

HGS (INDIA)LIMITED

(A 100% EXPORT ORIENTED UNIT)

158, Sector-4, IMT Manesar

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LETTER OF INTRODUCTION

HGS (INDIA) LIMITED: WORLD RENOWNED SUPPLIER OF GEOPHYSICAL EQUIPMENT

Dear Sir/Madam,

We take pleasure in introducing our Company, **HGS (INDIA) LIMITED (HGS)**; a world-renowned manufacturer & supplier of geophones, seismic cables & other geophysical products; and announcing our successful & ever-growing partnership with **Seismic Source Inc. USA (SSC)**; a globally recognized seismic equipment manufacturer; to provide a bundled solution for MASW, LVL, uphole, earthquake monitoring & engineering studies using our famous seismographs & accessories to customers across the Indian sub-continent.

SSC is well known for its state-of-the-art shallow refraction & reflection seismic data acquisition systems ranging from 1-24 channels with provision for unlimited expansion in their distributed format. Apart from acquisition systems, SSC has an enviable range of source triggering and timing systems, as well as geophone testing equipment.

We have tied up with SSC to bundle such locally assembled data acquisition systems along with our spread and data cables, trigger and hammer extension cables and all types of geophone assemblies required for use with these systems.

As part of the Atmanirbhar Bharat program, we entered into a manufacturing agreement with SSC in 2016 and now assemble the SSC range of seismographs in India. Seismographs are assembled at our state-of-the-art factory in IMT Manesar, Gurugram. In addition, we partnered with R T Clark Inc USA to provide accelerated weight drop systems ranging from 40Kg to 500Kg hammer weight. Coupled with our earlier technology transfer for the manufacture of all kinds of geophones and seismic cables from Geosource Inc USA (Owners of Sensor Nederland), we offer a complete solution for all survey needs. We have also tied up with leading developers of Reflection, Refraction, Crosshole, Downhole, REMI, HVSR and MASW processing software, and are now a one-stop-shop for all your seismic survey/ geophysical exploration equipment needs. Finally, to further strengthen our product offering, we have set up an in-house service & repair facility in Gurugram to offer customers in-country services for all their servicing and repair needs. Our team of engineers & geophysicists are available for product demonstrations, installation, training & troubleshooting activities.

We currently have the largest seismograph market in India with the highest number of seismographs sold for refraction, MASW and weathering studies to ONGC & OIL India's seismic contractors and other customers. Our customer base extends to various public sector clients including CSIR Institutes, Central & State Government bodies, various engineering colleges & IITs, R&D laboratories, and a number of institutes & laboratories overseas. Furthermore, our range of geophones are world renowned with HGS being one of only four companies in the world to be audited by Saudi Aramco and approved as suppliers for their seismic crews in Saudi Arabia.

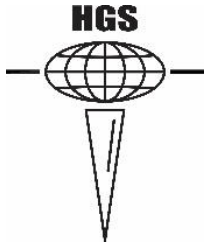


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A brief write-up on SSC's & HGSI's product range & user segments has been attached with this letter (see Annexure 1 & 2). We look forward to serving your needs & requirements and would be delighted to have one of our geophysicists visit you and give you a presentation on our capabilities and products.

Thanking you,

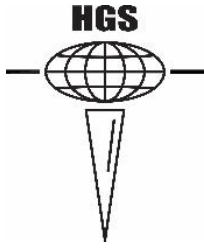
For HGS (INDIA) LIMITED

(ANIL DASS)
MANAGING DIRECTOR



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ANNEXURE 1: RANGE OF GEOPHYSICAL EQUIPMENT

1. SEISMOGRAPHS – SEISMIC RECORDING SYSTEMS

Range of seismographs (*offered along with all necessary data interface/ethernet cables and connectors, and WiFi/GPS options, and in field-ruggedized pelican cases) for various customer requirements and applications:

- 3-4 Channel Seismograph: Sigma 3+ | Sigma 4 | Sigma 4+
- 6 Channel Seismographs: DAQ-4/DX-6
- 24 Channel Seismograph: DAQLink-4 (Standalone)
- 24 Channel Seismograph: DAQLink-4 (Distributed – for cascading multiple units)

Channel count can be added/upgraded by simply adding additional units as and where required.

