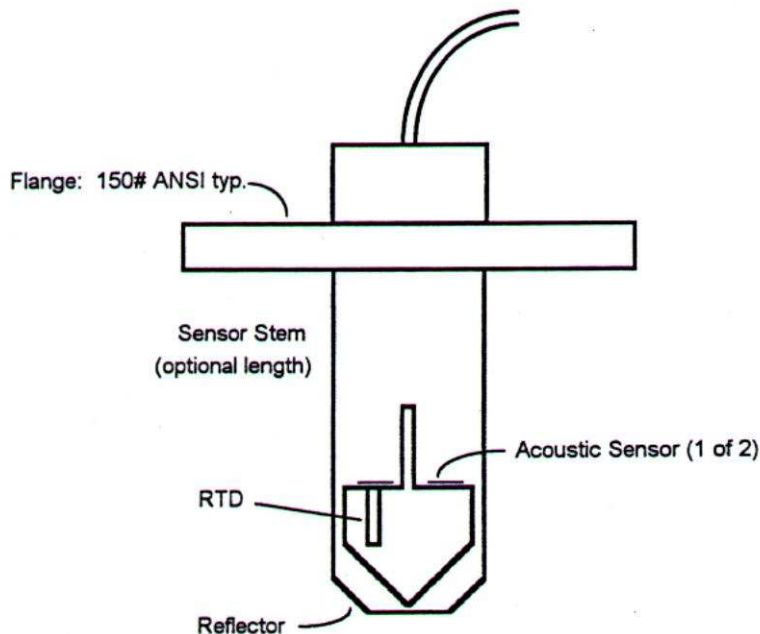
Accurate rolling oil concentration measurement requires that the solution be relatively free from air bubbles, large solid particulate or large globules of unemulsified oils. Rapid and extreme pressure variations can also affect signal quality. It is recommended that the sensor be located after any filters or particle (iron fine) separators in the process line.

If the probe assembly is located on a process line, the oil concentration measurement will usually not be valid when there is no flow. This occurs because emulsions will break, the oil present will rise to the top of the process line, and will therefore not be visible to the sensor. If it is desired to monitor the oil concentration even during process shut down, it is recommended that the probe assembly be mounted on its own circulation process loop from the main holding tank.

Benefits

- ◆ No required maintenance
- ◆ Continuous measurement of oil concentration
- ◆ User selectable units of measure
- ◆ Grab sample testing not required
- ◆ Easy to install. No special tools required to install HSX/T probe assembly
- ◆ Reduces operating costs through better process management
- ◆ All wetted parts are 316 SS
- ◆ Repeatability of 0.10 Vol. % or better, accuracy typically 0.20 Vol % or better

Please contact the NuSonics Division or your local sales representative to discuss your particular rolling oil measurement needs.



HSX/T SCM Probe Assembly