



Certified Sustainable Cable Maintenance

Lifetime extension, repair and fire protection of electrical cables

OIL & GAS INDUSTRY





Sustainable Cable Maintenance

Protecting and prolonging the life span of electrical cables, FS has proven its worth for decades. We have an extensive reference list stretching from industrial plants, oil rigs and cruise ships to offshore wind farms. Our products are approved by leading classification societies and authorities. Our core activities are:



Using warranty backed applications only, FS repairs and upgrades damaged cables.

Cable life extension

The FS coating systems upgrade your cables and extend the lifetime by up to 3 times. No other fire protective cable coating is certified 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. This is done with minimum shutdown time.

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.

SAVE LIVES / SAVE COSTS / SAVE THE ENVIRONMENT



Certified Sustainable Solutions

FS offer certified sustainable solutions to extend cable life and avoid electrical fire, using nothing but non-toxic materials.



Our commitment to the environment is documented through our DNV ISO 14001 environmental management systems certification.

mitigates the negative end-of-life environmental impact of cables, as well as the inherent environmental and resource cost of excessive production and installation of new cables.

Repaired cables are fully restored and functioning

FS procedures are tested and approved. We deliver a turnkey solution that avoids operation shutdown, removes the costly need for cable replacements, and halts the spread of further damages. Rejuvenated cables continue their operation with a warranty backed application.

Fire Security products and systems are LEED and EPA 24 compliant, non-toxic, solvent-free, phosphate-free, and do not contain asbestos or any other substance identified as being cancerogenic. Our products release no poisonous and corrosive gases and smoke.

Significant reduction of excessive production and waste

By extending the life of cables, FS limits the need for resource-intensive cable replacement. Cables contain large volumes of plastic, PVC, XLPE in sheets and insulation. Those components are commonly incinerated openly or disposed of in landfills. Extending cable lifetimes

Prevention of toxic and poisonous gasses

Our coatings prevent flame propagation and prevent escalation from a small fire to a major incident. FS cable fire protection minimizes impact from short circuits, removes cables as a source of combustion and prevents the release of toxic & poisonous gasses.

GREENHOUSE GAS EQUIVALENCIES CALCULATIONS

The Global Warming Potential (GWP 100) of production of 1000 meters of Single Core 630 mm² Voltage Grade 64/110KV cable is 32863 kgCO₂eq. Extending the operating life of such cables and avoiding replacement has significant positive impacts.



1 meter = 82 miles
Keeping just 1 meter of cable in service is the equivalent of removing the GHG emissions of an average family car being driven for 82 miles.



10 meters = 39,975 charges
Keeping just 10 meters of cable in service is the equivalent of removing the CO₂ emissions of 39,975 smartphones being charged.



100 meters = 1.1 tonnes
Keeping just 100 meters of cable in service is the equivalent of avoiding the GHG emissions of 1.1 tonnes of unrecycled waste in a landfill.



1000 meters = 76 barrels
Keeping just 1000 meters of cable in service is the equivalent of removing the CO₂ emissions from the consumption of 76 barrels of oil.



CABLE LIFE EXTENSION

FS coatings have protected cables for more than thirty years both on and offshore. Evolving from fire proofing electrical cables FS products and systems have now been developed in to a complete cable life extension program.

Fire Security's coating systems extend the lifetime of the cables whilst upgrading the cables fire technically.

Applications are usually delivered on live cables without any shutdown and resultant loss of production.

In 1996 FS delivered its first lifetime extension project. Mobil Oil -now Exxon Mobil - had experienced outer sheath cracking on their North Sea platforms: Lancelot, Guinevere, Camelot and Excalibur.

In 2010 Perenco invited us to visit these platforms that were now a part of their asset portfolio where we were delighted to see how well the cable life extension program had worked. The cables that had experienced cracking in 1996 had been treated by Fire Security were in excellent condition.

Since then, Fire Security has performed multiple cable rejuvenation projects for Refineries, Process Industries, Smelters, Mills and LNG Tankers with results that exceed ours and our end users' 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.

