



FIRE SECURITY

Lifetime extension, repair and fire protection of electrical cables
ONSHORE INDUSTRIES



Last updated September 2021



FIRE SECURITY



Fire Security is a Norwegian company offering cable life extension, repair, and fire protection of electrical cables for industrial plants worldwide. We conduct turnkey projects for an

extensive client base like cement factories, steel and aluminum plants, paper mills, power plants, and even tunnels and high-rise buildings.

Our clients each have their unique requirements for high-quality products and a professional delivery with a minimum of interruption to their operations. Fire Security's coating systems have obtained type approval certificates from the world's leading international classification societies.

Ole Tom Eidjord
Chairman



FS CABLE COATING SYSTEMS

FS cable coating systems have been tested worldwide for decades with impressive results. An investment in the longevity of electrical cables is an investment in secure performance and insurance against production/operation shutdown.

The main advantages:

CABLE LIFE EXTENSION

The FS coating system can upgrade your cables and extend the lifetime by up to 3 times. No other fire protective cable coating is approved to be as resistant to UV, water, mud, oil, and a wide variety of damaging chemicals.

CABLE REPAIR

We repair cable sheaths that are damaged by UV, oil, mud, and mechanical stress. The coating restores the cable value, prevents future damage to cables and cable jackets, and eliminates the need for large-scale replacement.

FIRE PROTECTION

No other cable coating system has equal or better fire protection properties. Our coating provides superior fire protection compared to standard cables and can upgrade existing cables to the highest fire technical standard.

Saving costs – saving assets – saving lives.



CABLE LIFE EXTENSION

The historical background for our lifetime extension program

FS coating has protected cables for more than 30 years onboard ships and heavy industries. Initially, only fire protection was performed, but over the years, more benefits and a broader scope of work have been added as our cable life extension program. We experienced that FS coated cables came out looking far better than uncoated cables in the same environment.

Fire Security's coating systems extend the lifetime of the cables at the same time to upgrade the cables fire technically.

We conduct the work scope without any shutdown required, thus offering huge flexibility when maintaining or upgrading an existing installation.

In the mid-1990's we did our first lifetime extension projects. Mobil Oil company, now Exxon Mobil, had experienced outer sheath cracking on their asset in the North Sea, Lancelot, Guinevere, and Excalibur. Fire Security completed a successful lifetime extension campaign of these cables in 1996.



When Perenco, in the year 2010, invited us to visit these platforms that were now a part of their asset portfolio, we were delighted to see how well the cable life extension program had worked. The cables that were experiencing cracking in 1996 and was treated by Fire Security was still (2010) in excellent condition.

Since then, Fire Security has performed numerous such projects for cement plants, paper mills, power plants, aluminum and steel plants, always with results that exceed ours and the clients' expectations.

Fire Security's Class approved coating systems are perfect for repairs and environmental protection in high-risk areas in both offshore and land-based industries and lately on numerous LNG carriers and refineries.

We conduct cable surveys with no commitments from your side

We are always available for consultations with our experts if your company has assets that may outlive the cables normal lifetime or if the cables are aging prematurely.

Fire Security offers to conduct surveys of cables in high risk areas of your plant, after which we deliver a detailed report with suggestions to what we can do to extend the lifetime of vital cables, what you will gain, and a price quote.

The FS program for extension of cables' operational life, consists of:



