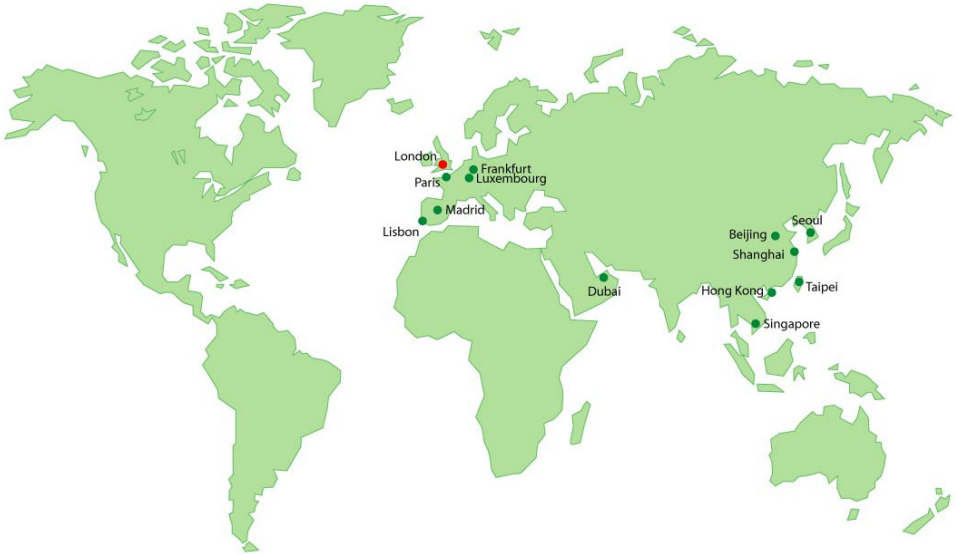
## TTK Worldwide

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TTK

DIGITAL LIQUIDS LEAK DETECTION SYSTEMS


DIGITAL LIQUIDS LEAK DETECTION AND LOCALIZATION SYSTEMS

www.ttkuk.com

## TTK at a Glance

TTK is an European company who develops, manufactures and sells liquids leak detection systems based on sense cables. These sense cables can detect all types of liquids: water, acids and bases and also non-conductive liquids, such as hydrocarbons or solvents.

Established since 1989 in France, 1996 in Germany, 2000 in UK, 2003 in Hong Kong, 2004 in Singapore and starts in 2006 in Shanghai (representative office), Dubai and Mumbai.

The headquarters are located in Paris - France where they establish the R&D center and the manufacturing plant.

TTK is present in Europe, Middle-East and Asia through its subsidiaries and representative offices.

FG-SYS systems consist of standard lengths of sensing cables; these standard lengths are equipped with Male - Female connectors. In each length, a micro-chip is embedded. It communicates digitally defective information (Leak or Cable Break) towards FG-SYS digital unit.

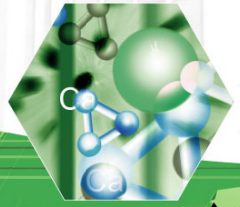
## TTK Technology

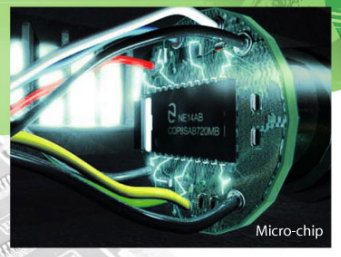
### Polymer Chemistry

Development of new materials allows the manufacture of sensing cables fulfill the industrial requirements.

These materials:

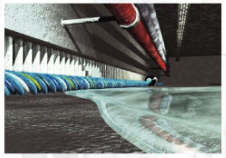
- Resist various types of acids and bases
- Use polymers "LSOH" (Low Smoke Zero Halogen) and "self-extinguishing"
- Have characteristics hydrophobic subject or damp-proof according to applications




### Embedded Digital Electronics

Each length of sensing cable embeds an electronic circuit controlled by a microchip. The sensitive and detecting cable becomes thus an "intelligent" cable which communicates an address and an information of defect: Leak or Cable Break towards the FG-SYS digital unit.




## Water Leak Risks

The crucial technical environments tend towards a safety "24/7" 0 defect. A non-detected liquid leakage can be extremely detrimental with the exploitation and generate very important financial consequences.

In particular in the data-processing environments, the risk "water damage" remains one of major risks and is evaluated the same by the users and the insurance companies.

