

**[Company Profile]**



**ACE INSTRUMENT**

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Kyunsik Kim  
Managing director

Our company has the philosophy of customer oriented and technology development oriented.

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ACE INSTRUMENT CO., LTD was established in August of 1998 to secure the effectiveness of design and safe construction for civil engineering, structure, measuring instruments (load, stress, displacement, earth pressure, the water level of underground, water pressure, angle, physical property of a base rock and dynamic environmental feature) and to manufacture output apparatus, data logger, data acquisition system of wire and wireless and operating software for analysis.

We are an expertise group who have over 20 years job expertise and advanced technology in geotechnical engineer field such as civil engineering construction, structure, nature of soil, machinery, and the dynamics of engineering works.

We are the only company in this industry to have our own 1500ton testing machine, servo controlled 500ton, 300ton, 200ton material testing machine and digital hydraulic calibrating equipments and it is manufactured in accordance with the regulations of ISO-9001 quality assurance system, precision and accuracy are guaranteed.

Our company is specialized in manufacture and calibration technology of vibrating wire sensor suitable for semi-permanent measurement, and electrical sensor (Foil strain gage) suitable for research purposes such as dynamic characteristic detection and model experiment. We have developed high technology type products such as measuring instrument, readout unit, data logger, digital type inclinometer system, and pendulum system, and supply it to domestic and oversea market.

We will develop the hardware and software to enable the physical properties and dynamic measurement of rock mass, and will contribute to the information construction by devoting ourselves to product development to provide total solution for civil engineering measurement.

Thank you.

## General information

Established year	1998. 8. 10
Head office factory	54, Nongshim-ro, Gunpo-si, Gyeonggi-do, 15845, Korea
Type of business	Manufacture of civil measurement equipment / Manufacture of geological exploration equipment Software development / civil engineering services
Employee	40 Executives member 3 / Engineer member 10 / Office member 5 / Technical member 22