2. SEISMIC SOFTWARE

Range of data acquisition and data processing software offered for various survey requirements:

- Data Acquisition Software: V-Scope Data Acquisition Software offered along with all DAQLink units for data acquisition/recording, QC & data storage in SEG-2, SEG-D, SEG-Y, etc. formats (suitable for data acquisition for MASW, refraction, cross-hole, downhole tests, etc.)
- Data Processing & Analysis Software: a variety of data processing software options for shallow seismic to deep seismic, suitable for MASW, Refraction and tomography data processing, etc. Software options (for shallow seismic) include but are not limited to Reflex-W, Parkseis, WinMASW, Geogiga, Surfseis, etc.

3. SPREAD CABLES & CONNECTORS

Fully customizable spread cables/ shallow refraction cables with customer defined lengths and customer specified take-outs & end connectors/terminations compatible with most industry known seismographs/ acquisition units and geophone strings & assemblies:

- 12 take-out cables (*supplied with Y-adapter cable) | 24 take-out cables | Customer-defined no. of take-out cables
- Waterproof/ Graphite/ Overmoulded take-out options
- Single ended and reversible SR cable options
- Light-Duty and Heavy-Duty cable options
- Light-weight winches for cable mounting options

4. GEOPHONE ASSEMBLIES

Wide range of geophone elements & assemblies fully compatible with spread cables & seismograph offerings suitable for all seismic survey needs. Assemblies are fully customizable with a selection of land & marsh case types, leader cable options, end terminations & connectors, and other string accessories:

- Geophone elements with natural frequency from 2Hz to 50Hz
- Geophone elements with vertical/ horizontal/ omni-directional orientation
- Geophone elements with best-in-class technical specs and options for high sensitivity, low & very-low distortion, wide temperature range(s), extended tilt tolerance, miniature geophones, all with between 1-3 year extended warranty depending on model.
- Geophone cases for land and marsh applications with moulded & overmoulded waterproof options,

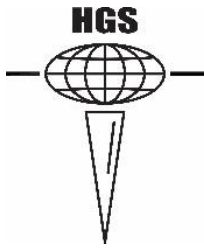


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horizontal case options, 3 component & triaxial case options, steel & brass spike and tripod base planting/coupling mechanisms, etc.

- Single core/ 2 core/ 3 core/ 6 core/multi-core leader cable options with water-blocking compound, shielding & braiding, insulated Kevlar core, anti-rodent additive, moulded or with loose PU/steel loops.
- Other string accessories and spare parts including geophone carry hasps, moulded tees, moulded junctions, aluminium ID tags & steel/brass pick-up loops, cable ID tags, dead-end seals, etc.
- End connectors and terminations compatible with all offered spread cables and seismographs, including and not limited to Split Plate Connectors, Banana Plug Connectors, Wide & Narrow Clip Connectors, BNC Connectors, HGS-5515 (KCK), HGS-1BP (KCL), HGS IV (Amphib 4) etc.

5. OTHER ACCESSORIES

Range of other cables & accessories compatible to offered seismographs for seismic data acquisition. We offer a complete set of geophysical equipment for all survey needs:

