VIBROMETRIC

VIBSIST-200
CODED-IMPACT SEISMIC SOURCE

VIBSIST-200

KEY FEATURES

- All terrain reflection seismic source
- Simultaneous multiple-source capability
- High productivity
- High resolution
- Rugged and mobile
- Minimum environmental impact
- Compatible with all industry-standard seismographs

The VIBSIST-200 is multi-impact, time-distributed seismic sources intended for detailed seismic surveys in remote and environmentally sensitive areas or from tunnels and mine galleries.

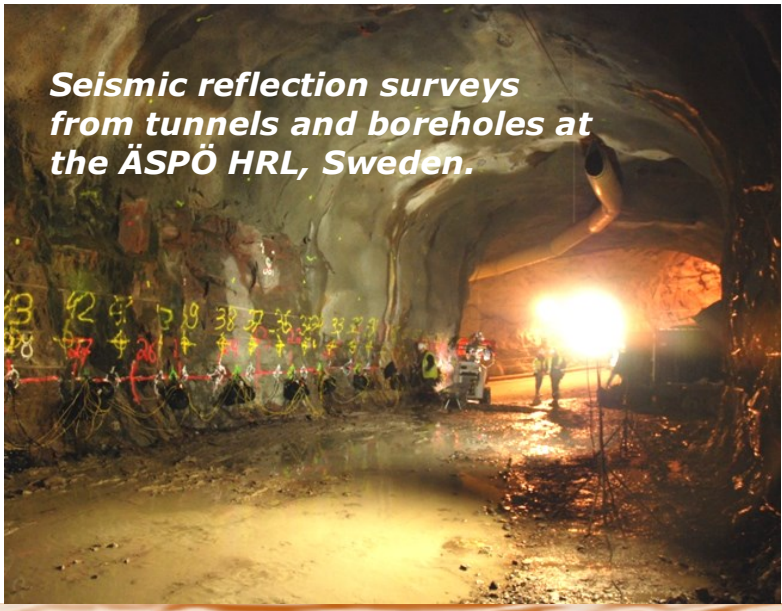
The light 200 J/impact model provides high-maneuverability and mobility in urban, industrial and mining environments.

The seismic signals are generated by a hydraulic hammer mounted on a miniature tracked vehicle, which produces a rapid sequence of impacts according to a pre-programmed time function.

APPLICATIONS

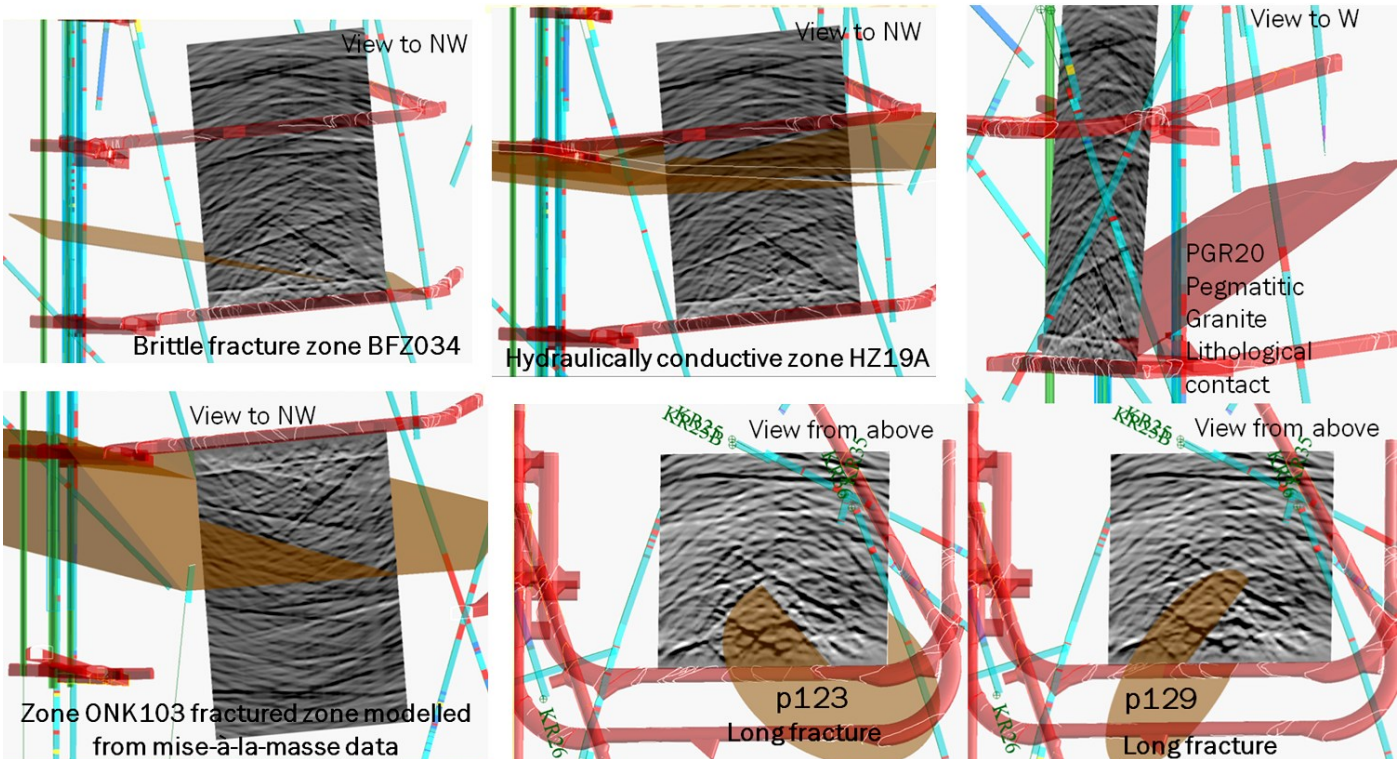
The VIBSIST-200 is intended for detailed **surface, borehole and underground surveys** with a typical penetration range of 300 to 500m, in reflection mode.

