



**CANSTAR**

**Instruments Inc.**

## **CANSTAR 3101SE STRESS ENERGY VIBRATION TRANSMITTER**



**Hazardous Locations approved for  
Class 1, Div. 1, Groups C, D T4  
IEC Exia IIB T4**

**Certified to:**

**CSA E60079-11-02 (R2006)**

**CAN/CSA E60079-0-07**

**CSA 22.2 No.142-M9187 (R2004)**

### **Typical applications:**

**Trust bearings on Screw Compressors  
Bearings in gearboxes  
Dry seal-less pumps  
Pump cavitation  
High pressure leak detection**

Vs3 100517



## **Canstar 3101SE detects machine stresses**

The Canstar 3101SE Stress Energy Transmitter detects machine stresses by acting like it is listening, instead of feeling for vibration (velocity or g)

The 3101SE is the improvement of existing stress energy transmitters on the market, since the electronics are equipped to detect and measure higher Stress Energy Levels (SEL in gse). This development is based on research and customer feedback.

The transmitters are quite sensitive and will detect minute stresses at very early stages. It has been found that a number of applications can run for some time at levels exceeding the 10 gse (SEL if you will). Hence this transmitter is equipped to measure and detect up to 20 gse and on-line monitoring can continue, allowing personnel to make the call for the appropriate shutdown time.

The Canstar 3101SE installs easily, it operates right of the loop power and connects to the analog inputs of the PLC, DCS system.

### **It detects:**

- Problems with rolling elements in bearings
- Steel to steel in motion contact (i.e. non-lubrication situations)
- Dry seal-less pumps
- Pump cavitation
- Vibrating screens plugging up
- Solids in product
- Gear problems
- High pressure leaks
- Seal and bearing rub (sleeve or pad bearings)

### **How it works:**

Machinery generates stress energy emission when they cavitate, run dry, become excessively loaded, or approach bearing failure points. The Canstar 3101SE listens for these high –frequency emissions and transmits the proportional elevated signal when they happen. In quite a few cases the operators can make process adjustments to bring the stress signal back within operating levels and with this at least mitigate equipment failure



# CANSTAR

Instruments Inc.

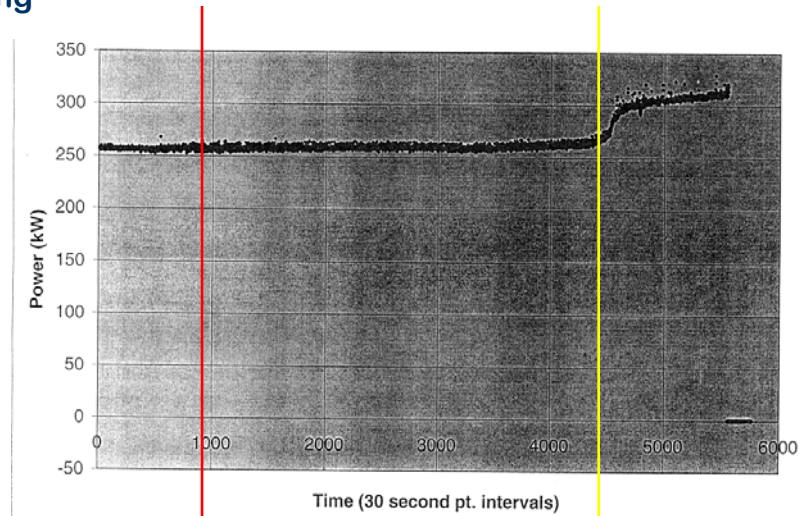
**Application:** Two stage Mycom screw compressor: High pressure 2<sup>nd</sup> stage  
400HP, 3645rpm