- Y-adapters for 12 take-out spread cables compatible to most industry known seismographs
- Trigger Switch/ Hammer Switch with cable for triggering
- Heavy Duty Hammer/ Mallet and Hammer/ Strike Plate for triggering
- Trigger Extension Cables with customized lengths and fully compatible with offered seismographs
- Battery (rechargeable) and Battery Charger for power supply
- Geophone Testing Equipment including lab testers and portable field testers offering 3- geophone simultaneous testing capability
- Accelerated Weight Drop (AWD) Unit with hammer assembly weight options of 40Kg/ 50Kg/ 500Kg – optionally can be offered along with trolley/ loader unit and necessary cables & connectors
- Branded Field Ruggedized Laptops with carrying cases and pre-loaded software for data acquisition, storage and analysis
- Source Control Systems (Encoders, remote Triggering Modules, Decoders with Radios), BBM refraction units for LVL and Uphole surveys, etc.
- Fully customizable Land Streamer Cables fixed on strengthened Kevlar webbing with moulded take-outs and customer selected geophones affixed on steel alloy geophone stations with anti-rotation wings, end connectors/ terminations compatible with offered seismographs, offered with hardware kit of tow-hitch adapter and tools for installation
- Downhole geophones – 3D Downhole Wall-lock Cable Assemblies with customer selected geophones and end connectors/ terminations, supplied on a winch
- Crosshole Energizer Units/ Seismic Sources for P/S Wave complete with 50M/ 100M cable options on a reel
- Downhole Hydrophone Assemblies with customized lengths and end connectors/ terminations
- Other cables for cascading multiple DAQlink seismographs including 8-Port Ethernet Switch, Network Cables, Ethernet Switch Cables, etc.

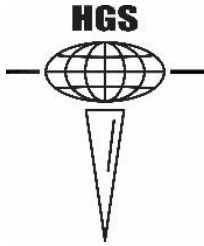


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6. OTHER PRODUCTS

Other various cable and geophone offerings include:

- **SEISMIC SYSTEM CABLES:** compatible to most industry known data acquisition units including but not limited to Inova G3i, Sercel 408/428/508, ABEM-ARIES, etc. Cable lengths are fully customizable and offered with light-duty and heavy-duty options
- **RESISTIVITY CABLES:** resistivity imaging cables fully customizable with cable type (16 Pair, 18 Pair, 32 Pair, 48 Pair, etc.), cable length, no. of take-outs and end connectors/ terminations. Various options for light-duty & heavy-duty with shielding, braiding, water-blocking, anti-rodent additive, strengthened Kevlar core, etc. supplied on winches.
- **DOWNHOLE POD ASSEMBLIES:** with customer specified geophones and cable requirements
- **CONNECTORS:** a wide variety of connectors including other System connectors compatible to most industry known data acquisition systems, geophone end connectors & terminations compatible with offered spread cables & seismic system cables, various panel mount connectors, etc. and other accessories

ANNEXURE 2: CUSTOMER SEGMENTS & APPLICATIONS

1. OIL & GAS EXPLORATION

- Land/ Onshore Seismic Exploration
- Ocean Bottom Seismic Exploration
- Passive Seismic
- Vertical Seismic Profiling (VSP)
- Micro-Seismic Surveys
- Reflection Surveys

2. GEOTECHNICAL ENGINEERING

- MASW (Multi Channel Analysis of Surface Waves)
- Seismic Refraction
- Seismic Reflection
- Crosshole & Downhole Surveys
- REMI
- HVSR

3. INDUSTRIAL MONITORING

- Vibration & Blast Monitoring
- Earthquake Monitoring / Early Warning Systems
- Structural Dynamics
- Deflection Sensors
- Balancing Machines / Industries (*identification of ground amplification due to running of big machines / factories).

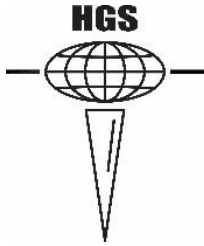


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4. MINING

- Mineral Exploration
- Hydrogeological Monitoring

5. DEFENCE, SURVEILLANCE AND SECURITY

- Defence / Intrusion Sensing
- Border Surveillance
- Perimeter Security

Seismic Data Equipment Manufacturers | Seismic Exploration Companies | Seismic Contractors | Engineering Colleges & Research Institutes | Vibration Monitoring Equipment Manufacturers | Structural Engineering Service Companies | Defence Equipment Manufacturers | Security Equipment Manufacturing Companies



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