SHINKAWA Electric Co., Ltd (SEC)
SHINKAWA Sensor Technology, Inc. (SST)
SHINKAWA Electric Co., Ltd

Company History

- 1927  Started business under the name “SHINKAWA Namito Shoten”.
- 1951  Reorganized into SHINKAWA Electric Co., Ltd. (SEC)
- 1977  Started manufacturing the displacement and vibration transducers.
- 1980  Started manufacturing the turbine monitoring system.
- 1994  Separated from SHINKAWA Electric Co., Ltd. and SHINKAWA Sensor Technology, Inc. was established.
- 1994  Hiroshima factory was certified as conforming to the international quality assurance standard ISO 9001.
- 1996  Hiroshima factory obtained ISO 14001 certification for the Environment Management System.
- 2000  Established Shinkawa Electric Company of America, Inc. (SECA)
- 2001  Opened offices in Singapore
- 2004  Opened offices in China
Linked 5 segments in SHINKAWA

SHINKAWA Sensor Technology, Inc (SST)

SHINKAWA Electric Co., Ltd (SEC)
How large SHINKAWA Electric Co., Ltd is?

- Established in 1927
- Capital: 200 Million Yen
- Annual Sales: 30 Billion Yen
- 638 employees
- 35 Sales Offices throughout Japan
How large SHINKAWA Sensor Technology is?

- Established in 1994
- Capital: 50 Million Yen
- Annual Sales: 1,803 Million Yen
- 135 employees
- Factory in Hiroshima
Certification List - Certified by Customers

- MITSUBISHI ELECTRIC CORPORATION / Energy & Industrial systems center
- HITACHI, Ltd. / Hitachi works
- MITSUBISHI HEAVY INDUSTRIES, Ltd. / TAKASAGO machinery works
- TOSHIBA CORPORATION / Power systems & Services company (Keihin)
- BABCOCK · HITACHI / Kure works
- TOSHIBA CORPORATION / Power systems & Services company (Fuchuu)
- ISHIKAWAJIMA · HARIMA HEAVY INDUSTRIES Co., Ltd. / Aero · Engine & Space operations
- HITACHI, Ltd. / Instrument division
- HITACHI, Ltd. / Tsuchiura works
- HITACHI, Ltd. / Omika works
- ISHIKAWAJIMA MASS-PRODUCED MACHINERY Co., Ltd
- MITSUBISHI HEAVY INDUSTRIES, Ltd. / HIROSHIMA machinery works
- KOBE STEEL, Ltd. Industrial machinery plant
- MITSUBISHI HEAVY INDUSTRIES, Ltd. / YOKOHAMA dockyard & Machinery works
- GENERAL ELECTRIC / Power systems (U.S.A.)
- COOPER TURBOMACHINERY
- ATLAS COPCO
Product Lines

- Vibration Measurement (Main Product)
  - Sensors
  - Transducers
  - Monitors
  - Vibrating Analyzer

- Displacement Measurement
  - Thickness Measurement

- Custom Products
  - Special Sensors for Shinkansen, Rocket etc
Eddy Current Sensor

Operational Overview

RF in → COIL

Magnetic Field

Eddy Currents

Oscillator / Demodulator

(+)

TIME (ms)

0 10 20 30 40 50 60 70 80 90 100

Eddy Currents

Vibration Amplitude

Average Gap Voltage

(-)

VOLTS

4 8 12 16 20 24
Turbine Supervisory Instruments (TSI)
Vibration & Displacement Transducer Line up

- **VK Series**: Vibration Transducer
- **FK Series**: Vibration Transducer
- **CV Series**: Accelerometers Velometers
- **WK Series**: 2-Wire Transmitter
- **MS Series**: Magnetic Pickup
- **LVDT Series**: Differential Transformer
Monitor Lineup

VM-21
Signal Conditioner

VM-15
4-Channel Monitor

VM-16
4,8,12-Channel Monitor

VM-5
TSI Monitor

VM-7 New TSI Monitor

MP-2 Machine Protection Monitor
Vibration Analysis Software

RV-100
View Station
SWiNS  Smart Wireless Network System

- Wireless Communication of Vibration and Static Data
  SS series for static data, SD for Dynamic data
- Any signal +/-20V
- Convertor (8pcs max) and Depo (16pcs max)
- 100m transmission distance (Outside)
KC Series
Electromagnetic Rail Displacement Sensor

- JR East Test Train for Shinkansen
- Measure at same speed as Commercial Shinkansen
- Measure Rail straightness and Location
- Track inspection for Railway (Part of maintenance)
- All weather, Outstanding environmental Resistance
Rail Displacement Sensors

- KC Sensor For Straight Line
- KP-100A Sensor For Location
- JR East Test Train
- Target for Location
Liner Motor Car Levitation Control Sensor

- Principle is eddy current.
- Two sensors are installed in long alminum case and measure the distance between sensor top and target rail without any contact. (non-contact)
Liner Motor Car Levitation Control Sensor

- The reason for 2 sensors is to prevent the signal deterioration at rail joint. The system selects the right sensor automatically.
- Send the distance information to control circuit in order to control the car floating.
H-ⅡA Rocket Sensors

Liquid hydrogen Turbo Pump

Liquid Oxygen Turbo Pump

LE-7A Engine

Sensor & Cable

H-ⅡA Rocket

Courtesy of JAXA
H-ⅡA Rocket Sensors

- Vibration sensors for H-ⅡA rocket.
- Turbo pump is used for sending liquid oxygen and liquid hydrogen to the jet orifice with high pressure.
- The sensor needs to be used at -253degC and 25MPa atmosphere.
Special Displacement Sensors

- Super Low Temperature Sensor: Up to -253°C
- High Pressure Sensor: Up to 25MPa
- High Temperature Sensor: Up to 600°C
- Metal Top Sensor: 13MPa, 10Mrad
  Covered with metal in order to withstand high pressure and high radiation.
THE END