Head office factory



Casing factory



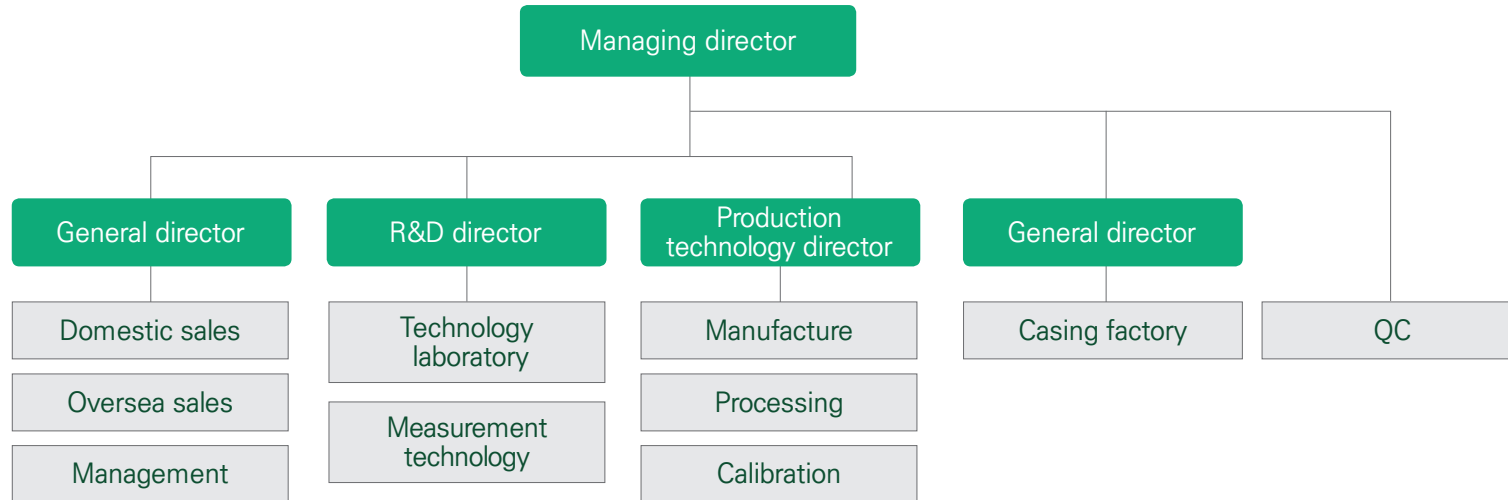
Casing processing equipments



Casing extruding line



Organization



R&D director / Sungho Kim, General director / Jaeyoung Lee



Oversea sales part / Director Steve Jo, Staff Jake

## History



## Business scope

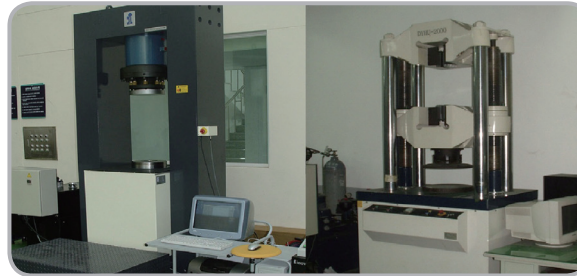
- Manufacturing of civil engineering, construction, rock, geology, environmental measurement equipment
- Readout, data logger, software development for civil engineering sensor
- Manufacture of hydraulic cell & measuring equipment for pile load test
- Installation and operation service of civil engineering instruments
- Automated and Informatized measurement engineering services
- Civil engineering technical support, rental service
- Sensor, data logger calibration service

Company facilities

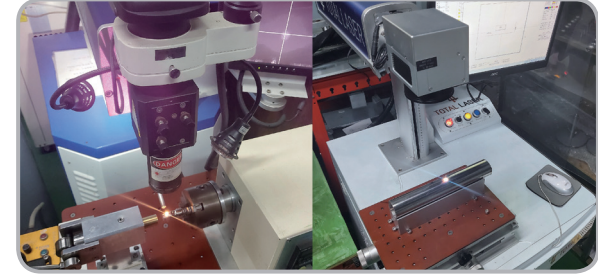
[ CNC machining center ]



[ Load tester ]



[ Laser welding machine / Laser marking machine ]



[ CNC 3-Direction machining center ]



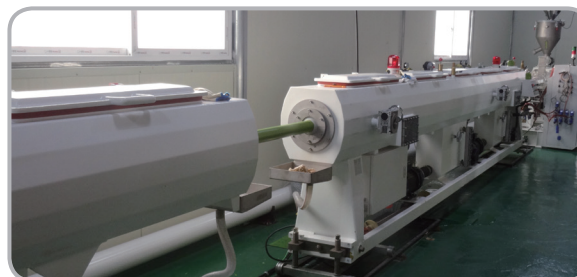
[ Automatic welding machine ]



[ Temperature & Humidity chamber ]



[ Casing extruding machine ]



## Main facilities

### [Manufacturing facilities]

Equipment	Usage	No.
CNC machining center	For a machine work	4
CNC multi-turnmill center	For a machine work	4
Lathe	For a machine work	1
Digital milling machine	For a machine work	2
Bench drill machine	For a machine work	4
Inverter TIG welding machine	For welding sensor	3
Laser welding machine	For welding sensor	1
Laser marking machine	For marking sensor	1
Compressor	For supporting operation of equipment	2
Power press	For product assembly	2
Booster type press	For product assembly (gage)	4
Booster type spot welder	For product welding (strain gage)	1
Condenser type spot welder	For product welding	1
Casing broaching machine (Casing factory)	For casing grooving	2
Casing extruding machine line (Casing factory)	For casing production	1
CNC turn-mill center (Casing factory)	For casing production	3
ABS dry hopper set (Casing factory)	For casing production	3

### [Calibration & Testing facilities]

Equipment	Usage	No.
1500ton testing machine	For fixing a high capacity load sensor	1
Servo controlled universal testing machine	For fixing a high capacity load sensor	3
Temperature & humidity chamber	For inspection of temperature / humidity characteristics	1
PLC type hydraulic low pressure calibrator for pressure meter	For calibration of low pressure sensor	2
PLC type hydraulic high pressure calibrator for pressure meter	For calibration of high pressure sensor	1
High precision digital angle calibrator	For calibration of tilt sensor	2
High precision barometer	For measurement of barometric pressure	1
Frequency counter	For inspection of frequency characteristic	1
Oscilloscope	For inspection of waveform characteristics readout unit	1
Leakage tester	For inspection of sensor characteristics	1
Calibrator for VW sensor	For calibration of VW sensor	10
Digital calibrator for VW sensor	For automatic calibration of VW sensor	3
Calibrator for foil strain gage	For calibration of strain gage	2
Digital calibrator for displacement sensor	For calibration of displacement sensor	10
Rockwell hardness tester	For Hardness measurement	1
Cryogenic thermostat	For test of cryogenic temperature	1
PC & printer	For wire / output calibration report	10



We introduce the products of  
**ACE INSTRUMENT CO., LTD.**  
which manufactures the highest value of civil  
engineering measurement instrumentation.

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These products are the crystallization that was created by the continuous research and development of our engineers. We are trusted as a partner of civil engineering / architecture / rock / geology experts in overseas and expect to be loved in global industry through customer impressions.