- Ozone protection
- UV protection
- Increase of the dielectric strength



- Mud protection
- Oil protection
- Chemical protection

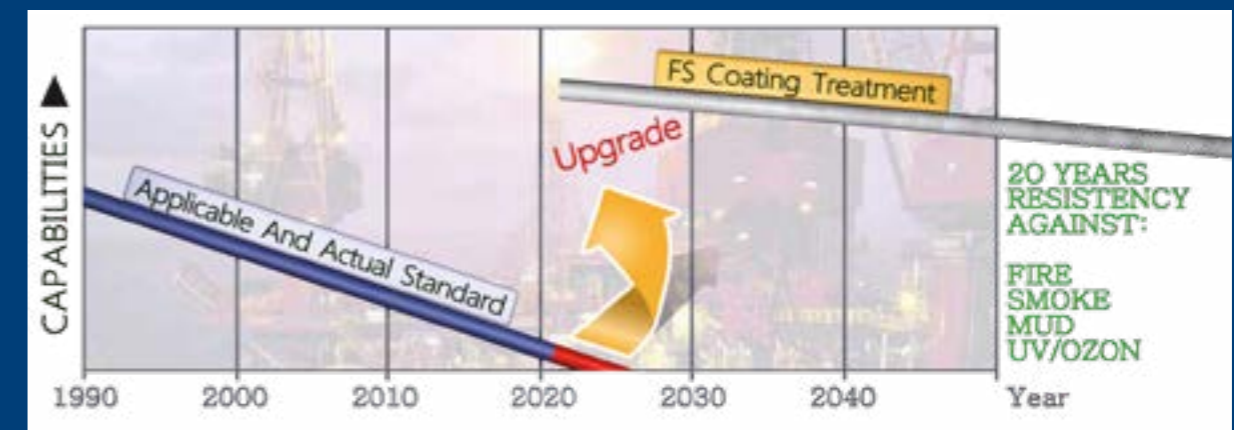


- Bring back, upgrade insulation properties
- Repair cables where the outer sheath is damaged



- Bring back, upgrade fire protection
- Upgrade cables smoke class
- Prevent short circuit in a fire situation

Are your cables damaged by mechanical stress or environmental influence?



Cable lifetime extension is a cost-effective solution to premature aging of electrical cables. Changing or rerouting the cables is a costly operation, so why not choose Fire Security to execute the repair of damaged cables and protect them from fire, smoke, mud, UV, ozone and chemical damage for many years to come.



CABLE REPAIR

We offer cable repair and protection with our FS cable coating systems to all electrical cables at your unit, eliminating the need to change or reroute cables. Not only will our cable coating systems repair existing damage, but also prevent future damage to cable jackets.



Our cable coating system is unique: it can repair damaged cables and offer fire protection in one operation. Failing to repair damaged cables can leave your industrial plant severely impaired.



FS cable repair system fixes cable damages such as: Cracks, UV damage, Oil, Mud, Water, and Mechanical Destruction.



FS coating system for cable repair, lifetime extension, and fire protection can save millions compared to replacing old cables, here from a project at an industrial plant.

Cable restoration by Fire Security has benefits like cost savings, damage prevention, and fire protection.

Fire Security industrial cable coating is designed to repair damaged or brittle LV to HV cables without shutdown or loss of production in the power generation/distribution, and heavy industry sectors. We pride ourselves on zero business interruption as we efficiently find a solution to repairing your industrial cables' cracks and leaks.

After manually rebuilding the damaged sheaths and restoring insulation and mechanical integrity with our coating system, your industrial cables are repaired and protected against both environmental stress and fire. Your cables are ready to continue their operation with a warranty backed application.



Cable upgrade benefits

- Your cables comply with international qualification standards.
- An upgrade eliminates the need for costly large-scale cable replacements.
- An investment in cable upgrade is an investment in the security of your operation and prevention of unexpected future costs.
- We do cable repair, cable life extension, and fire protection in a turnkey solution with specially trained personnel.



Contact Fire Security for a consultation or an onsite cable survey.



Fire Security has 30 years of experience serving heavy industries worldwide with the best cable repair and fire protection solutions.





FIRE PROTECTION

Cable fire protection worldwide

FS coating is used for fire protection on electrical LV/ HV and signal cables.

Fire Security has more than 30 years of experience in cable fire protection and we are the only cable coating producer offering application as a turnkey solution worldwide.