- Shallow oil and gas
- *Mineral exploration*
- *Mine gallery and tunnel surveys*
- *Hydrogeological studies*
- *Geologic waste storage*
- *Geothermal energy*



Seismic reflection surveys from tunnels and boreholes at the ÄSPÖ HRL, Sweden.

SEISMIC CHARACTERISATION OF HARDROCK AROUND ONKALO TUNNEL AT THE OLKILUOTO SITE IN FINLAND



Known brittle fracture zones, lithological contacts, hydraulically conductive zones, electrically conductive zones (according to mise-à-la-masse surveys) and long fractures could be confirmed by seismic data acquired from Onkalo tunnel.

The VIBSIST-200 source achieve equivalent or better data quality than would drop-weights, especially in noisy environments.

The improvement is obtained by accumulating higher impact energy over a period of time. A signal energy of 40 kJ is produced over a period of 25 seconds at an average rate of 8 impacts per second.

The build-up of individually low energy impacts leads to significant depth penetration while conserving the high frequency component and leading to higher resolution surveys.

All types of noise – cultural, natural, and instrumental – are canceled by the swept impact technique.

The data quality is also increased because the VIBSIST-200 is not dependent on shot-to-shot variations of other impulsive sources.

Compared with frequency swept vibrators, a wideer bandwidth is achieved with the VIBSIST-200 even when the coupling to the rock or ground is relatively poor.

EISMIC SOURCES

SYSTEM MODULES

The **impact assembly** is built as a sandwich of aluminum, steel and rubber plates and bells and several types are available to customize the VIBSIST -200/500 for specific applications and ground or rock conditions.

The Hydraulic impact hammer operates in accordance with the coded sequence, produced by the instrument controller.

The seismic response recorded by the controller processor of the source is conveyed to the recording station by a coded radio signal cable or optionally by cable. A variety of **seismographs** can be used, which include all industry -standard recording systems.

SOFTWARE

- **Control Software** used to program and operate the sweep control sequence
- **Sweep Decoder**; correlates the sweeps. This module can either be used for fast on-line monitoring or elaborate off Line processing
- **Signal Conditioning**, includes a collection of filters used for processing of the records before and/ or after correlation

Signal Display Interface allows the

- operator to visualize the data conveniently and flexibly.

The VIBSIST-200/500 can be used all WINDOWS seismographs and a number of UNIX/LINUX seismographs. A dedicated correlator is included with the VIBSIST software.

SPECIFICATIONS

Impact energy:
VIBSIST-200: 120—200 J / impact
Repetition rate: programmable between
10 20 impacts per second
Programmed sweep characteristics:
operator designed (graphic interface) or preset
Sweep time adjustment: 2.5 to 30 seconds (possibly limited by the maximum number of samples per channel of the recorder).
Controller
Remote start button for normal operations, Display unit for sweep monitoring and set-up.
Data transmission
Radio / Cable link for trigger, pilot signal.
Impact Hammer
Hydraulic with gas accumulator
Impact Plate
Steel and aluminum sandwich, base plate 500 x 500mm
Hydraulic Controller

Oil Tank	20 l
Pressure	150 bar
Max flow	55 l / min

Total weight 1000 kg
Dimensions **L**1400 x **W**800 x **H**1500 mm

The recommended temperature range for operation is –30° to 50°C.

VIBSIST-200 SEISMIC SOURCE

The VIBSIST-200 is an environmentally friendly seismic source. This a non-destructive alternative that does not create environmental pollution such as chemicals, sound, etc. Legal risks frequently associated with using explosives are eliminated.

The VIBSIST-200 allows jobs to be done faster and in very different conditions.

The VIBSIST-200 source produces wide-band seismic signals even when coupling to the ground or tunnel wall is relatively poor.

127 Taipaleentie
Perttula, 01860
Finland

Phone: +358 9 2761418
Fax: +358 9 2761266

info@vibrometric.com
www.vibrometric.com