**Test:** Forced failure on trust bearing

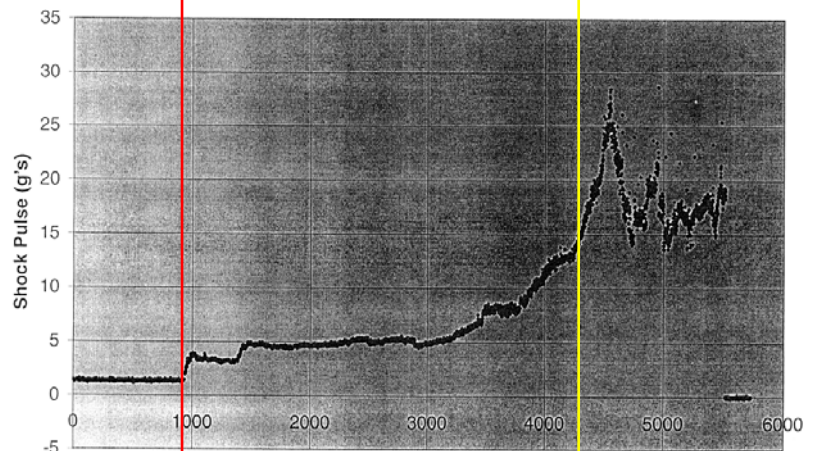
**Red line:** Trust bearing is starting to fail

**Yellow line:** Screw hit housing

## Power consumption

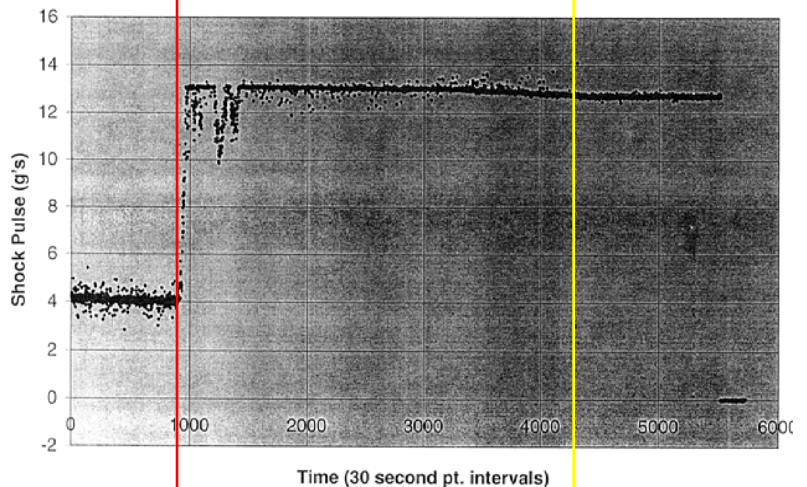


## Typical shock-pulse



## Stress Energy

**Important Note:**  
The trending was set up to measure up to 10gse, hence the flat line, and no further increase in signal once the screw hit the housing: one good reason for the new measurement range of 0 to 20 gse on the Canstar 3101SE