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

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

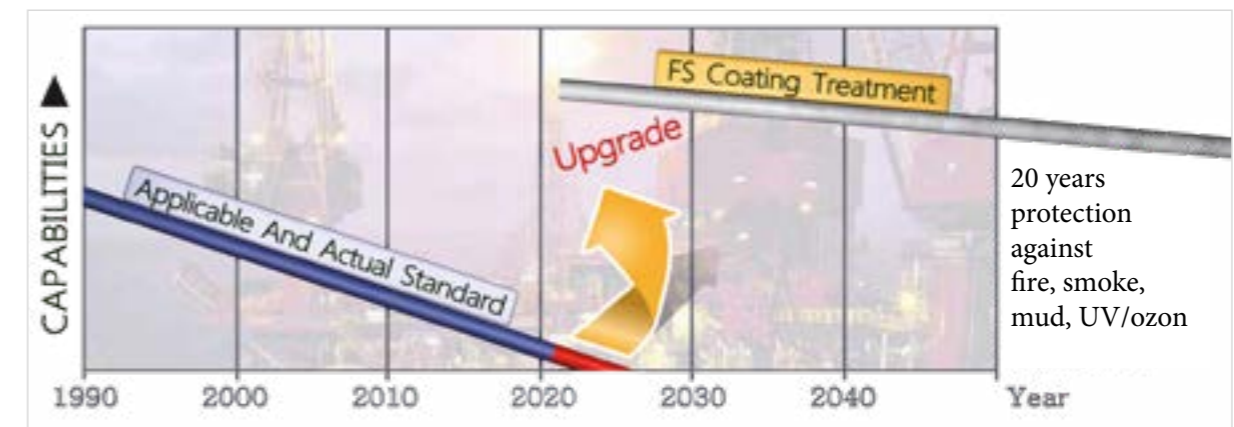


- Bring back, upgrade insulation properties
- Repair cables where the outer sheath is damaged



- 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.

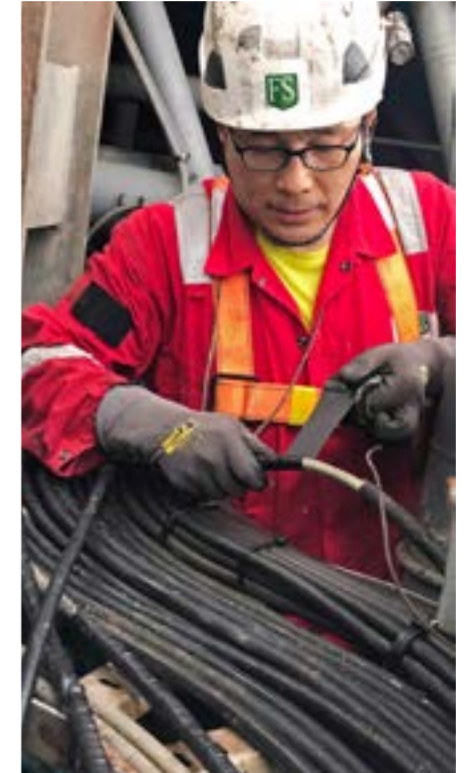


FS coating system for cable repair, lifetime extension, and fire protection can save millions compared to replacing old cables, here from a project at an industrial plant.

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 the oil & gas industry worldwide with the best cable repair and 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.

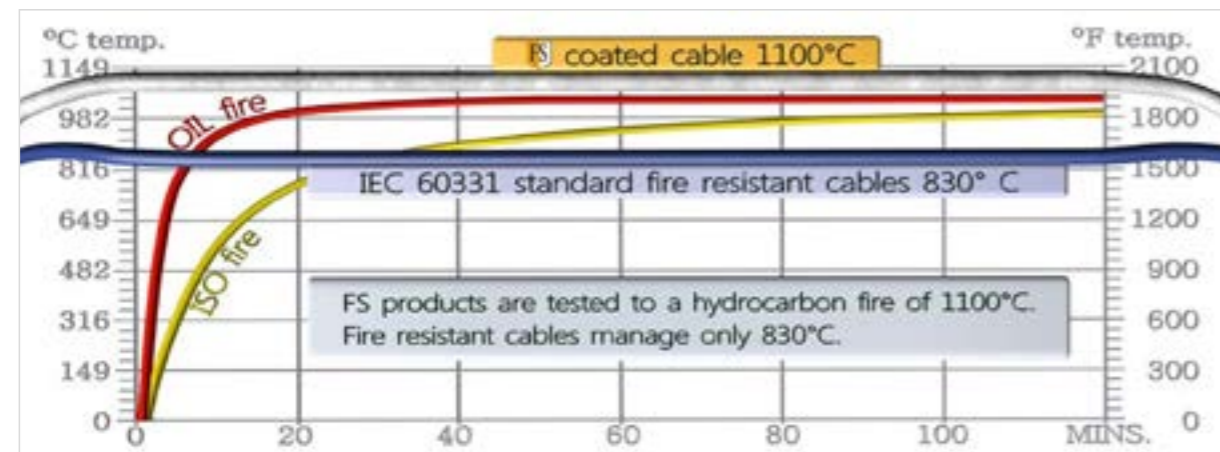


During a fire, the coating expands and protects the cables from fire damage and also prevents the fire from spreading via the cable trays. FS coated cables function during a fire, and if the fire is ceased within a reasonable time, there will be no need for cable replacement.



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.