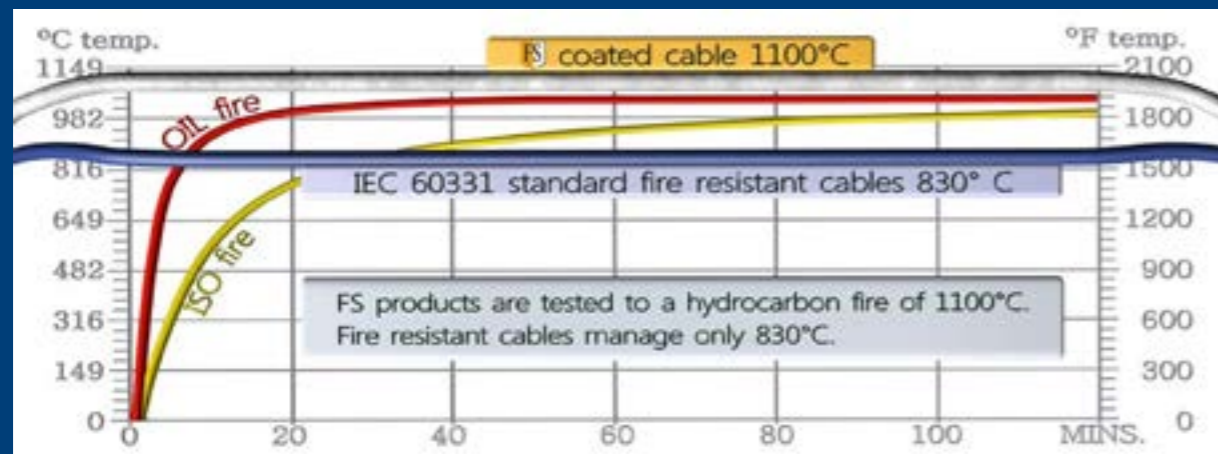


During a fire, the coating expands and protects the cables from fire damage and also prevents the fire from spreading via the cable trays. FS coated cables function during a fire, and if the fire is ceased within a reasonable time, there will be no need for cable replacement.



FS coated cables can survive a hydrocarbon fire for 60 mins.

The yellow curve below shows the temperature of an ISO fire, which is a fire in a typical room or a building. The red curve represents the temperature of a hydrocarbon fire, up to 1100° C, the temperature to which Fire Security tests our coatings.



In a fire situation, our systems prevent:

- Ignition of the cable insulation.
- Release of toxic fumes from the cable insulation.
- Release of poisonous gas (HCL) from the cable insulation.
- The cable tray from melting and collapsing.

The difference between standard cables and FS coated cables

- Uncoated cables experience a short circuit after less than 2 minutes in our oil fire test.
- FS coated cables function up to 1 hour without a short circuit.
- Uncoated cables could leave your installation in danger under a fire incident and will most likely cause a costly shutdown, including the rerouting of cables.
- Vital cables for your operations and critical emergency systems will operate in a fire situation if they are protected with FS coating. In most incidents, there will be no need for cable replacement.



Our coatings are water-based and have been approved by the world's leading classification societies and authorities.

Fire Security has offices in Norway, UAE, Indonesia, USA, Mexico, and Brazil. We have representatives in South Africa, Kenya, South Korea, Vietnam, Malaysia, and China.



We issue certificates upon completion of projects



Recommendation letter



FIRE SECURITY

CERTIFICATE

For Fireproofing of Cables on

Haili Transformer Substation and Tunnel

for

Jiangsu Shagang Group Co.Ltd

Fire Security is a Norwegian company specializing in cable repair, protection and life time extension. Our systems are available for application worldwide with specially trained personnel.

We confirm that we have applied our approved coating system FS 5 on cables on Haili Transformer Substation and Tunnel, Fire Security hereby guarantee our product FS 5 cable coating and application work for a period of 7, seven years.

Work completed 6th of September 2016
Certificate valid until 6th of September 2023


 Jim Sollesvik
 Technical Department


FIRE SECURITY a.s


 Terje Waage
 Vice President

Fire Security • Skibslisen 20b, 4036 Kristiansand Norway • Phone: + 47 95 47 80 00 Fax: + 47 38 02 15 31
website: fire-security.com • email: headquarter@fire-security.com


ELECTRICAL & MECHANICAL ENGINEERING
 P.O. Box : 28774, Abu Dhabi - U.A.E.
 Tel. : 00971 2 5538900
 Fax : 00971 2 5538901
 E-mail : dancon@emirates.net.ae

دان وى

للهندسة الكهربائية والميكانيكية

ص.ب. ٢٨٧٧٤ ابوظبي - ا.ع.م

تليفون : ٠٠٩٧١ ٢ ٥٥٣٨٩٠٠

فاكس : ٠٠٩٧١ ٢ ٥٥٣٨٩٠١

بريد الكتروني : dancon@emirates.net.ae

Abu Dhabi,
8th February 2016

M/s. Fire Security Middle East
PO Box 40068
Ajman, United Arab Emirates.

