Thermo Cables

Offshore Cable Solutions

Global Expert In Speciality Cables Manufacturing

Thermo Cables is a recognized and preferred brand across various industries including Oil & Gas, Railways, Navy, Defence, Renewable Energy, Nuclear Power, Process Industries, Power etc, exporting 50% of products. Established in 1990, it is a leading manufacturer of various types of speciality cables. Thermo Cables is a part of Thermo Group - a multi-product & multi-service organization with other group companies: Thermopads: A specialist in Commercial, Domestic and Industrial Heating Thermosystems: An EPC company in the field of Fuel Oil Handling Systems, Fire Detection Protection Systems etc.

Major Approvals

ADNOC - OFFSHORE
ADNOC - ONSHORE
ALBA
AP GENCO
AP TRANSCO
ARO DRILLING
AVANT GARDE
BALTIC CHEMICAL PLANT
BAPCO ENERGIES
BDL, BEL, BHEL, BLW
BOROUGE, BPCL
CLW, CMRL, CSL
DESEIN LTD, DGMS, DVC
DLW & DMW
DLRL, DMRL & DMRC
DOLPHIN ENERGY
DRDO & DRDL
DUBAI WORLD
EGA
ENGINEERS INDIA LTD
ENOC
EXPRO
FICHTNER CONSULTING
GRSE, GSPC
GOA SHIPYARD
HALLIBURTON
HINDUSTAN SHIPYARD
HPCL, HAL, HMRL
INTERNATIONAL MARITIME INDUSTRIES
IOCL, ICF, ISRO
JACOB'S H & G
KNPC - KUWAIT
KOC - KUWAIT
LAMPRELL
L & T
MATERIAL ORGANISATION - KARWAR
MATERIAL ORGANISATION - MUMBAI
MATERIAL ORGANISATION - VIZAG
MECON, MCF
MN DASTUR & CO.
MAZGOAN DOCK LIMITED
MUMBAI PORT TRUST
NMDC ENERGY
NORTH OIL
NPCIL, NSTL, NTPC
ONGC
ORLEN
OXY
PDIL
PGCIL
PDO OMAN, PETRONAS
PETROPERU
QATAR ENERGY, QATAR PETROLEUM
RCF
SABIC
SAIL
SAIPEM
SAPURA ENERGY
SHELL, SONATRACH
TATA CONSULTING ENGINEERS
TECNIMONT ICB LTD
TOYO ENGINEERING INDIA LTD
THYSSENKRUPP

Stringent quality requirements, global standards of precision and increasingly demanding customers are the order of the day. Thermo Cables, sensitive to this reality, designs, manufactures and supplies a wide range of cables to satisfy customers' specifications and requirements.

Product Range

- Instrumentation Cables
- Power & Control Cables
- Thermocouple Cables
- Fire Resistant Cables
- Renewable Energy Cables
- High Temperature Cables
- Material Handling Cables
- Foundation Fieldbus Cables
- VFD Cables
- Cathodic Protection Cables
- ESP Cables
- Downhole (TEC) Cables
- Railway Cables
- Naval Application Cables
- Marine/Shipboard Cables
- Pressure Tight (PT) Cables
- Special Application (LFH) Cables
- Co-Axial Cables (RG Series)
- Custom Wiring & Cable Harnesses
  - Railway
  - Defence
  - Wind
- IV Coupler & Jumper Cable Assembly
- Cable Systems

Why Us

- Leading & reputed manufacturer of Specialty Cables
- One stop solution for all Low Voltage Cables
- Serving satisfied customers since 30 years across 60+ countries
- In-house wire drawing, compounding, Electron beaming and testing facilities
- Quick response time and offer submission in less than 24 hours

Standards

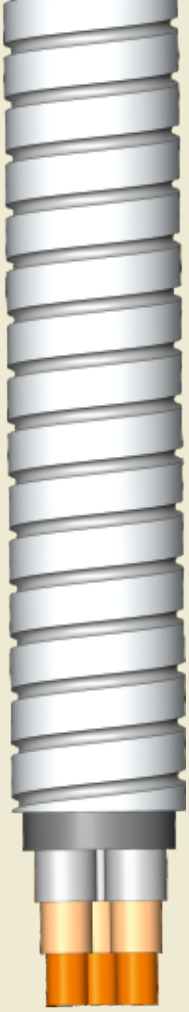
- Cables designed and manufactured conforming to various National and International Standards:
  ANSI MC 96.1, BS-6346, BS-5467, BS-7919, BS-7629, BS-6387, BS-7846, BS-5308-I & II, BSEN 50288-7, DEF-02 526, DEF-02 527, EED 50-12, 50-13, IEC-60502-I, IEC-60189-I & II, IEC-60228, IEC-60092 350 353 376, IEC-60584-I & III , IEC-60331, IS-8784, IS-613, IS-694, IS-1554-I, IS-7098-I, IS-9968-I, JSS-51034, JSS-51038, MIL-C-17, MIL-DTL-22759/86A, MIL-DTL-22759/87A, MIL-DTL-27500H, MIL-DTL-24640C, MIL-DTL-24643C, UL-1581, UL-758, VDE-0815, VDE-0816, VG-95218 60-66, EN 50306-1, 2, 3, 4, EN 50382-1, 2, EN 50264-1, EN 50264-3-1, EN 50264-3-2 etc.

