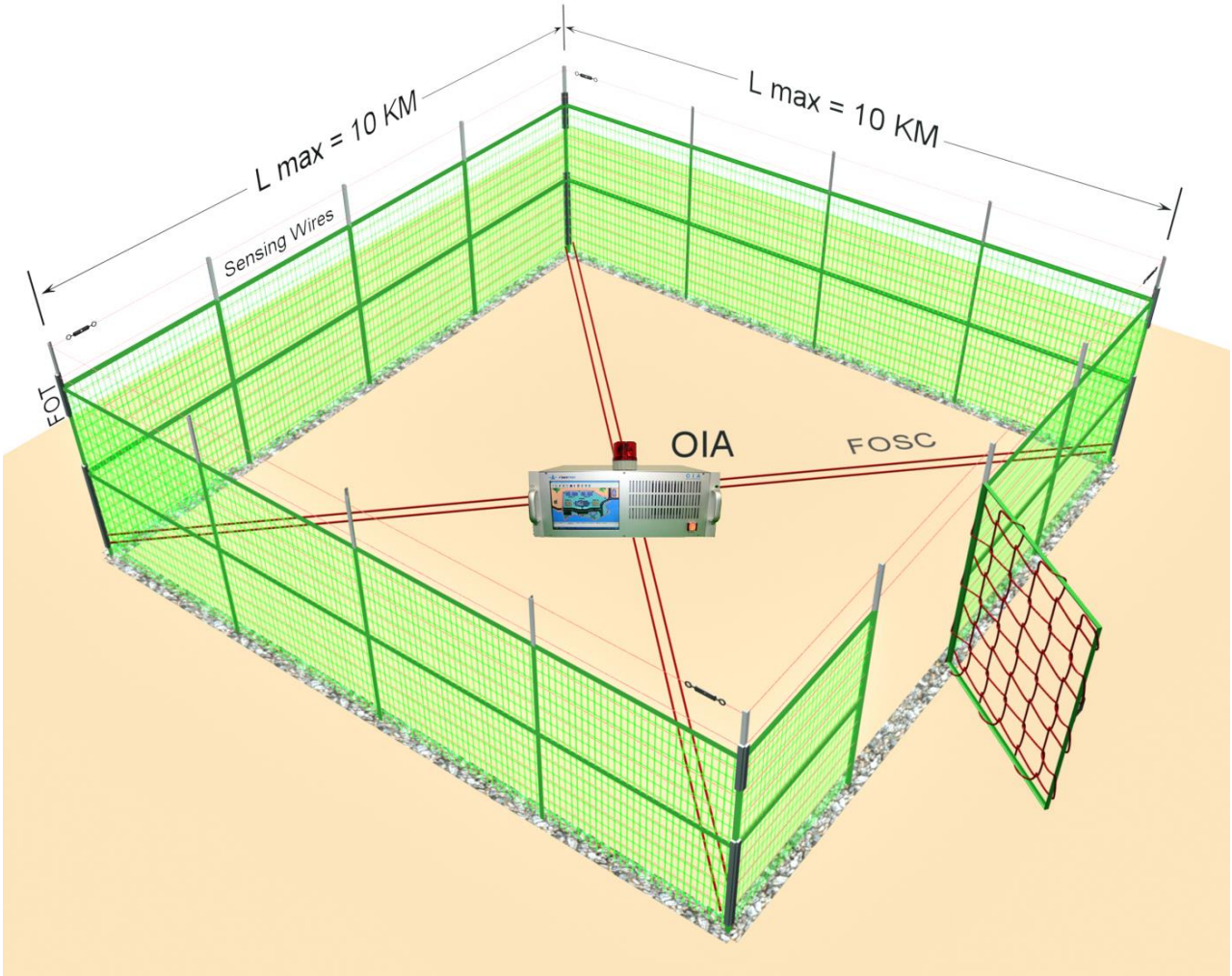
FMSW

Fence Mount Sensing Wire

- No field equipment up to 40km
- Free from nuisance alarm
- Nearly Invisible
- High Probability of Detection over 95%
- Locate intrusion spot within ± 25 meters
- Environmental Proof