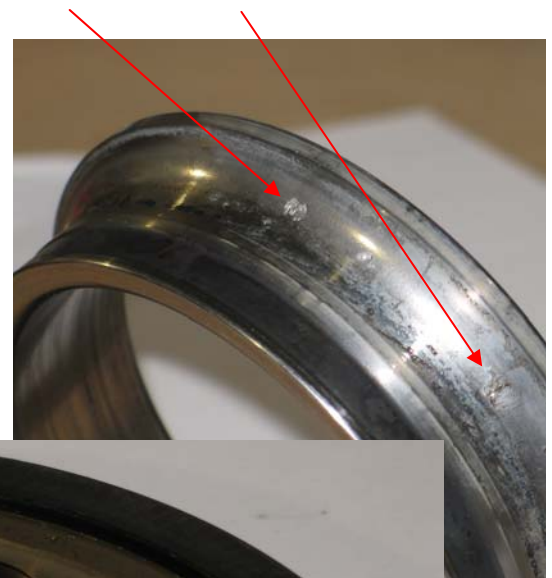
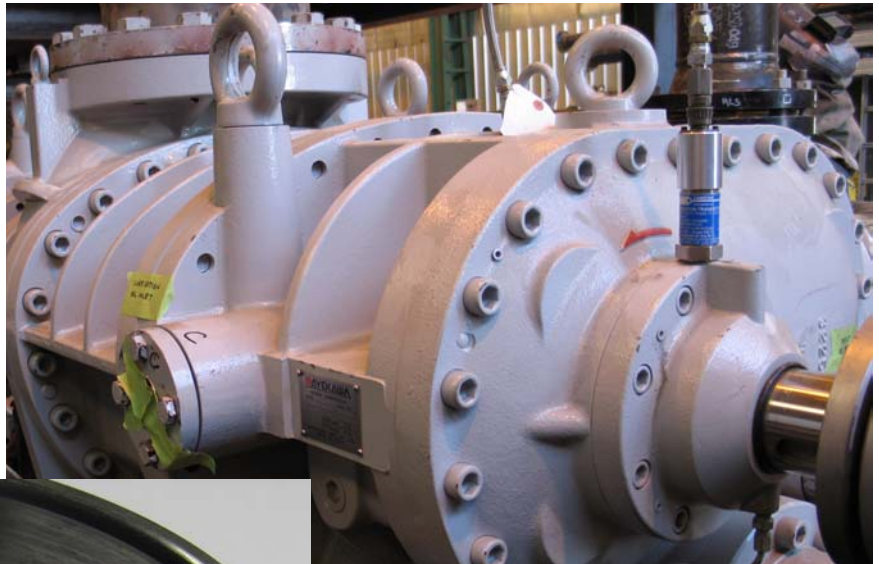