## Description of geotechnical instrumentation for dams

The geotechnical instrumentation for dams should have excellent durability, high reliability and high accuracy quality characteristics that should not cause problems in measuring 50 to 100 years. Our company is a proven quality product that has delivered the civil engineering measurement instrument to 5 dam sites for hydroelectric plant in Iran, about 10 small and medium sized dams in Turkey and a dam construction site in Vietnam and Indonesia. Ace Instrument's civil engineering instruments are equipped with a piezometer, earth pressure cell, extensometer, horizontal displacement gage, 3D jointmeter, inclinometer, casing installed for safety construction and maintenance measurement of dam. Also we have automatic a pendulum system and a leakage measuring device for a dam and there are lightning arrestors and high-tension signal cables to protect the instrument from over current, and an automatic measurement system for real-time data transmission.

Finally, we are producing 100% Korean products, including web-based programs for management. It is now being used by civil engineers and geological engineers with its global companies.



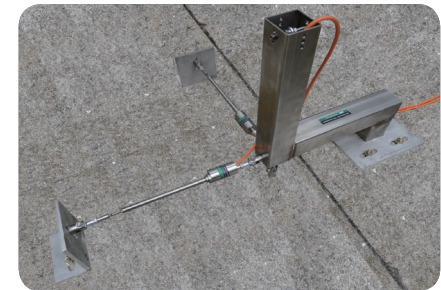
Instruments for dam



Weir monitoring system



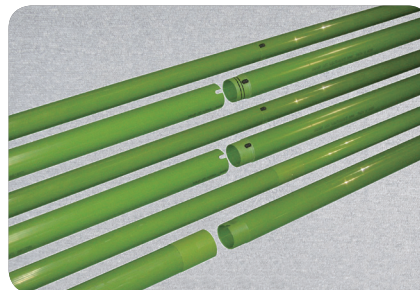
Digital horizontal, slope inclined inclinometer system



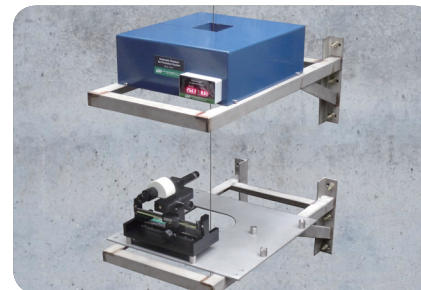
3D Jointmeter



Data loggers



Inclinometer casings



Pendulum system



Surge module

## Description of data logger

In case of our automatic data acquisition system of ADL-200A smart logger and ADL-16V VW data logger, it is used wirelessly in long traffic line such as tunnels, and has convenience and practicality that can be used as wired in the field where sensors are gathered like urban construction. Also, it is the world's strongest and most reliable product that surpasses foreign competitors' products!

ADL-300 dynamic data logger can measure dynamic data by connecting FSG(foil strain gage) sensor, voltage(mV) and current(mA) sensor.



### Smart logger (ADL-200A)

The smart logger can connect 16 channels of vibrating wire sensor and 16 channels of mV sensor and mA sensor at the same time. FSG sensors and sequential serial communication sensors can also be measured. Remote communication and control is possible with an external modem, and it is useful when used alone in a small field.



### VW data logger (ADL-16V)

Model ADL-16V Vibrating wire data logger is a data logger for connecting 16-channel vibrating wire sensor and temperature sensor. It is designed to be used mainly for vibrating wire sensor, which is frequently used and installed and operated in civil works.



### Dynamic data logger (ADL-300)

Model ADL-300 dynamic data logger is manufactured separately for FSG sensor and voltage sensor. There are dynamic measurement mode and static measurement mode functions, so it can be changed and used according to the site situation.

## On-site installation



7 sets of ADL-200A laminated in Iran Dam site



Installation in Turkey Dam site

It is recommended to use our products in dam construction site, agricultural dam extension construction site, airport extension construction site, railway / subway construction site, tunnel construction site.

We will thoroughly clean up distrust and worry about products that may be caused by unqualified quality.

It is a data logger with high reliability and easy to install and operate.

## Description of in-situ tester

Our company manufactures various kinds of in-situ test equipments. In-situ tester are designed to measure physical properties of soil and rock! It is a product manufactured by lot production according to design standard, work standard and quality standard and it is composed of through quality control and technology of our company and is highly reliable test equipment without any trouble even if it is used for a long time.

### Rock borehole pressuremeter (GJ-75)



Rock borehole pressuremeter is designed to measure rock displacement. Two LVDTs are built into the jack to measure the displacement of rock mass and display it on the displacement output readout connected to the signal cable. Model GJ-75R indicator can be used in harsh field environments by treating the interior with rust and waterproof. Built-in charge battery.