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Development Background

FOM on Kuwait Diplomatic Facility Wall 2011 Dubai

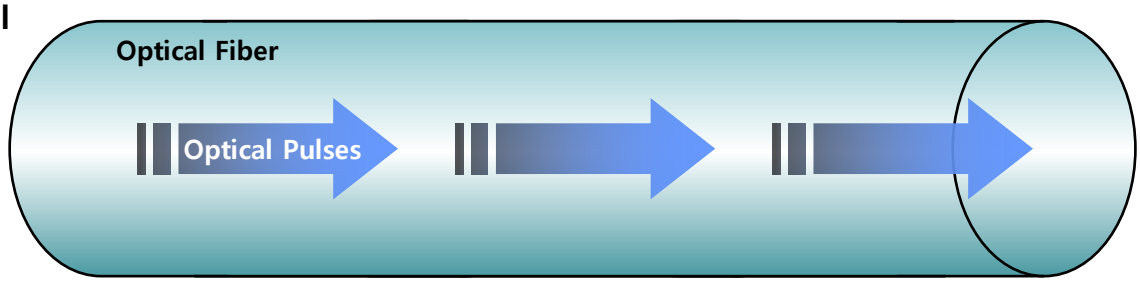
FOM at Korea Top Gov't Site Fence 2015 MAY

FOSM (Fiber Optic Security Mesh) operates based on the unique Optical Radar principle and throughout its worldwide installations over 15 years has been reputed as the unique foolproof accurate intrusion detection system being free from nuisance alarm. However FOSM costs high and requires protection from direct environmental disturbances by animals and grasses.

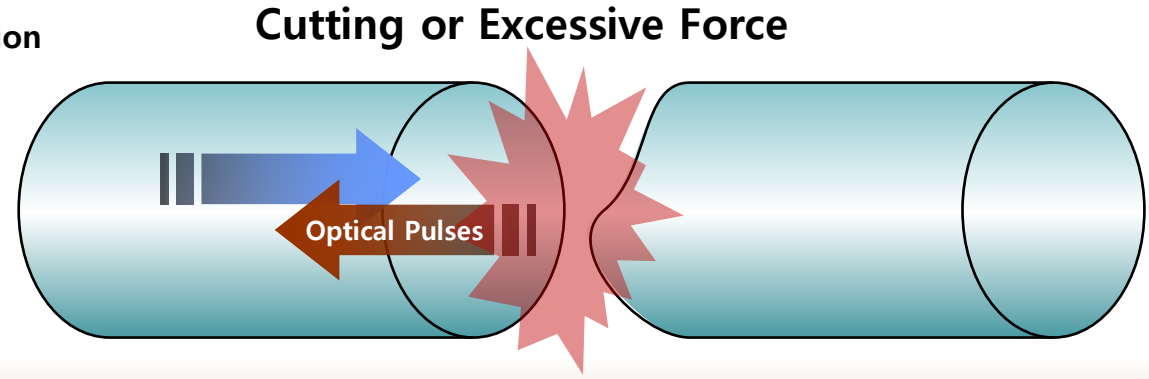
FMVS (Fence Mount Vibration Sensors) costs low but are known as ineffective because of severe nuisance alarms due to wind, rain, vehicle etc, and limitations not to detect intruder at bad weather as well as intruder climbing over fence from a shoulder /ladder without touching the fence mesh.

Recently Fibertron Co., Ltd. presented FMSW (Fence Mount Sensing Wire) as an extended application of FOSM technology to eliminate the draw backs of FMVS and to drastically reduce the cost and surely withstand all kind of environmental disturbances compared to FOSM by employing tiny stainless steel wire as the primary sensor and FOSC (Fiber Optic Sensor Cable) as the secondary sensor .