Attn: Mr. Jesper Rexen

To Whomsoever It May Concern

We confirm that **Danway Electrical and Mechanical Engineering** has used services of **Fire Security Middle East** on a number of projects in United Arab Emirates.

At EMAL Smelter Plant of Emirates Global Aluminum, Fire Security Middle East has safely and efficiently upgraded multiple areas within Phase 2 of the plant with their FSS coating system as a turnkey delivery.

Fire Security Middle East has carried out the works at below listed areas in a very safe manner by protecting live critical power and instrumentation cables, ensuring no interruption for normal operation of the plant and without accident and lost time

- > MV / LV Substations and MCC Rooms
- > 220 KVA GIS Substation
- > Rectifier Transformer Areas
- > HV /MV Transformer Bays
- > GT and ST Halls
- > Anode Rodding Shop
- > Green Anode Plant

Ensuring no loss to production and conforming to FM Global insurance requirements, Fire Security's activities have contributed towards our successful delivery of the project.

We would recommend Fire Security's services and products for any future projects.

For **Danway Electrical and Mechanical Engineering**


Anwar.Sadath
 Senior Project Manager





WORLD WIDE OFFICES AND REPRESENTATIVES

Fire Security worldwide offices:

Fire Security headquarter, Norway – Kristiansand:

Phone +47 95 47 80 00, Fax +47 38 02 15 31,

Email: headquarter@fire-security.com

Fire Security Norway – Oslo:

Mobile +47 91 54 48 81, Email: tw@fire-security.com

Fire Security USA – Houston:

Mobile +1-281-352-7182, +1-281-352-0800,

Email: henning@nortech.com

Fire Security Brazil – Rio de Janeiro:

Phone: +55-21-97498.4945, Phone: +55-21-98121.1380

Email: brasil@fire-security.com

Fire Security Asia-Pacific, Indonesia – Jakarta:

Phone +62 21 2293 0520, Mobile +62 812 8990 0625,

Email: paal@fire-security.com

Fire Security Middle East, United Arab Emirates – Ajman:

Phone +97 16 74 78 842, Mobile +971 50 6453425,

Email: jrx@fire-security.com

Fire Security representatives:

Mexico: OistBrokers

Ciudad del Carmen, Phone +52 1938 3843 062,

Email: jmontoya@oistbrokers.com

South Africa: IBAS GROUP (Pty) Ltd

Mobile +27 72 443 2900, Email: fire@ibasgroup.com Website: www.ibasgroup.com

Kenya: Amotech (E.A.) Limited

Phone: +254709223344, Mobile +254720450565.

Email: amos@amotech.co.ke Website www.amotech.co.ke

South Korea: Kangnam Drive Co. Ltd.

Phone : +82-2-497-4505, +82-10-4572-4505,

Email : fire@kangnamdrive.com Website: www.kangnamdrive.co.kr

Vietnam: Gre-Coating Engineering JSC (VGCE)

Vung Tau City, Phone: (+84) 254 3 626 628,

Fax: (84) 254 3 626 629, Mobile: (+84) 919430335.

Email: stewart@gce.com.vn Website: www.gce.com.vn

Brunei: PTT Engineering Sdn. Bhd.

