

SeTAC

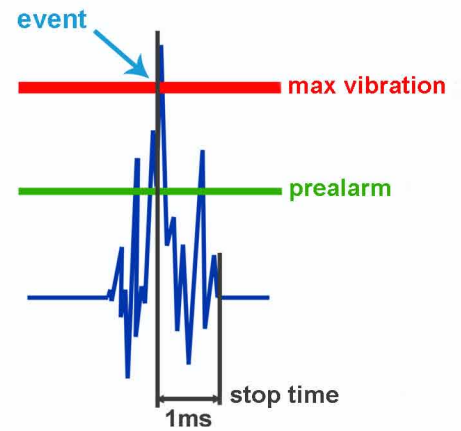
On board machine monitoring

Mounted on the machine, the SeTAC smart sensor affords continuous, independent triaxial monitoring of vibrations. With its extreme flexibility, the sensor provides a simple cost-effective solution for correct monitoring of a single machine or of an entire work cycle.



Detect, compare, alert, record

The SeTAC's innovative technological design has made it possible to overcome pre-existing difficulties in the field of on-board vibration analysis, with a drastic reduction in the complexity and costs of the typical monitoring functions of industrial processes. The vibration is studied on the sensor through an in-depth triaxial analysis, identifying the components caused by the various mechanical parts and discriminating between damaging processes and those of the normal work cycle. Having verified the behaviour of the machine, the signals processed are compared with a number of user-configured limit thresholds. Any irregular functioning is highlighted by a deviation from correct functioning levels which is communicated to the outside with extremely fast digital alarms and also logged and catalogued inside the SeTAC. The SeTAC therefore represents the ideal solution for real-time monitoring and control of vibrations, equipping the machine with a real "black box".



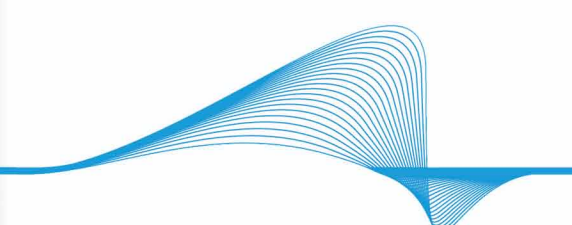
Example of machine stop time after the occurrence of an event exceeding the max threshold that was set from the operator

Applications

The SeTAC has been designed with the aim of monitoring tool-part collisions in machine tool applications where precise reading of the vibration and fast reaction are essential. The sensor is able to distinguish between the various phenomena analysed, to intervene promptly alerting the operator and to contribute to any modifications of process parameters. With these characteristics, the instrument is also highly appreciated in other fields of application, from process monitoring of any work cycle to supervision of machine conditions. Applicable amongst others in the eolic, railway and automotive sectors, its extreme versatility guarantees high level integration in a range of different applications characterised by the need to keep a watchful and expert eye on on-going vibrations.

Events recorded			
Date	Time	Value	Alarm thr.
02.03.05	07:35	2,25	3
13.03.07	19:41	2,67	2
15.05.08	06:55	3,12	3
.....

Internal black box up to 12.000 events with indication of the main parameters: date, time, reached value and involved alarm threshold



Connections and use

The acceleration signals acquired inside the SeTAC are processed by the powerful integrated microprocessor and displayed via the SeTAC Configuration Console user interface.

With a simple USB connection to the PC, the software permits selection of a wide range of application programs (Sequoia is also willing to study specific algorithms for personalised applications) that, once uploaded inside the SeTAC, offer latest generation vibration signal analysis techniques (frequency analysis, RMS assessments in order to study work overloads, instantaneous recognition of destructive phenomena and collisions, concurrent and combined analysis of vibrations on several axes).

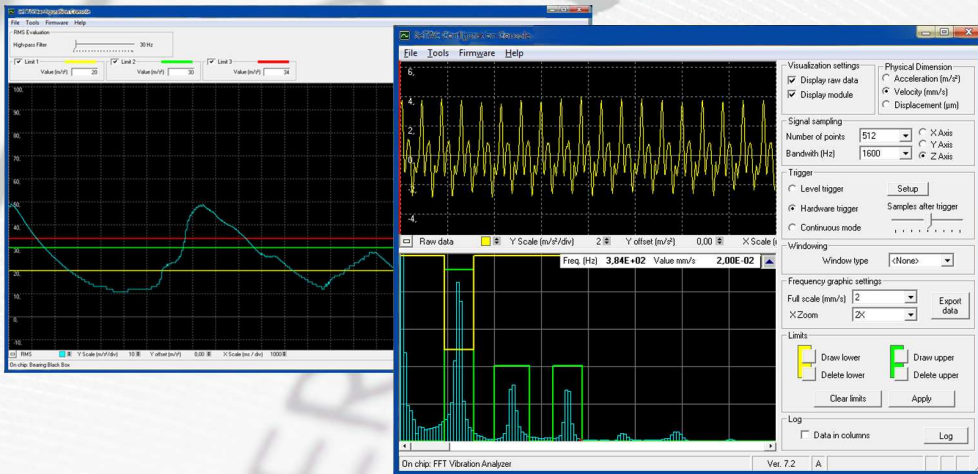
Using the simple graphic interface, the PC makes it possible to set working parameters such as thresholds and digital filters, providing real-time display of the vibration graphs and the log of vibration events acquired on the machine.

After disconnecting the PC, the SeTAC operates completely independently, connecting to its interface card which, in addition to simplifying connection and powering of the device, provides the possibility of integrating the SeTAC in the company's Ethernet network and inside industrial logical controllers such as for example PLCs and actuators.



Technical specifications

Acquisition	<i>Full scale</i>	+/- 18g
	<i>Bandwidth</i>	0 - 2500 Hz
Physical	<i>Resolution</i>	0,0075 m/s ²
	<i>Dimensions</i>	30 x 55.5 x 15 mm
Electrics	<i>Weight</i>	55 g
	<i>Cable length</i>	3m (optional up to 30m)
	<i>Supply voltage</i>	18-36 V _{DC}
Environmentals	<i>Supply current</i>	200mA
	<i>Communication</i>	RS232, USB 2.0, Ethernet
	<i>Relay contacts</i>	Out 1,2: 240 V _{DC} 6A
		Out 3: 60 V _{DC} 400mA
	<i>Protection level</i>	IP67
Environmentals	<i>Shock resistance</i>	10.000 g
	<i>Temperature range</i>	0-70°C
		CEI UNI - EN 61000-6-2 CEI UNI - EN 61000-6-4



Guarantee of correct measurement

Use of innovative MEMS sensors integrated in the device eliminates the need for periodic calibration of the SeTAC. It is also fitted with a continuous self-test system which verifies correct functioning and can alert the user of any malfunctions, thereby guaranteeing certain, correct measurement throughout the life of the device.

Measurements

Time domain analysis

Axial components
Bi-Axes and Triaxial Modules
RMS value

Frequency analysis (Hz,rpm)

FFT acceleration
velocity
displacement

Overall: peak and RMS

Acceleration
Velocity
Displacement

Digital filters on full bandwidth

Low Pass
High Pass