Normal



Intrusion



Chain Link Iron Mesh Fence, typical

Weld Iron Mesh Fence, typical

FMSW drawing, front view

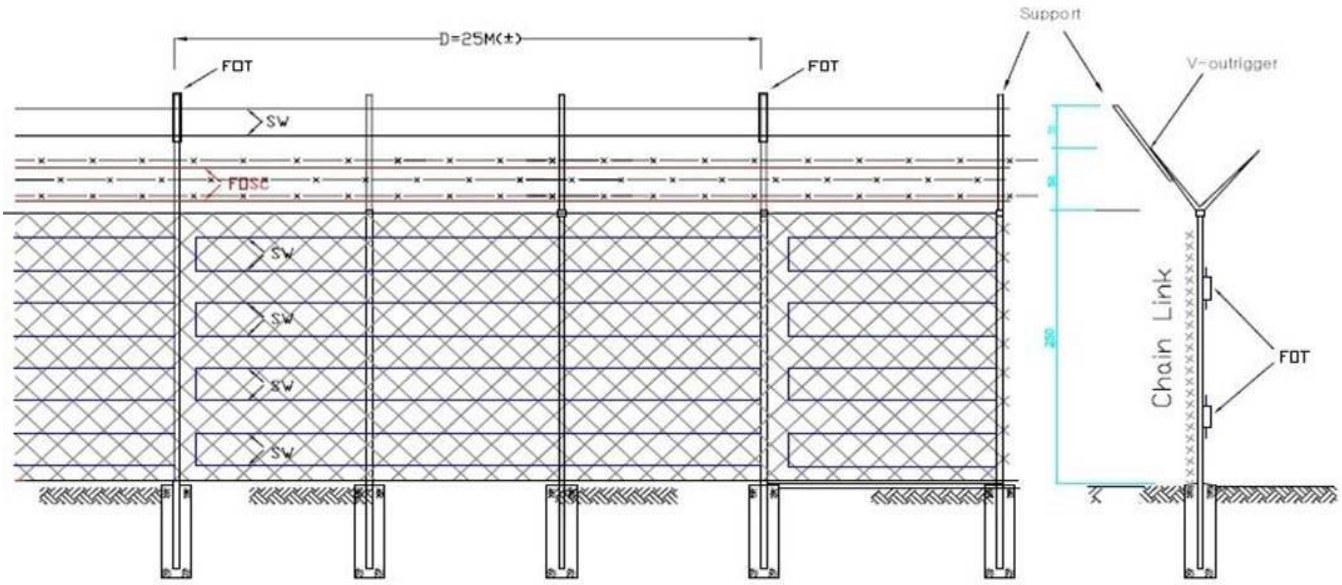