## FG -SYS Solution

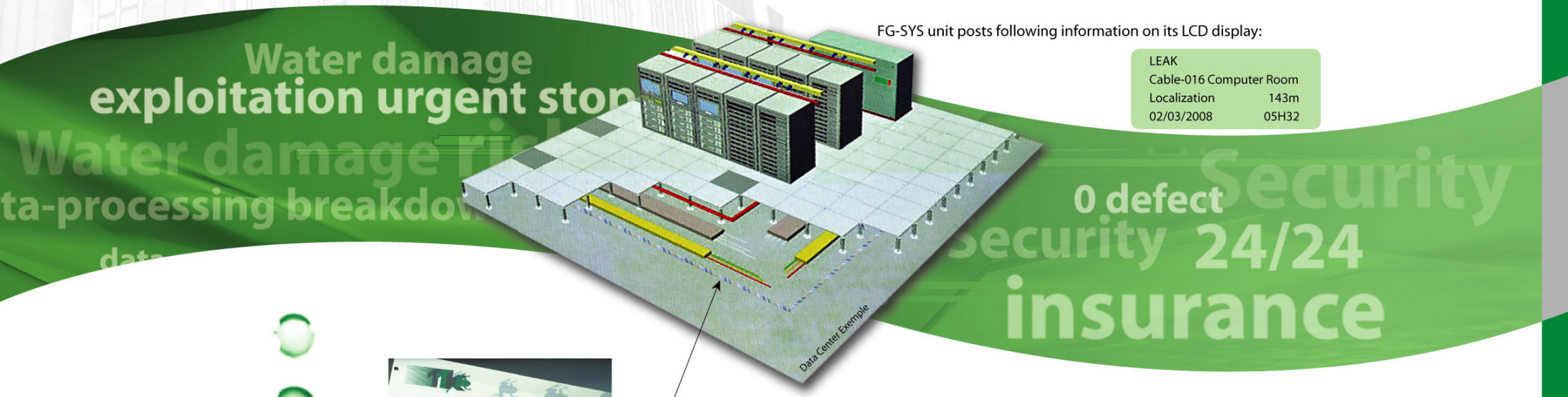
The FG-SYS technical solution of detection and localization of liquid leaks is the suitable answer to protect effectively the crucial environment from this risk.

The sensing cables ensure a continuous protection to significant and/or risky zones. They are standard lengths and connect one by one toward to a digital central unit.

In the event of leakage, the length of sensing cable in contact with the liquid transmits instantaneously to the central unit the information of leakage, with the exact localization within one meter.

FG-SYS unit posts following information on its LCD display:

| | |
|---|---|
| LEAK | |
| Cable-016 Computer Room | |
| Localization | 143m |
| 02/03/2008 | 05H32 |




Digital Liquids Leak Detection Systems- FG-SYS

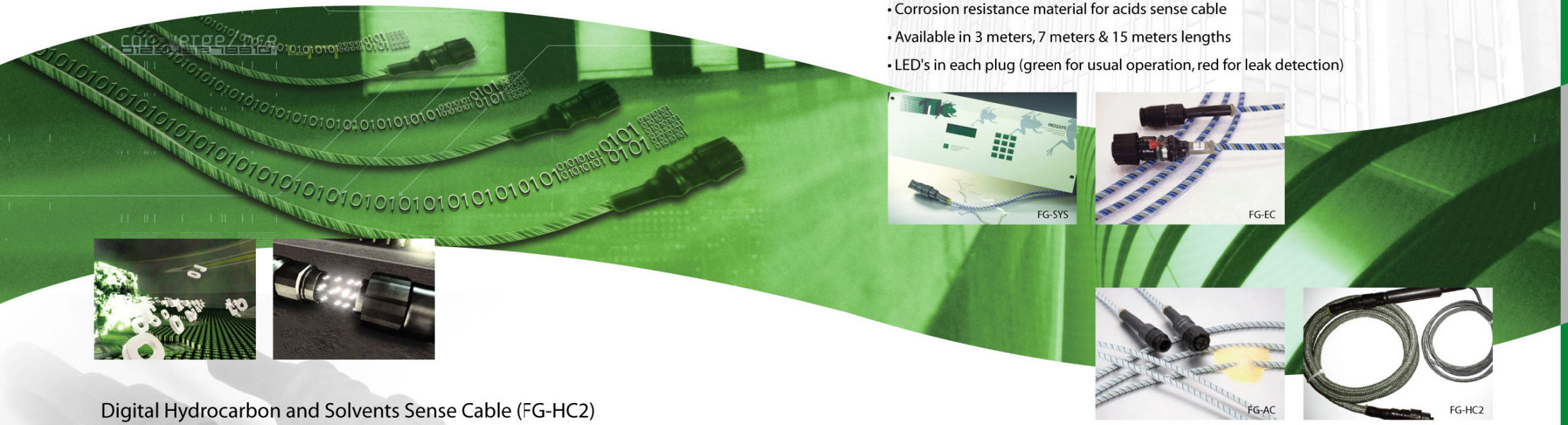
The precision of the localization to one meter allows the user an immediate action.