### Borehole pressuremeter tester (PMT-75)



Borehole pressuremeter tester is the lateral load testing equipment of borehole whose pressure capacity is 20MPa. This equipment targets hard soil layers that can't be measured with the LLT test equipment and can measure from soft ground to had ground(weathered rock layer).

### Borehole share tester (BST-75)

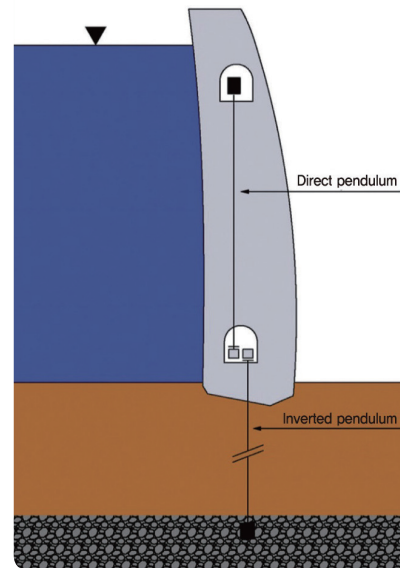
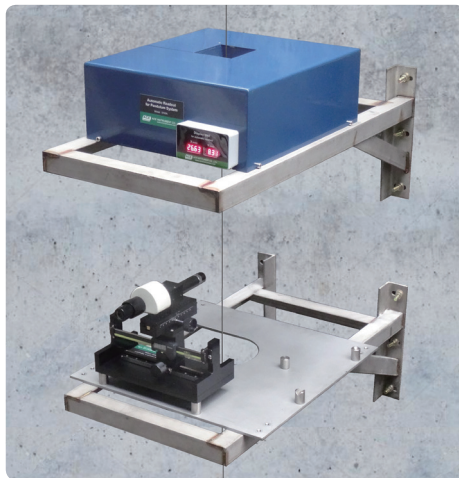


Borehole share tester is designed for measuring share resistance at  $\varnothing 75\text{mm}$  size of borehole inside so that it can provide adhesive power and frictional angle. It is possible to take a test at several point of inside of borehole.

## Description of pendulum

The pendulum system set is an inverted type and a direct type inclination measuring instrument installed in the dam to detect the horizontal displacement of the dam body.

Both manual and automatic measurements are possible. The manual readout detects the position of the wire with a high-performance aiming scope. The automatic readout is arranged in two axis with no contact with the CCD laser device and can display or store the data transmitted by the data logger. It is designed with world-class resolution and high accuracy.



[Installation of pendulum system]

## Description of rock instrumentation

Our company manufactures and supplies various types of sensors to measure the physical properties, rock stress and displacement during underground space excavation or tunnel excavation, as well as test equipment that measures rock properties by using the overcoring technique.

### Rock stressmeter



[ VW borehole rock stressmeter ]



[ VW soft inclusion stress cell ]



[ VW borehole pressure cell ]



[ VW biaxial stressmeter ]

### Overcoring rock stressmeter



[ FSG borehole deformation gage ]



[ 3D rock borehole deformation gage & logger ]

## Description of digital inclinometer set

Digital inclinometer system includes the lightweight digital inclinometer probe, bluetooth reel, cable guide and software as “Inclinometer Collector” for the smartphone. Digital inclinometer system has pursued a development by concentrating on high-performance nature such as high accuracy, responsiveness, ultra-light and high-reliability! Digital inclinometer is manufactured 3 kinds according to usage that are vertical, horizontal and slope inclined.



Digital inclinometer set



Mounted probe



Data transmission by Smart device

### The feature of digital inclinometer system

#### Very fast responsiveness

Digital inclinometer set provides fast data acquisition. In the case of a casing hole with a depth of 20m, it takes about 10 minutes to measure twice in the 0° direction and 180° direction, and the data acquisition capability is dramatically improved.

#### High reliability

It is operated as digital by installing a native App on smartphone. Therefore, the circuit is simple, bugs and errors do not occur in use, and the durability of the equipment is high, so it can be used for a long period of time with stability. The control cable is composed with Ø3mm aramid fiber inside so that it holds over 200kgf weight.

#### Easy to carry

The digital inclinometer set consists of a lightweight probe, bluetooth reel, cable guide. The bluetooth reel is equipped with a probe and cable guide. So that it is easy to carry and handle at work site. In case of a 50m cable reel, the total weight is less than 6kg, which is very light.

## Description of inclinometer casings

Our company produces and sells two kinds of high precision grade cutting type casing (OD70mm and 85mm) and extrusion type casing(OD64mm, 70mm and 85mm) for the first time in Korea.

The cutting type casings developed by our company are manufactured by broaching machine in the inside diameter's groove of the casing.