Fig. Front View of FMSW

FMSW drawing, rear view

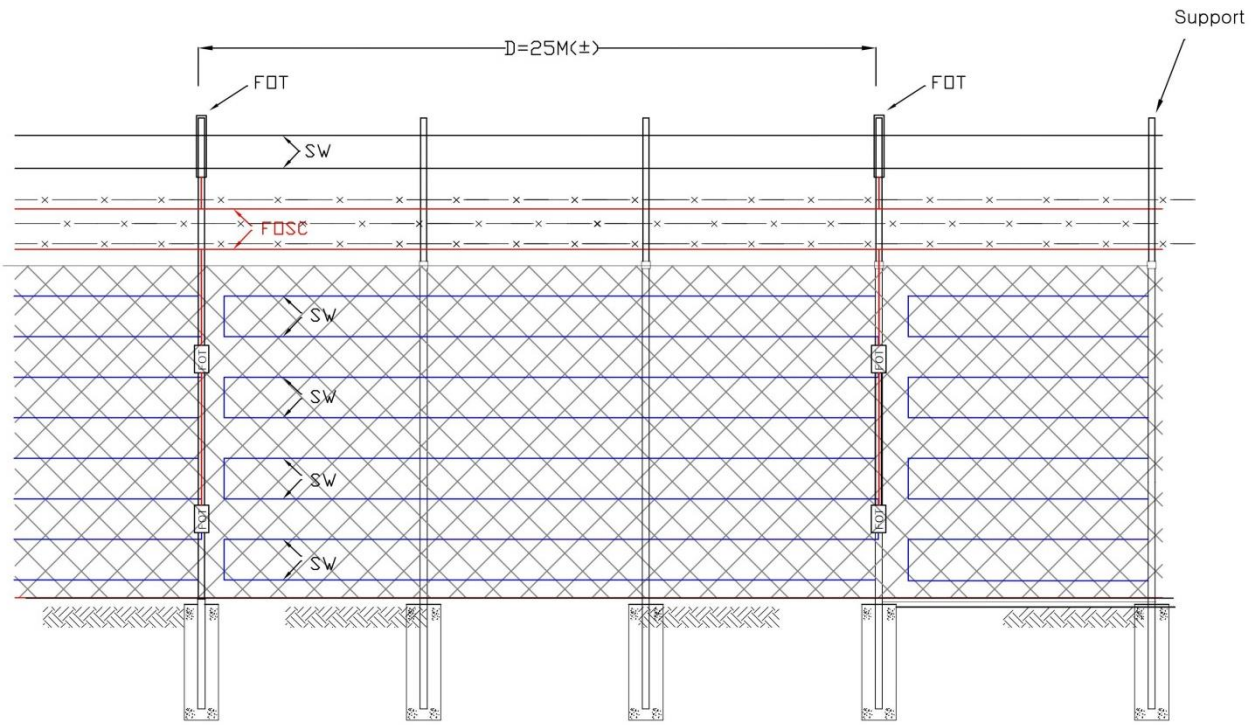


Fig. Rear View of FMSW