**CANSTAR**

**Instruments Inc.**

**Application: Screw Compressor trust bearing failure detection**

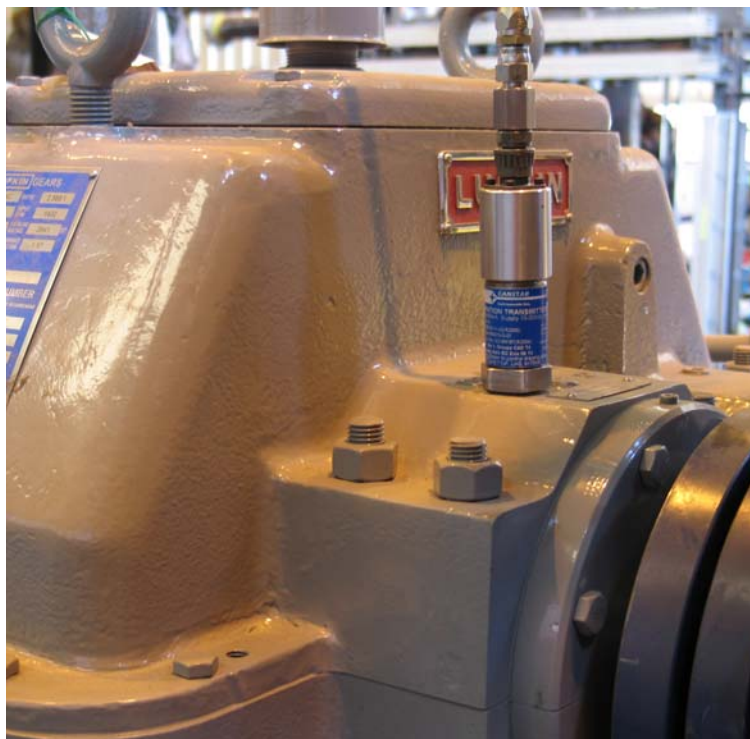




**CANSTAR**

**Instruments Inc.**

## Application gearbox





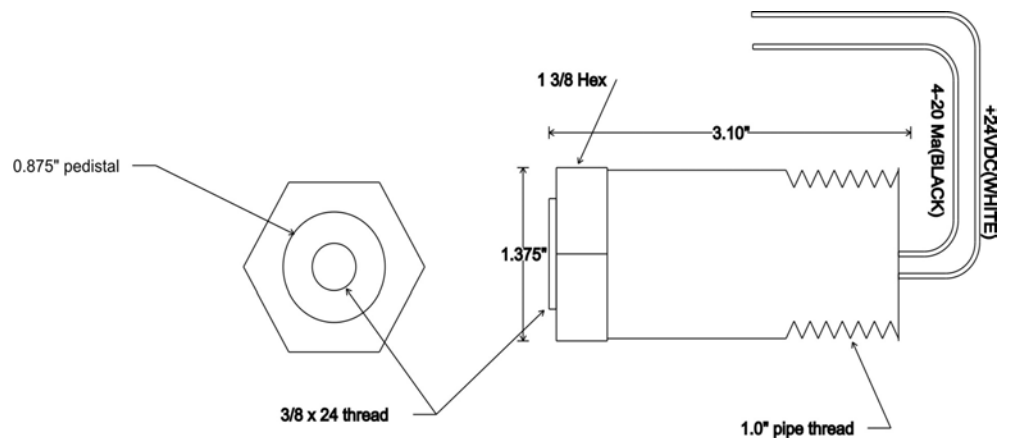


# CANSTAR

**Instruments Inc.**

## Specifications:

Housing:	316 Stainless Steel with double epoxy sealing
Power supply:	15 to 30 Vdc, 24Vdc nominal
Load Resistance:	50(Vs-12) Ohms, isolation: 500V, circuit to case
Output:	4-20mA, into 600 Ohms 24Vdc nom.
Stress level:	0-10 g(se) standard 0-20 g (se) with jumper clipped
Electrical Connection:	4" flying leads standard, 20 AWG Phoenix two pin (optional) MIL style two pin (optional) FlexBraid 3101SE-H 1.0" pipe thread
Mechanical Connection:	0.875" round flat spot, with 3/8-24 stud (stud supplied) Drill to 12mm, tap (thread) to 9mm Using 1 3/8" wrench torque to 55 inch/lbs only
Orientation of axis:	Any direction
Frequency range:	5 kHz to 60 kHz
Temperature range:	-40°C to +85°C
For Hazardous Locations:	Class 1, Div. 1, Groups C, D T4 IEC Exia IIB T4
Certified to:	CSA E60079-11-02 (R2006) CAN/CSA E60079-0-07 CSA 22.2 No.142-M9187 (R2004) Note: IS Barrier required, and follow local wiring codes



**CANSTAR****Instruments Inc.**

Optional accessories with 3101SE Stress Energy Transmitter

### **FLEXBRAID Flexible Conduit with swivel connectors**

FlexBraid Conduit comes standard in 5' (other lengths available)

Order: 3101SE-FBx  
(where x is length in feet)

The Flexbraid, provides two main functions: Protection of the signal wires from EMR and RFI interference and prevents ingress of water into the conduit.

Also the Flexbraid is at both ends fitted with swivel connectors, so the wiring internal does not get twisted when connecting or disconnecting.

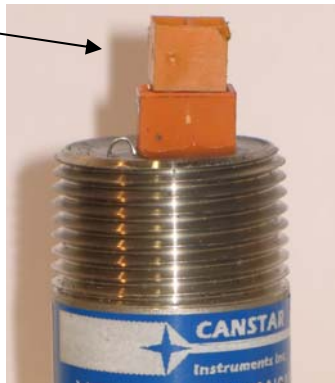
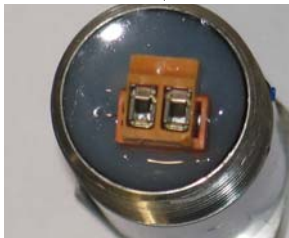
FlexBraid Housing comes with the two pin mating connector  
(1" NPT female)

Order: 3101SE-HS

### **Phoenix Connector**

2 pin plug-in connector

Order:  
3101SE-PC



**Mounting studs** Adapter 3/8-24 to: 3/8"NPT; 1/2 " NPT; 3/4" NPT;

1/4-28



Order: 3101SE-0.375NPT; 3101SE-0.500NPT; 3101SE-0.750NPT; 3101SE-0.250-28