The connecting part is processed in CNC turn-mill center and is the world's best quality product with no connection error.

Cutting casings are manufactured only in 5 or 6 overseas companies because of the difficult management standards and the need for high-level manufacturing technology. We are the only company in Korea that manufactures cutting type casings.

In addition, OD  $\phi$ 64mm extrusion casing is OD  $\phi$ 70mm including sleeve. Therefore, it can be installed after drilling with NX drill.

It is larger than most  $\phi$ 55mm~ $\phi$ 60mm casings that are manufactured in small size, so there is relatively no jamming of the probe.

### RC 70/85 Casings



- Rapidity casing
- The surface dimension of the connection is the same as the outer diameter of the casing.
- CNC lathe / High precision by broaching process
- Connection after ABS bond application(No follow-up work required)

### DC 70/85 Casings



- Waterproof rapidity casing
- The surface dimension of the connection is the same as the outer diameter of the casing.
- CNC lathe / High precision by broaching process
- No ABS bond required / Waterproof of O-ring

### SC 70/85 Casings



- Standard casing
- The surface dimension of the connection is the same as the outer diameter of the casing.
- CNC lathe / High precision by broaching process
- Connection after ABS bond application(No follow-up work required)

### WC 70/85 Casings



- Waterproof rapidity casing
- The surface dimension of the connection is the same as the outer diameter of the casing.
- CNC lathe / High precision by broaching process
- No ABS bond required / Waterproof of O-ring
- The connection part is a band strap insertion type.

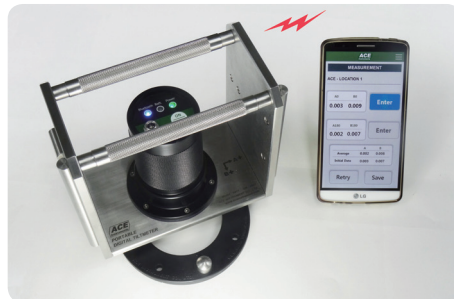
### FC 64/70/85 Casings



- Extrusion casing
- Used in places with low displacement such as rock or sheet pile etc.
- Twist angle less than 0.5 degree / 3m

## Description of portable digital tiltmeter

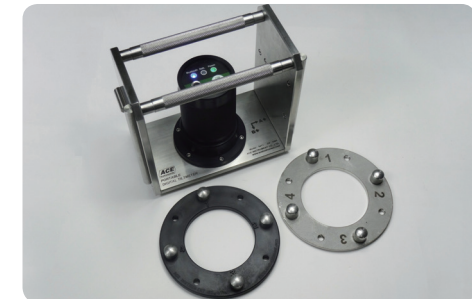
Portable digital tiltmeter is a safety diagnostic measuring instrument for measuring the stability of building structure. It is light and easy to equip with tiltmeter sensor, data logging circuit and bluetooth circuit. Download and use the “Tiltmeter Collector” App on your smartphone, so you do not need any data logger or jump cable and it provides innovative and comfortable usability.



Measurement and data storage using smartphone



Site measurement and data by native App



Tilt plate

### The features of portable digital tiltmeter

#### Easy to carry

Portable digital tiltmeter is operated with bluetooth circuit and smartphone interlocked, and there is no data logger, so it is easy to carry. Weight is 3.9kg including moving case and is light. Foreign products exceed 8kg including data logger and jump cable.

#### Good response & reliability

By installing a native App on your smartphone and operating it digitally, you can quickly and accurately measure and store data and transfer data from the site to the office.

#### High-precision product

STS316 Stainless steel is machined and finished after grinding. It is a high precision product with repeat accuracy of  $\pm 40$  arcseconds. It is ideal for tilt measurement for safety diagnosis of buildings and structures.

#### Enough continuous use time

You can consume 17 hours in a full charge and use 1 week in a full charge.



## Description of piezometers

Our company manufactures various kinds of piezometer!

All piezometers and pressure sensors are calibrated with a fully automatic digital pressure calibrator and leak tester. In Korea, we only use a polyurethane cable for piezometer, and there is no peeling off of the jacket, and heavy duty signal cable containing aramid fiber is used for use in the field where heavy load such as dam site is required.

Our vibrating wire piezometer is recognized as a highly reliable product at more than 30 dam construction sites in Turkey, Iran, Vietnam, Indonesia at soft ground construction sites in Singapore. the product life span is semi-permanent.



### Vibrating wire piezometer

Vibrating wire piezometer's pressure sensor can measure the water level or pore water pressure in the pipeline, base of foundation, embankment and perforation. The signal cable is made of polyurethane and heavy duty cable, The life span of the sensor is semi-permanent.