FMSW System Diagram, 10KM

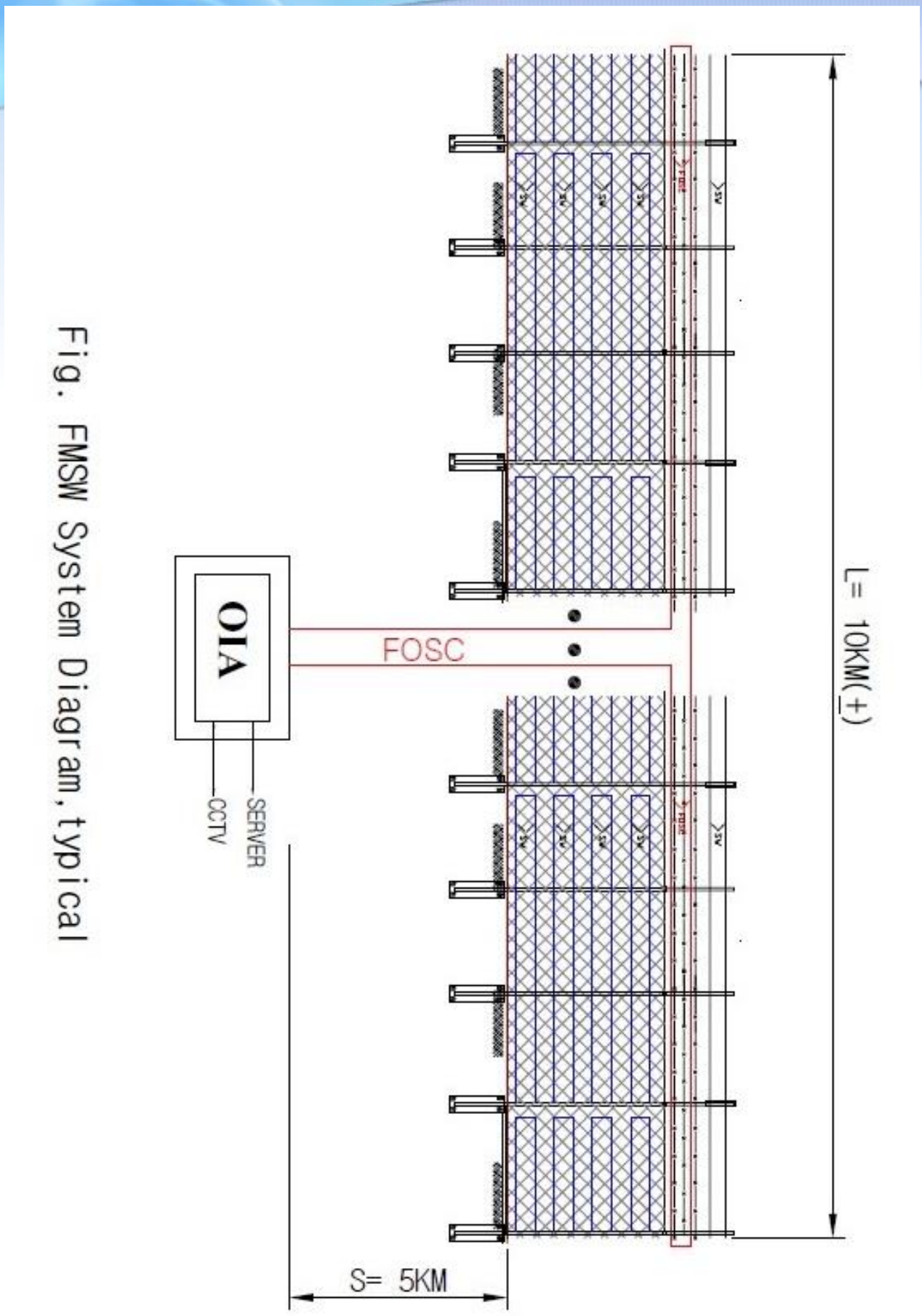
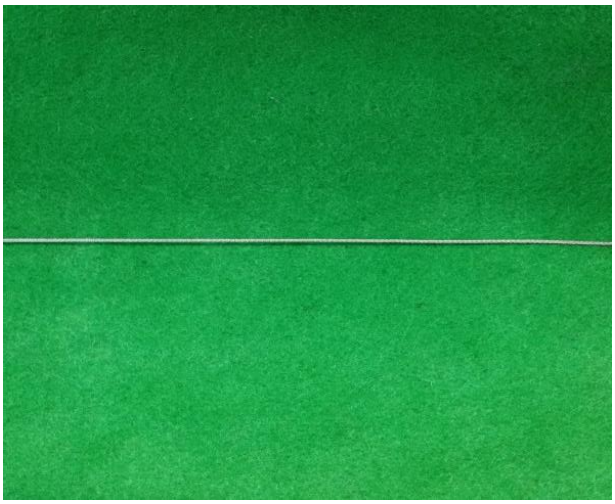
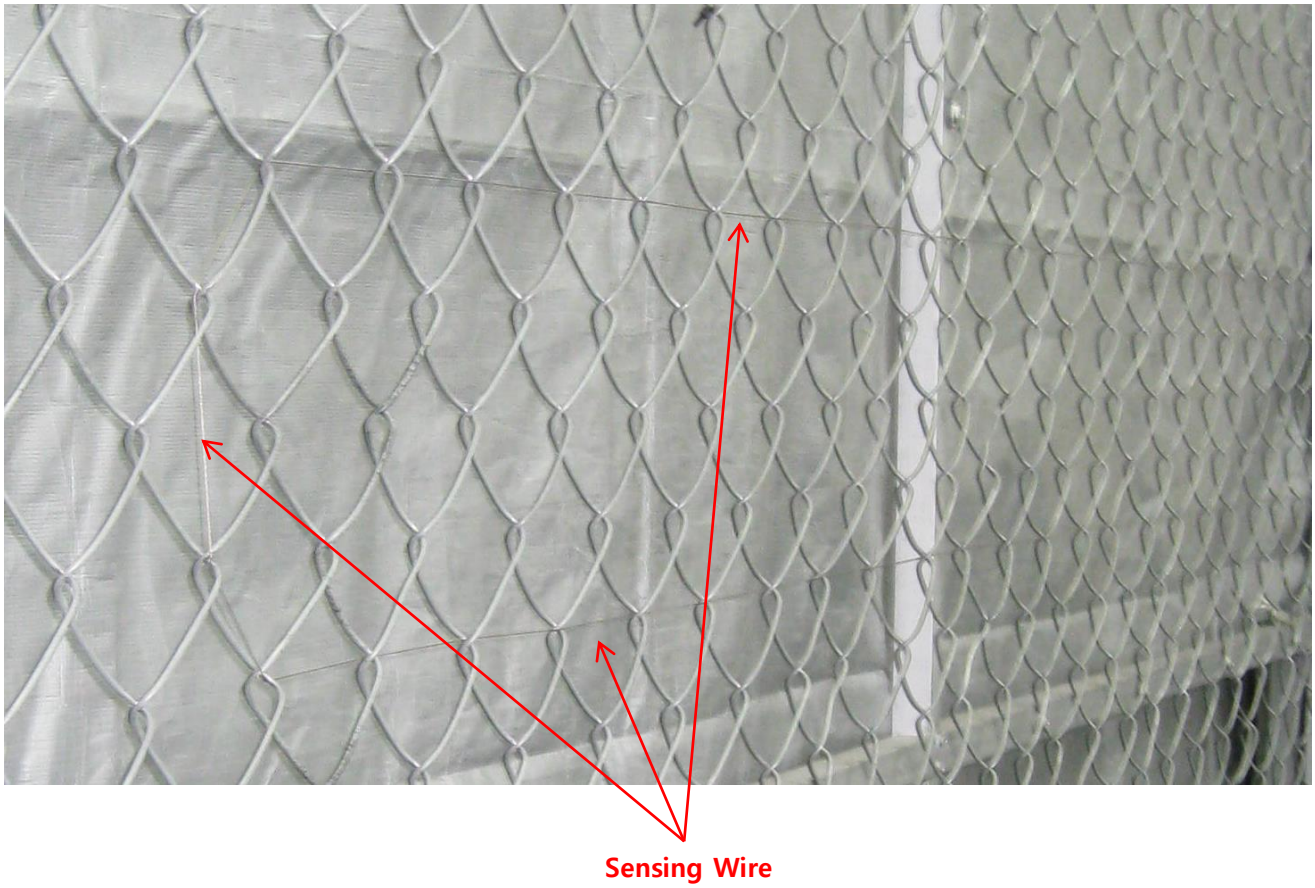


