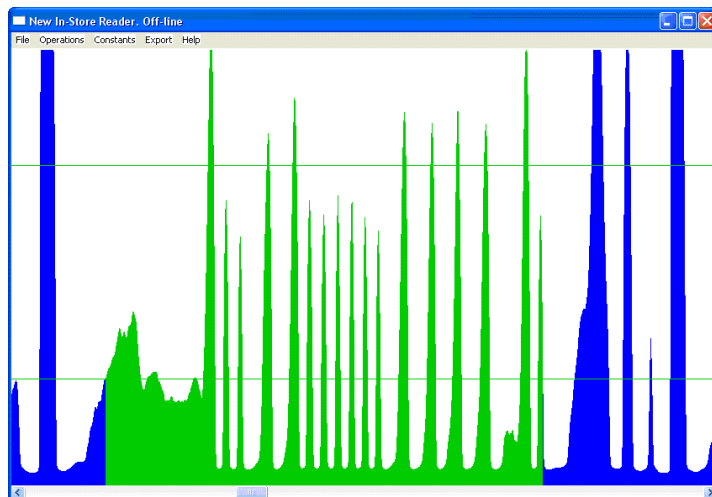


Intermediate Can Reader

Challenge

THORP Finishing Line product is packaged and stored in special containers comprising three concentric stainless steel cans. The intermediate can has a tamper-proof identification barcode machined into the surface. This must be read through the outer can. The inner and outer cans also have laser-etched barcodes.



Solution

NNL has developed instrumentation to read the intermediate can barcode using the eddy current techniques developed for use in the field of non-destructive testing. When an alternating current flows in a coil in close proximity to a conducting surface, the magnetic field of the coil will induce circulating (eddy) currents that penetrate the surface.

As the measuring head travels along the length of the outer can, the eddy currents are interrupted by the grooves in the intermediate can. Pulses in the output signal corresponding to the grooves are processed by digital electronics and analysed by bespoke software. The software can interpret the can number when travelling in either direction and incorporates sophisticated error detection.

There are 17 grooves on each can. The width of the grooves is constant but the spacing between them is varied to produce a 15 bit binary number. This means that there are 32768 unique can numbers.

The product store is arranged in horizontal ports, each holding up to 13 cans. The eddy current head is therefore mounted on a trolley enabling all the cans in a port to be analysed in a single pass.

Benefits

The instrumentation developed by NNL has helped the customer to meet the regulatory requirements of external auditors. Additional benefits include decreased plant downtime and decreased risk of operators receiving a radiation dose.

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