# DATA ACQUISITION SYSTEMS

PIG-2 : Pipe Inspection Gauge

Pipe Monitor or Pipe Inspection Gauge (PIG) is a battery operated instrument complete with 1" dia x 1" thick or 2" dia x 2" thick NaI (Tl) detector, voltage divider and preamplifier for the detector. H V supply for PMT, pulse processing circuitry, counter /timer circuitry and Flash Card for data storage are integral part of Pipe Inspection Gauge (PIG).
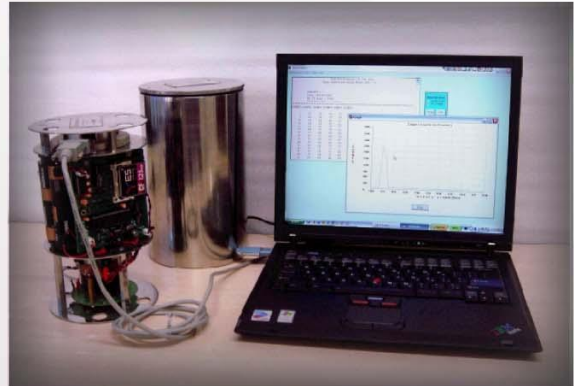
Entire equipment is housed in a water tight Stainless Steel container. This SS container is strong enough to withstand the tumbling and the shocks inside pipeline while traveling from one end to the other. Pipe Inspection Gauge works on 8 C type Dura Cells. Typical battery life is more than 40 hours. This enables user to use the PIG without changing the batteries even after one or two experiments.

PIG is a micro controller based single channel data acquisition system. It has front end electronics compatible to the NaI(Tl) detector. The incident radiation produces the sharp pulses as output of PMT. These pulses are shaped to TTL output for counting. Micro controller based counter counts these pulses and stores them in the Flash Card memory. The use of Flash Card reduces the down loading time of data when the PIG is retrieved after the pipe inspection.

Initialization of Flash Card, setting of counting time are accomplished by the software program. This program check the integrity of the Flash Card for writing the data. Once the time parameter is set, PIG is ready to acquire the counts data for a period over 20 hours.

Reading of Flash Card is done with use of another Windows based program PIGReader. This program downloads the raw counts and converts them in a text or excel file for later use. The graphic display is provided to quickly check for the peaks in the counts vs time histogram.

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Specifications -PIG-2

Detector : 2 dia x 2" thick, NaI(Tl) Detector with PMT integral assembly
or detector of specific size

Resolution : 8% or better for Cs-137

Electronics : Voltage Divider: Suitable for above NaI(Tl) detector
H V Supply: 0 to 1000 Volts as required by PMT, internally set

Pulse Processing : Pre-amplifier suitable for the detector with adequate pulse shaping
and discrimination for different isotopes of interest

Counter

Input : TTL pulse internally connected from pulse shaper

Counting Time : Externally programmable from 1 to 999 sec with step of 1 sec

Maximum Counts : 15777K(3 bytes) / Counting Time

No. of Events : up to 100,000

Data Storage : Flash Card memory

Mechanical

Enclosure : Water tight Stainless Steel cylindrical enclosure

Max. Dimensions : 150mm(6")dia x 300 mm (12") long

Electrical

Battery Power : Standard Dry Cells or Dura Cells, 8 nos.

Battery Life : 20 hours minimum

Software

Data Retrieval : Windows based for downloading the stored counts data to PC