FG-SYS digital unit controls in an independent way up to 120 intelligent sensing cables, that is to say 120 distinct addresses, which would make it possible to have as many simultaneous defects.

To answer the various requirements of users, FG-SYS is integrated perfectly into the various systems of supervision and remains compatible with the standard of the suppliers of BMS.

## Advantages of FG-SYS Digital System

- Linear protection with addressable sense cables
- Early detection and precise location of the leak (to 1 m)
- Addressable system (micro chip in each sense cable)
- Modular system (standard & pre-connected lengths)
- Simultaneous faults can be handled at once with alarm
- Simple to install on new and existing buildings
- Total compatibility with alarms systems (BMS)
- Site programmable with Set Up software
- Long service life with minimum maintenance required







## Digital Water and Bases Sense Cable (FG-EC)
## Digital Acids Sense Cable (FG-AC)

- Each sense cable is individually addressable
- No false alarm due to conductive dust particles
- Localization within 1 meter
- Low smoke and low toxicity material
- Doesn't get contaminated by glycol
- Metal braids have no effect
- Corrosion resistance material for acids sense cable
- Available in 3 meters, 7 meters & 15 meters lengths
- LED's in each plug (green for usual operation, red for leak detection)













## Digital Hydrocarbon and Solvents Sense Cable (FG-HC2)

- Each sense cable is individually addressable
- Localization within 1 meter
- Special material designed for non-conductive liquid
- Available in 2 meters lengths

## Standards/Approvals

## Advantages of FG-SYS Digital System

- Linear protection with addressable sense cables
- Early detection and precise location of the leak (to 1 m)
- Addressable system (micro chip in each sense cable)
- Modular system (standard & pre-connected lengths)
- Simultaneous faults can be handled at once with alarm
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- Total compatibility with alarms systems (BMS)
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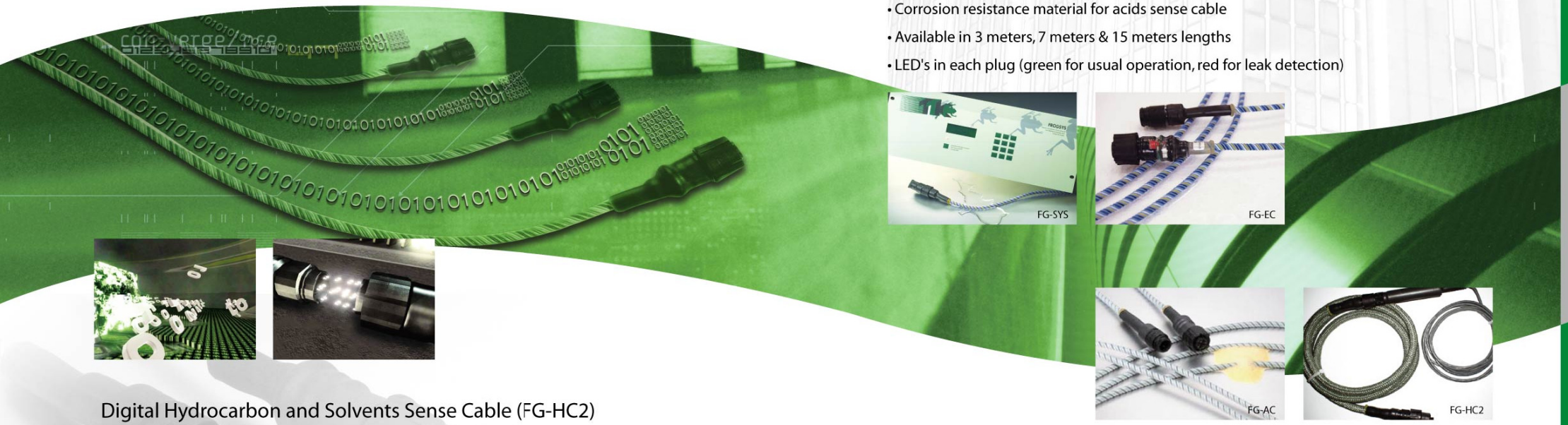
- Long service life with minimum maintenance required