Fig. FMSW System Diagram, typical

SW (Sensing Wire)



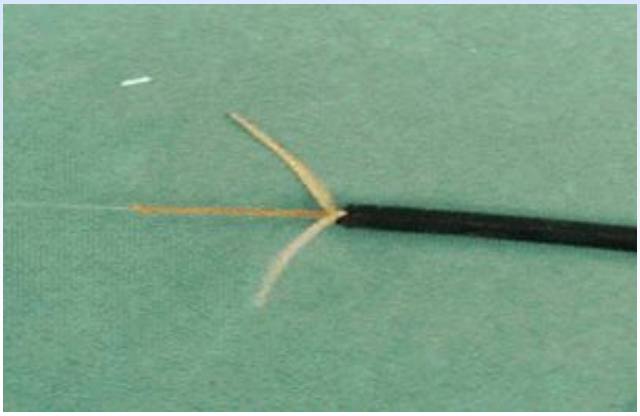
- Diameter : 1.0 mm typical
- Material : SUS 304
- Weight : 5kg / km
- Environmental : immune to water, electricity, vibration.
- Operating Temperature : -40℃ to + 75℃
- Allowable strength : 80kg
- Lifetime : over 20 years



FMSW Photograph, nearly invisible

FOSC (FO Sensor Cable)

FOSC provides connection between FOT and the control equipment, supplies Optical Laser Pulses to every FOT on the fence and conveys Optical backscatter from FOT back to the control equipment for triggering alarm at picking up abnormal Optical Echoes due to intrusion.



