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Number 40

# APPLICATION NOTE

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## Solving Sensor Problems using Stabilants

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- *Background*

Sensors have been with us ever since the days when Watt invented the flyball governor for steam engine speed regulation. While we are seeing an increase in optical encoded outputs suitable for optical-fibre cable use, most sensors we encounter today use electrical signals to transmit their output back to the controlling device. With the increase in microprocessor-controlled signal processing the signal levels in the wiring harnesses have generally dropped to TTL/MOS levels, that is, voltages under 5 volts and with correspondingly low currents.

Unfortunately for the reliability of equipment whose operation is controlled by sensors, connector reliability at these voltage and power levels has lagged behind the demands placed upon them and the consequences are, for example, that it is estimated that 10% of all automobiles stalled on the roadside are suffering from an electrical connector failure of some sort.

The same conditions exist in many other areas, be it untimely landing-gear retractions caused by "squat-switch" failure to unnecessary rejections of IC's during the final acceptance tests caused by improperly functioning test fixture connectors.

Where "sensor-failures" occur, the lost-of-time and loss-of-product can be expensive. The cost of replacing perfectly-good sensors because of the malfunction of a connector (whose cost is generally only a fraction of the cost of the sensor itself) can really hit a service group in the pocketbook. Normally, reimbursement of the service group for labor and parts costs are dependant upon testing by the manufacturer to verify that the assembly is actually at-fault. The problem is that a simple disconnect and reconnect cycle will usually clear up the connector problem (for a short time anyway) and thus the faulty connector may perform flawlessly under the manufacturer's testing conditions. Not only is the customer annoyed by the original down time, but the service group is out-of-pocket. Another problem is the potential for loss of good relations between the dealer and customer, and between the manufacturer and dealer.

Often the long-term duty cycle of the equipment can increase the problem. For example, in the agricultural impliment field, the situation can be aggravated by the fact that the equipment is usually laid-up for the major part of the year and then is called upon to fuction perfectly during several weeks of intensive use. It is not unusual for farmers to run their combines on a multiple-shift basis to bring in the crop as soon as the grain ripens, thus any worst-case down-time can increase the potential for a major financial loss to the farmer due to adverse weather conditions.

- **Can Sensor Connector Problems be Reduced?**

Yes, the **Stabilants** have proven to be very effective in improving the reliability of connectors in general and are developing a reputation for ease and speed of use under field conditions. Not only are many OEM's pre-treating sensor connectors during manufacture, many are providing the **Stabilants** to their service technicians either as Standard Store items, or recommending them for field procurement.

The **Stabilants** are presently used in applications ranging from Avionics through Process control, including such critical fields as Bio-medical electronics, Air-Traffic Control, Police & Emergency communications and the like.

- **How are the Stabilants applied?**

The application of the **Stabilants** is exceptionally easy. Just use a drop of two of **Stabilant 22A** on one of the sensor connectors and any other in-signal-path connector in the wiring harness, and reconnect the system.

*Not only are they easy to use but they have so many potential applications in industry, automotive, farm and even in the home (on everything from Computers, CATV, & Stereo Systems) that they should be in everyone's tool-kit!*

NATO Supplier Code 38948 - 15 mL S22a size has NATO Part # 5999-21-900-6937

The **Stabilants** are patented in Canada - 1987; US Patent number 4696832. World-wide patents applied for. Because the patents cover contacts treated with the material, a Point-of-sale License is granted with each sale of the material.

**MATERIAL SAFETY DATA SHEETS ARE AVAILABLE ON REQUEST**

**NOTICE**

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