### FSG/Mini piezometers for modeling test

FSG piezometer is useful for field and water level measurement where research purpose or real time measurement is required because dynamic measurement is possible. Model mini piezometer and earth pressure cell are designed to be able to perform model test in laboratory and are made of waterproof structure. Foil strain gage sensor is built in to enable dynamic measurement, which is useful in real time measurement.

We manufacture FSG (foil strain gage, semiconductor type, etc.) piezometer suitable for the field requiring dynamic measurement and vibrating wire piezometer suitable for long term measurement from low pressure to high pressure (1bar ~ 70bar).

## Oversea delivery performance : major geotechnical instrumentation

Year	Country	Company	Name of site
2011	Iran	DaeLim Construction	LPG Tank 3EA
2012	Turkey	Startest M. L. T	Kokel Dam
2012	Turkey	Startest M. L. T	Moglice Dam
2012	Turkey	Startest M. L. T	Koyunbaba Dam
2012	Turkey	Startest M. L. T	Ura E Fanit Dam
2016	Iran	Noavaran Seraj Abzar	Azad Dam
2016	Iran	Noavaran Seraj Abzar	Hirvi Dam
2016	Iran	Noavaran Seraj Abzar	Konjancham Dam
2016	Iran	Noavaran Seraj Abzar	Telegghan Dam
2016	Iran	Noavaran Seraj Abzar	Kouhrang 2 offer Dam
2016	Iran	Noavaran Seraj Abzar	Tehran Metro Line1
2016	Indonesia	PT. GeoDelta	Gongseng Dam
2016	Spain	PT. GeoDelta	Tunnel B-40 project
2017	Iran	Noavaran Seraj Abzar	Mashhad Metro Project
2017	Iran	Noavaran Seraj Abzar	Sarcheshmeh Cooper Mine
2017	Indonesia	PT. GeoDelta	Tugul Dam
2017	Singapore	Ryobi Geomonitoring Pte Ltd	Changi airport project
2017	Iran	Noavaran Seraj Abzar	Kani sib Dam
2017	Turkey	Startest M. L. T	Aydin Cine Dam
2017	Turkey	Startest M. L. T	Aydin Cine Dam

Year	Country	Company	Name of site
2017	Turkey	Startest M. L. T	Koyunbaba Dam
2017	Vietnam	Redriver Engineering & Trading Co., Ltd	Hanoi Metro CP03
2018	India	Aimil	UG Powerhouse Project
2018	Turkey	Startest M. L. T	Silvan Dam
2018	India	Aimil	Mega Project
2018	India	Aimil	PHPA-2 Project
2018	Indonesia	PT. GeoDelta	Ladongi Dam
2018	Indonesia	PT. GeoDelta	Bintang Bano Dam
2018	Indonesia	PT. GeoDelta	Tritip Dam
2018	Russia	Monsol Rus Lcc	Wind Turbine Project
2018	Vietnam	Fecon	Hanoi Pile Load Test
2019	Indonesia	PT. GeoDelta	Gongseng Batch2 Project
2019	India	Aimil	PHPA-2_UG-PH Project
2019	Vietnam	GeoVietnam	Cai Vieng project
2019	Indonesia	PT Teknindo	Kaya Agung 2 Toll Road Project
2019	India	Geo Dynamics	Nuclear Power Plant
2019	India	LCM infratech	L&T P1 Project
2019	Indonesia	PT. GeoDelta	Toll Road Sumatera Project
2019	Indonesia	PT. GeoDelta	Kuwil Dam

Year	Country	Company	Name of site
2019	Indonesia	PT. GeoDelta	Tabalong Project
2019	Indonesia	PT. GeoDelta	Kaltim Dam
2019	Singapore	Dong-A Consultant Asia Pte. Ltd	Tuas Terminal Project
2019	Poland	NeoStrain Sp.	Dam in Middle of Poland
2019	Poland	NeoStrain Sp.	Warehouse in North of Poland
2019	Poland	NeoStrain Sp.	Mine in Silesia Region
2019	Chile	Geosinergia	Sanhose Mine Project
2019	Peru	Geoinstruments International S.A.C.	Lima Purification Plant project
2020	India	Aimil	Tangenco. Tamil Nam project
2020	India	Angelique International Ltd.	Kabu Project
2020	Poland	NeoStrain Sp.	Tunnel in North-West of Poland
2020	Spain	Sixens Iberia. S.A.	Variante De Valles-Montblanc
2020	China	Beijing Jiangwei Times Tech. Co., Ltd.	Nuclear Power Plant
2020	India	Aimil	Himachal Pradesh Project
2020	India	Aimil	PHPA-2_UG-PH Project
2020	India	Aimil	L&T P1 Project
2020	India	Aimil	Pune Metro Project