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## Standards/Approvals

# Applications

## Computer Room / IT Room / Server Room / Data Center

Once the air conditioner installed in computer room has a leakage, it can move through the sub-floor and flood electric wires to cause heavy losses. Protection by sensing cables in the perimeter of the computer room covers the risk of leakage from refrigeration systems and condensed water.

## Office / Dealing Area / Calling Center

The equipment of the air-conditioners in ceiling or sub floor must be protected by an installation of water detection to prevent any leak in the environments such as dealing areas, call centers and offices.



Dealing Area


Central Air conditioning

## Risers / Small Technical Room

The technical buildings to stage (risers) are established on the same verticality on all levels of multi level buildings. A protection by room allows an immediate and addressable detection.

## UPS / Switch Room / Battery Room

The Uninterruptable Power Supply safeguards the computer system in the building, it supplies power in a period after the power cut, so as to enable users the saving of data, therefore avoiding the loss of important data. The leakage water once in contact with UPS or the battery room would paralysis the backup system, causing the most serious data damage loss. This is a crucial environment makes water leakage unacceptable.


Pipework

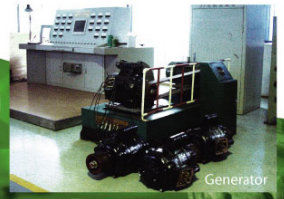

Battery Room

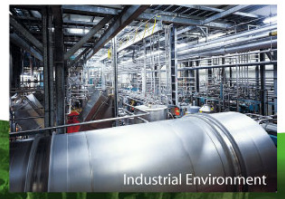
## Diesel Tanks / Generators

In this environment, diesel tanks and generators must be protected by non-conductive liquid sense cables.

## Industrial Environment

In order to avoid pipeline leakage cause the disaster consequence of pollution and contamination to our environment, containment pipes are required more and more to equip a leak detection system. Put sense cables along and inside the pipeline is the solution.


Generator


Industrial Environment


Laboratory


Museum

## Clean Room & Laboratory

Acids liquids used in these environments are detected by polymer resistant sense cables.

## Museum & Library

Precious artistic work, highly protected cultural relic, rare specimen demonstrated in the museum and books deposited in libraries are concerned by 100% safety. Protection of water leakage is one of the priorities.

## Interfacing - MODBUS, TOPSurveillance™, TCP/IP

### Modbus

FG-SYS has RS232 and RS485 serial links with Modbus communication protocol for interfacing with a supervisor (i.e. computer, BMS) and streamline printing. These are the communication tools which enable the users to manage all detection and alarm information in the best possible manner.





### TOPSurveillance™

TOPSurveillance™ and FG-SYS Set Up, utility software of the FG-SYS detection system can be connected with FG-SYS digital unit using Modbus interface.




### TCP/IP

TTK R&D has developed a plug-and-play daughter board enabling the Ethernet connectivity of FG-SYS. There is no need for special software for the set-up of the FG-TCP, the configuration software is a normal Web browser available on every computer such as Internet Explorer, Opera, etc. The configuration interface is password protected for maximum security. The FG-TCP board can be connected anywhere in the local area network and can be accessed by a remote computer.

The FG-TCP board sends SNMP traps to a LAN-connected BMS and e-mail alerts as soon as the alarms appear and/or disappear on the display of FG-SYS.

## UK References

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|---|---|
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| Reuters | Global Switch |
| Barclays Bank | British Telecom |
| Thompson Financial | Telstra PSI |
| Royal Bank of Scotland | Vodafone |
| HBOS (Halifax / Bank of Scotland) | **Industry** |
| JP Morgan Chase | Fujitsu |
| Credit Suisse First Boston | Easy Jet |
| Deutsche Bank | BP |
| Lehman Brothers | **Public** |
| Cazenov (JP Morgan) | Allan Overy (Legal) |
| Societe Generale | GCHQ |
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| | Whittington Hospital |