Recommendation received after a lifetime extension project for ADNOC

ADNOC Classification: Internal



Date: 01-28-2021
 To:
 Mr. Jesper Rexen
 Fire Security Middle East FZE
 Office 1216
 Building C1
 Ajman Free Zone
 United Arab Emirates

Re:
 Contract Number S.OMR.19.611
 Fire proof coating for cables and trays in SHT-2 area
 AGP Ruwais

This is to confirm that Fire Security Middle East successfully repaired and applied fire protective coating onto cables in our AGP Ruwais, Sulphur Handling Terminal utilizing their DNV-GL Certified FS5 Cable Coating system. This application was completed safely, efficiently and without incident during two mobilisations within 2020. The Fire security team coordinated their schedule with our operations schedule so that no interruption of operations was experienced. Areas that were coated we considered high risk, and we hope to have them return in coming years to upgrade the fire protective properties of cables in other high-risk areas within our plant. Based on our experience with Fire Security Middle East FZE, we are hereby pleased to give them our best recommendations.

For ADNOC Gas Processing - Ruwais.
Ugur Torun
 Senior Engineer, Electrical Maintenance
 Plant Operations Division - Ruwais & Sulphur

Ugur TORUN
 UGUR TORUN
 c/o-Ugur TORUN, o-ADNOC
 Gas Processing, o-Ruwais,
 email=ugur@adnoc.ae,
 c-AE
 2021.01.28 10:02:15 +0400

أدنوك لمعالجة الغاز
 ADNOC Gas Processing

Abu Dhabi Gas Industries Ltd. شركة أبوظبي للصناعات الغازية
 PO Box 695, Abu Dhabi, UAE
 ادنوك لمعالجة الغاز شركة أبوظبي للصناعات الغازية
 ادنوك لمعالجة الغاز
 adnoc.ae



Recommendation received after a lifetime extension project for TOTAL



Exploration & Production

DGEP/TDO/TEC/ELE

Fire Security
 For the attention of Mr Leif Harald Tveitnes
 Vesterveien 15b
 4613 Kristiansand - NORWAY

March 15, 2006

To whom it may concern:

Total Exploration & Production, a branch of TOTAL Group, has used since 1998 Fire Security expertise in cable protection and repair on various sites ranging from the North Sea through Middle East to Indonesia.

Fire Security has been involved in several projects where cables already damaged by UV, oil and chemicals, early ageing, have been repaired and upgraded fire technically. This has effectively extended the lifetime of the cables and contributed to significant cost savings.

It is our experience that the cables repaired and protected 6 and 8 years ago are still in good working condition, cables in some cases were 25 years old at the time they were repaired.

Among all the projects Fire Security has performed for us, there has never been any accident or lost time incident, nor has been any shutdown of production required as a result of their work.

We are pleased to give Fire Security and their coating systems our best recommendation.

Best Regards



Patrick LEROUX
 Total Exploration & Production
 Head of Electrical Department
 @ : patrick.leroux@total.com

Adresse postale : 2 place de La Coupole - La Défense 6 - 92078 Paris La Défense Cedex
 Tél. + 33 (0)1 47 44 45 46

TOTAL S.A.
 Société Anonyme au capital de 6 133 306 400 euros
 Siège social : 2 place de La Coupole - La Défense 6 - 92400 Courbevoie - France
 S42 051 180 RCS Nanterre

Ref: 21058 - 412006



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, Fax +97 16 74 78 843,

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 oil & gas industry

Transocean	Equinor	Statoil
	Petronas	
Shelf Drilling		Technip
	Gasco	
Petrobras		Total
	Egypt Drilling Company	Zadco
Pemex		
	Gasco	Petroleum Development Oman
ConocoPhilips		
BP	Kuwait Oil Tanker Company	Chevron
ExxonMobil	ADNOC	American Exploration
Seadrill	Pertamina	Chevron Indonesia
Shell	Alliance Refining Company	CNOOC China
Bazan Refineries		Kumho Petrochemical
Britannia Oil Operator	Cameron LNG	Maersk Oil & Gas
COSL	Dolphin Drilling	MOL
Elf	Freeport LNG	ONGC
Maersk Drilling	Japan Vietnam Petroleum Co.	Saudi Aramco
LG Chem		SBM
National Drilling Company	Norsk Hydro	Japan Drilling
Saipem	Samsung Heavy Industries	Stena drilling
Shell Brunei		Teekay
	Inpex	
Shell Sarawak		Vermillion
	Smedvig	
Talisman		
	Vår Energi	
Woodside		



Certified Sustainable Cable Maintenance

FS offer certified sustainable solutions to extend cable life and avoid electrical fire, using non-toxic materials.

Save Lives / Save Costs / Save The Environment

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



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