Year	Country	Company	Name of site
2020	India	Aimil	UG Hydro Project
2020	Indonesia	PT. GeoDelta	Gongseng Dam
2020	Indonesia	PT. GeoDelta	Ladongi Dam
2020	Indonesia	PT. GeoDelta	Kuwil Dam
2020	Russia	Monsol Rus Lcc	Construction of transport and transfer hub the Moscow city for subway infrastructure
2020	Singapore	Ryobi Geomonitoring Pte Ltd.	K5200 Changi T5 Airport
2020	Spain	Sixens Iberia. S.A.	Variante De Valles-Montblanc
2020	Vietnam	Aitogy infrastructure technology JSC	Hang Dong Project
2020	Vietnam	Redriver Engineering & Trading Co., Ltd	Nam Emoun Project
2020	Vietnam	Vietnam Environmental & Geotechnical Instrumentation JSC	Hydro Power Project in Southern Vietnam
2020	Vietnam	Vietnam Environmental & Geotechnical Instrumentation JSC	Khe Thoi Hydro Power Project
2020	Vietnam	Vietnam Environmental & Geotechnical Instrumentation JSC	Hua Chang 2 Hydro Power Project
2020	Vietnam	Hyundai E&C Ghella JV	Hanoi Pilot Light Metro Line project

# Worldwide exclusive agents

## Worldwide exclusive agents

Country		Company name	Address
Portugal		Tecnilab Portugal, S.A.	Lua Gregoria Lepas, Lote 1512B 1499-041 Lisboa Portugal
United Arab emirates		Al Bayan Technical Equipment LLC	Mohammad Matter Lahij Warehouse No.3 Opposite Civil Defense, Latifa Bint Hamdan Street, Al Quoz Industrial Area 3, Dubai-UAE
Iran		Noavaran Seraj Abzar Co.	Unit 12, No. 12, Zamani Alley, Zartosht Alley, Qodusi Blv, Shariati Ave, Tehran 1639 693836 Iran Po. Box:16765-4157
Pakistan		World Tech Inc	S-15 2nd Floor, Mlikabad Shopping Mall Rehmanabad, Murree Road Rawalpindi City (46000) Pakistan
Peru		Geoinstruments International S.A.C.	Calle Miguel Aljovin 344, Miraflores, Lima, Peru
Hongkong		YSF Corporation Ltd.	5A., Blk KinHo Industrial Building, 20-24 Au Pui Wan street, Fotan, Shatin, Hong Kong

Inside at Hirvi dam in Iran



Foundation at Konjancham dam in Iran



Slope at Azad dam in Iran



## Installation instruments

- Smart logger
- VW data recorder
- VW mini logger
- Water level meter
- Magnetic extensometer
- Terminal box
- Surge module
- Portable digital vertical inclinometer
- Inclinometer casing
- Piezometer
- Settlement gage
- Crackmeter
- Inclinometer

# Oversea site installation photos

Foundation at Teleghan dam in Iran



Water press at Ladongi dam in Indonesia



Embankment at Bano dam in Indonesia



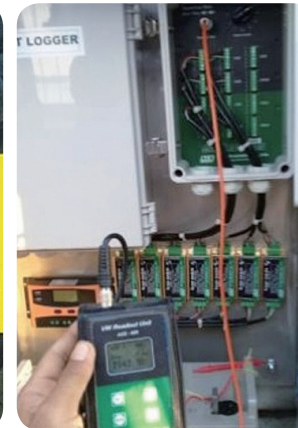
## Installation instruments

- Smart logger
- VW data recorder
- VW readout unit
- Water level meter
- Magnetic extensometer
- Portable digital vertical inclinometer
- Inclinometer casing
- Piezometer
- Pendulum system
- Surge module

## Foundation at Gongseng dam in Indonesia



## Water press at Kuwil dam in Indonesia



### Installation instruments

- Smart logger
- VW mini logger
- Water level meter
- Magnetic extensometer
- Terminal box
- Surge module
- Portable digital vertical inclinometer
- Inclinometer casing
- Piezometer
- Total pressure cell
- Settlement gage

