Surface Layer Activation (SLA) by ANS Technologies

What is On-Line SLA?

A thin layer and pre-selected area of the surface of a machine component is labeled with radio-isotopes. Once the activated part has been installed and the machine assembled, specific measuring equipment can detect the gamma rays emanating from the activity.

During the wear or corrosion process, the loss of material results in a loss of activity at the surface of the part and an accumulation of activated particles in the lubricant. By placing a gamma ray detector near the activated component or near the lubricant circuit reservoir or filter, the movement of the activity is very precisely measured. These measured values are computer-processed rapidly, and the on-line monitoring of the degradation is delivered.

The system is able to deliver a non-contacting and continuous measurement of wear and corrosion, even for moving parts in inaccessible locations. The results are extremely precise (0.1 µm - 0.01 µm). Moreover, the exact location of the loss is known. The measurements are performed under real operating condition.

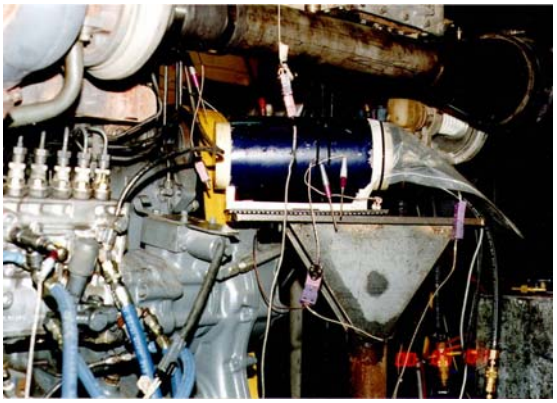
MAIN FEATURES

Very high sensitivity ⇒
Faster development

On-line measurements ⇒
Dynamic studies

Selective labeling ⇒
Exact localization of wear

Remote measurements ⇒
Study inaccessible locations

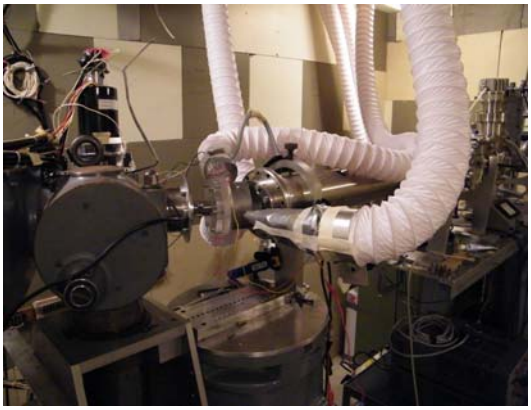


Residual Method (aka Direct or TLD)

This method consists of placing the detector near the activated component's labeled zone. The activity can be detected through the intervening material. As the activated material is removed from the zone, the activity decreases. This loss of activity is then converted on-line into the equivalent material loss.

Flow-Through Method (aka Concentration or Debris)

This method is used when the wear particles can be collected in a lubricant circuit. The increasing amount of activity in suspension in the lubricant is monitored, or the wear particles are captured by a filter or a magnet. This increase of activity is then converted on-line into the equivalent material loss.



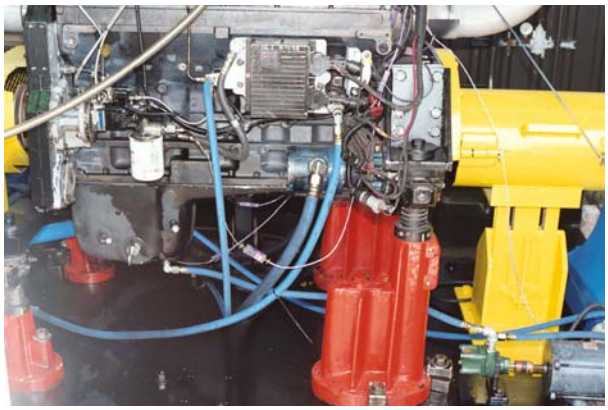
Activation Services

ANS Technologies operates its own activation facility at the University of Montreal. We are equipped to perform proton, deuteron and heavy-ion activations on a wide variety of components, materials and geometries. We also cooperate with other facilities to provide additional services of neutron activation, Be implantation, specialized profiles, and heavy targets.

Track-Wear Products

In order to perform SLA tests, a variety of equipment is required. ANS Technologies has developed most of the equipment that we use, and these products are available for purchase and rental for in-house users of SLA.
These products include:

- The ANIQSpec integrated spectroscopy system
- The ANSWERS software package, which monitors wear in real-time
- Flow-through reservoirs
- Water jackets for NaI detector cooling
- Lead shield configurations
- NaI and Ge detectors



On-Site Services

ANS Technologies has personnel who travel across North America performing SLA tests at the customers' facilities. Our personnel are available both short and long term, at very reasonable prices. We pride ourselves on providing the best support possible. Your test is our test!

Customized Service

We will customize our products & services to your needs. In addition to the Full-Service On-Site package, we also offer off-line measurement service and consultancy services for routine applications.

For all your SLA needs, contact:
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