Specification of FOSC-1C•

- **Diameter : 3mm**
- **Fiber Grade : multi-mode**
- **Weight : 10kg / km**
- **Environmental :**
  immune to water, electricity, vibration.
- **Operating Temperature : -40℃ to + 75℃**
- **Allowable strength : 10kg**
- **Lifetime : over 15 years**

Support

Speiciication of SP30x30x3t

- **Size : 30x30x3t**
- **Material : SS41, Zn Coat unless specified other wise**
- **Weight : 1.5kg**

FOT (Fiber Optic Transducer)

FOT houses FOSC coupled with Sensing Wire to generate abnormal Optical echoes at pulling by the Sensing Wire. It requires no electricity and is immune to environment.

Specification of FOT-2D
• Transducer Type : displacement/bidirectional
• Dimension : 40x40x250mm typically but depending on application
• Material : SS41, Zn Coat
• Environmental : Immune to water, temperature, electricity, vibration
• Lifetime : over 15 yrs
• Weight : 1kg typical

System Description

Everywhere of human skin is equipped with biological nerve. Likewise everywhere on iron mesh fence is equipped with either mechanical nerve SW or Optical nerve FOSC. Either cutting or pulling of SW/FOSC is to pull and activate FOT related or alarm.

SW (Sensing Wire) is a tiny & invisible stainless steel wire of dia 1.0 mm typically. It is inserted to iron mesh back & forth as well mounted to fence outrigger in 20 cm vertical spacing typically maintaining high tension and connected to FOT (Fiber Optic Transducer) at every 25 meters spacing. Intrusion either cutting through the chain link iron mesh or climbing over the fence shall cause to cut or pull SW. In turn the SW shall pull and activate FOT to trigger alarm and locate within ±25 meters by the control equipment.

The FMSW shall be intrinsically free from nuisance alarm being immune to all kind of environmental effects such as aircraft/truck vibrations, high temperature, sunshine, rain, snow, haze, dirt, storm, lightening, surge, power lines, Electric ground loop, Electric cross talk etc. and shall highly withstand strong external disturbances such as falling tree branches and animals.

System specifications

System Construction	Control Equpment – FOSC – Sensing Wire -FOT
Sensing Origin	Cutting or pulling Sensing Wires
Location Accuracy	± 15m, ± 25m, ± 50m, ± 100m, ± 200m Optional
Prob. of Detection	Over 95%
FOSC grade	3Ø 1Core MMF
OIA detection coverage	Lmax = 10 km, typical, Max upto 8 channel
Remote operation	Local OSU to be remotely controlled via comm. Link by ACS at Security Control Room
Op Temperature	-40 ℃~ +75℃
Environment	Immune to rain, snow, haze, wind, lightning, pollution, vehicle vibrations
Lifer time	Over 15 years

Control Equipment Specifications

OIA periodically & continuously injects Infrared Laser Pulses into FOSC(FO Sensor Cable) and trigger audible & visible alarming at reception of abnormal Optical Echoes flashing the intrusion spot on its own monitor site map within ±15m error. OIA also provides OTDR service function and operation data storage. OIA provides input ports for other sensors such as IR Sensor, Shock Sensor, Door Locks etc and communication ports with other PC, CCTV Control, Server PC, LAN, Internet etc

◆ OIA-nP (Optical Sensing Unit)

- Operation mode : Normal, Test, Emergency, Setting, Stop
- Sensing mode : cutting and/or excess force
- Location Accuracy : ±1m , ±15m , ±25m, Optional
- No of Optical Ports : n (maximum 8)
- Sensing mode : cutting , excess force , selectable
- External connection port : PC interface
- Fiber Optic test function : semi-OTDR
- Auto-logging : event data (alarm,action,status,setting value etc)
- Monitor : 8.4" LCD built in or 17" LCD external
- Interface : dry contacts, serial or LAN
- Acceptable output devices : warning light, signal phone
- O/S : Window XP or up to client request
- Dimension : 19" 4U (177×483×300 mm)
- Operating condition : indoors
- Power : AC220V±10% 50/60Hz, 100Watt approx