# Oversea site installation photos

Embankment at Silvan dam in Turkey



Embankment at Aydin Cine dam in Turkey



## Installation instruments

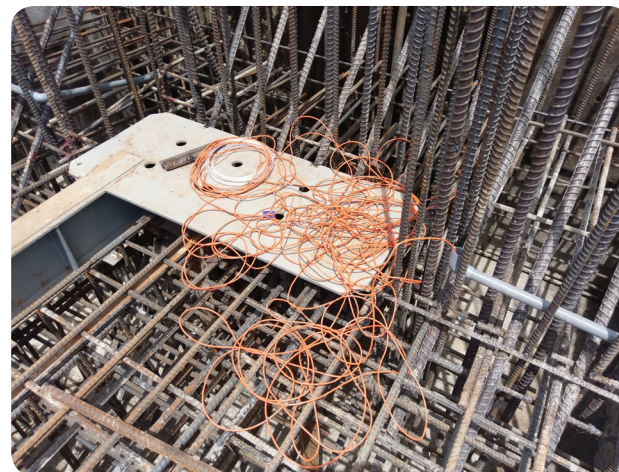
- Smart logger
- VW data recorder
- VW readout unit
- Water level meter
- Terminal box
- Multi point vertical inclinometer
- Piezometer
- Settlement gage
- Crackmeter
- Total pressure cell



Water press at Khe Thoi dam in Vietnam



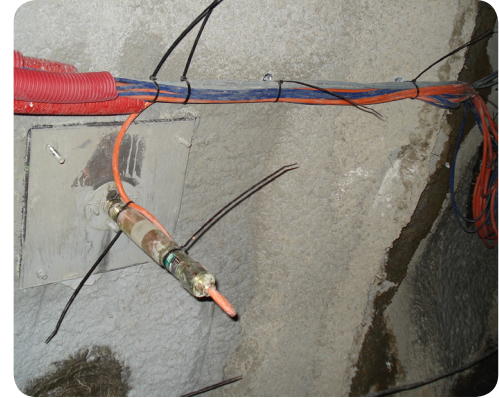
Foundation at Tan Loc dam in Vietnam



Installation instruments

- VW data recorder
- Embedment strain gage
- Weldable strain gage
- Temperature sensor
- Crackmeter
- Rebar stressmeter

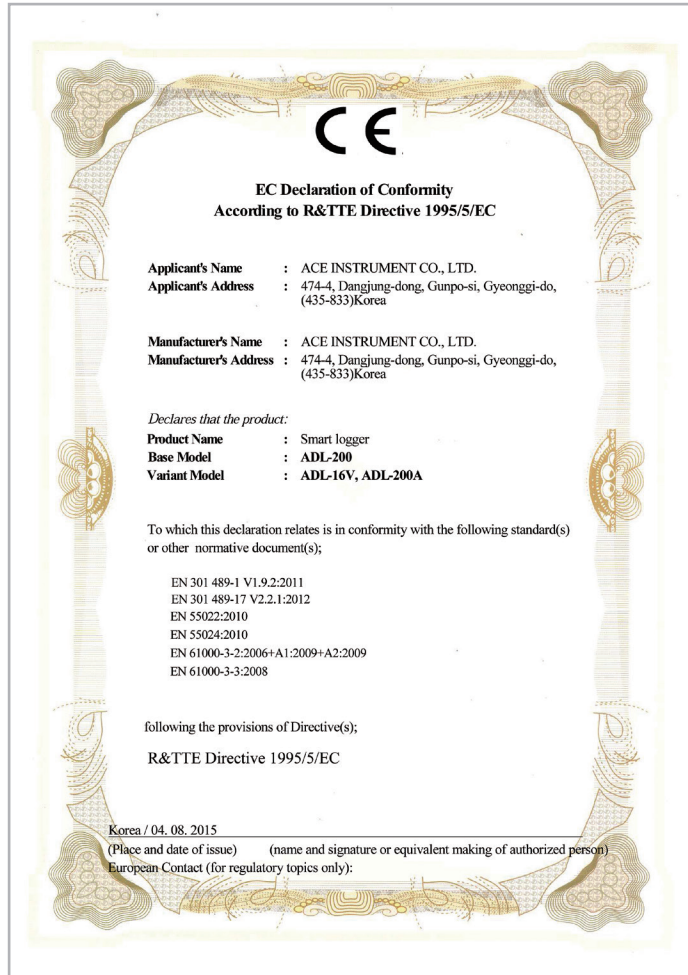
## Tunnel at Montblanc in Spain



### Installation instruments

- Rod extensometer(MPBX)
- NATM type shotcrete cell

CE



ISO 9001



# ACE INSTRUMENT

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Geotechnical & Structural Instrumentation



## ACE INSTRUMENT CO., LTD.

The first value in Geotechnical  
& Structural Instrumentation

**Address** 54, Nongshim-ro, Gunpo-si,  
Gyeonggi-do, 15845, Korea

**Tel** +82-31-459-8753 / 7

**Fax** +82-31-459-8758

**E-mail** [acens@naver.com](mailto:acens@naver.com)

**Homepage** [www.aceinstrument.com](http://www.aceinstrument.com)