Phone: +673-323-0185, Email: tn.lim@ptt.com.bn

Malaysia: Nargis Petroleum Sdn Bhd

Phone : +60 17 667 9269, Email: nphq@npsbm.com

Website: santubongeng.com

China: Tianjin Runbo Engineering & Technology Co. Ltd

Phone: +86-22-65151579, +86-13820858510, Email: chentao@rbet.com.cn

Website: www.rbet.com.cn

Here are some of our clients within the onshore industries

Airmech – Bahrain / Alba Line 6

Alba / Bahrain Aluminium

Al Ezzel O & M/ Al Dur Power Complex

Al Komed Engineering / Alba Line 6

Amata Power / Amata B Grimm Power

Asia Cement/ Jechon Plant

Asia Pulp & Paper / DSS - Karawang I plant

Asia Pulp & Paper / Indah Kiat Perawang Mill

Asia Pulp & Paper / Lontar Papyrus Jambi Plant

Asia Pulp & Paper / Pindo Deli Karawang II Plant

Bahrain Aluminium / Overhead Casthouse Cranes

Bahrain Gas Company / Emergency Lube Oil Pumps on

Gas Turbines

Bahrain Steel / Bahrain Substations

Bahrain Steel (GIIC)/ Jetty Conveyor Belts

BK Gulf / Burj Khalifa

BK Gulf / Dubai Mall Tunnels

BK Gulf / Dubai Mall

Cirebon Power / Cirebon Power Plant

Consortio Tunnel / Grota Funda (Rio de Janeiro)

Danielli – Bahrain / Alba Line 6

Danway EME / EGA AT PSI Intergration

Danway EME / Alba Line 6

Danway Electro / Mechanical Substations - Phase 2

Emirates

DNMC / Ling Ao NPP

Dubai Engineering Company / EGA Ja

Dubai Euro Engineering EGA / JA

Dubal / Dubai Aluminium Company

EGA AT / Pot Lines

Elkem / Elkem Bremanger

Elkem / Elkem Fiskaa Verk

EMAL / Emirates Aluminium Company

Emirates Aluminium / Plant wide substations - Phase 1 -

Abu Dhabi

ENGIE Abu Dhabi / Sweihat Power Complex

ENGIE Bahrain / Al Dur Power Complex

ENGIE Middle East / Um Al Nar Power

ENGIE Oman / Sohar Power

Eurotunnel / Eurotunnel

Hanil Cement / Danyang Plant

Hansol Home Deco / Hansol Home Deco Korea

Holcim Cement / Cilacap Plant

Hubco Narowal Pakistan / Substations

Hyundai Cement / Hyundai Cement Korea

Indocement / Citeureup plant

Jazeera Power / EGA Jebel Ali

KEPCO / Danjing Power Plant

Lafarge Cement / Korea

LG Chem / Daesan Plant

Lotte Chemical / Ulsan Plant Korea

Marafiq – Saudi Arabia / Jubail Power

MCSC – Bahrain / Alba Line 6

Methanex / Methanex Plant Trinidad

Methanex / Methanex Control Room

Substations Trinidad

Mulia Group / Bri II

Mulia Group / Menara Mulia

NagaWorld / NagaWorld Cambodia

Oderbrecht Brasil / Tunel Grota Funda –

Trasoeste

Osaka Steel / Osaka Steel Japan

PLN / Asahan 1

PLN / Pangkalan Susu

PLN / PLTU Lontar

PLN / PLTGU Indralaya

Qatar Fertilizer Company / Qafco Ureah 2 Substation

Ray International / Sohar Power Plant

Riau Andalan Pulp & Paper / Kerinci Plant

Sampyo Cement / Sampyo Cement Korea

Samsung Corporation / Emergency Pumps on

Turbines – Emirates

SEPAM / Alba Line 6

Shagang Steel / Jiangsu, China

Siemens / EWA 400 kv Substations

SK E&C / SK E&C Korea

Sohar Aluminium / Oman Aluminium Company

Sunchang Corporation / Sunwoon MDF Plant

Sungshin Cement / Sungshin Cement Korea

SWCC / Desalination plant

TNB Janamanjung / Tenaga Nasional Berhad

YTL Jawa Power / Paiton Power Plant



FIRE SECURITY

Our products have been approved by leading classification societies and authorities:
U.S. COAST GUARD, Lloyd's Register, Achilles, Bureau Veritas, DNV, RINA, NMA, ABS, FM, UL



SUSTAINABLE SOLUTIONS

Fire Security protects and extends cable life using non-toxic materials.

SAVING LIVES, COSTS and THE ENVIRONMENT

Global headquarters:

Skibåsen 20B, 4636 Kristiansand, NORWAY

Tel: +47 95 47 80 00 Fax: +47 38 02 15 31

Email: headquarter@fire-security.com

www.fire-security.com