Quality & Reliability

- An ISO 9001, 2015 certified company with proven track record of delivering quality products
- NABL accredited full-fledged in-house testing laboratory
- Environment, Occupational Health and Safety Systems adhering to ISO 14001-2015, 45001-2018
- 15% of power consumption sourced through in-house generated renewable energy

Valuable Assets

- Over 3,00,000 sq ft of infrastructure facilities with latest technology
- 1000+ dedicated & high performing workforce
- Experienced & professional leadership team
- Offers technical support in cable selection through SAP



Electrical Submersible Pump (ESP) Cables

High, medium & low temperature flat & round cables are rated 3KV, 4KV & 5KV Rated for operating temperatures up to 450° F, 284° F, 205° F & 160° F.

Sizes : 1, 2, 4, 6 AWG & other sizes and KV ratings available upon request

Applications : Downhole extraction systems are critical for crude oil extraction. The reliability of the electrical power supply to an Electrical Submersible Pump (ESP) system depends on the performance and reliability of the power feed through the wellhead, power cable, motor lead cable, pig tail connectors and related equipment such as the pump and motor. Thermo Cables ESP cables offer an efficient, rugged and easy to handle solution that delivers reliable performance in a package that is straight forward to install and maintain.

Construction :
- Solid or stranded plain or tinned copper conductor
- Proprietary PP / EPDM rubber insulation with a poly-adhesive layer to the conductor
- Lead Sheath (applicable only for SL.No 4,12 &14 from the below table).
- HDPE / EPDM / Nitrile Rubber
- Longitudinally applied rubber backed fabric / PTFE
- Galvanized steel armour

SL.No	Rated Temp. °F(°C)	Rated	Voltage Rating kV	Conductor Size(AWG)	Conductor Coating	Insulation Material	Jacket Material	Tape	Standard Armor
1	160(71)	Flat/Round	3,4,5	1,2,4,6	Tin	PP	HDPE	NA	Galvanized
2	205(96)	Flat/Round	3,4,5	1,2,4,6	Tin	PP	Nitrile Rubber	NA	Galvanized
3	205(96)	Flat/Round	3,4,5	1,2,4,6	Tin	PP	Nitrile Rubber	NA	Galvanized
4	250(121)	Flat/Round	3,4,5	1,2,4,6	Tin	PP	Lead Sheath	Rubber Backed Woven Fabric	Galvanized
5	250(121)	Flat/Round	3,4,5	1,2,4,6	Tin	PP	Nitrile Rubber	Rubber Backed Woven Fabric	Galvanized
6	284(140)	Flat/Round	3,4,5	1,2,4,6	Bare	EPDM	Nitrile Rubber	Rubber Backed Woven Fabric	Galvanized
7	284(140)	Flat/Round	3,4,5	1,2,4,6	Bare	EPDM	Nitrile Rubber	Rubber Backed Woven Fabric	Galvanized
8	300(148)	Flat/Round	3,4,5	1,2,4,6	Bare	EPDM	EPDM	Rubber Backed Woven Fabric	Galvanized
9	300(148)	Flat/Round	3,4,5	1,2,4,6	Bare	EPDM	EPDM	Rubber Backed Woven Fabric	Galvanized
10	400(204)	Flat/Round	3,4,5	1,2,4,6	Bare	EPDM	EPDM	Rubber Backed Woven Fabric/PTFE	Galvanized
11	400(204)	Flat/Round	3,4,5	1,2,4,6	Bare	EPDM	EPDM	Rubber Backed Woven Fabric/PTFE	Galvanized
12	450(232)	Flat/Round	3,4,5	1,2,4,6	Bare	EPDM	Lead Sheath	Rubber Backed Woven Fabric	Galvanized
13	450(232)	Flat/Round	3,4,5	1,2,4,6	Bare	EPDM	EPDM	Rubber Backed Woven Fabric	Galvanized
14	450(232)	Flat/Round	4,5	2,4,6	Polyimide tape	EPDM	Lead Sheath	Rubber Backed Woven Fabric	Monel

NOTES : Note: Materials and specifications are subject to change without notice.

Downhole Tubing Encapsulated Conductor (TEC) Cables

Thermocables is a supplier of downhole TEC (Tubing Encapsulated Conductor) cables that are used in the Oil and gas refineries, Oil well monitoring, Powering downhole equipment and instrumentation, Underground power distribution, Pressure sensing equipment & Data collection etc.

Thermo cables are used to monitor, provide power and transmit signals in a downhole application. Cables used in the oil & gas industry must be able to withstand extreme environments, extreme temperatures and extreme pressure which is why Thermo cables are the choice of industry professionals.

TEC (Tubing Encapsulated Conductor) cables are cables that have the traditional characteristics of stranded wires or cables – they have some form or copper conductor surrounded by an insulation material or jacket. The difference comes when the stranded wire or the tubing layer that surrounds the product with an armored metal component. Lastly, the final layer encapsulates the entire cable. TEC tubing encapsulated cables can withstand temperature ranges from 150° C to 300° C.

Thermocables tubing encapsulated cables are made with 5 layers and can be constructed with the following materials:

Conductor Layer : can be comprised of 20 AWG to 12 AWG, solid or stranded, bare copper, tinned copper, nickel plated copper, or silver plated copper.

Insulation Layer : can be comprised of either FEP, PFA, ETFE or ECTFE.

Extruded Filler Layer : can be comprised of PFA, FEP or Polypropylene.

Armor Layer : can be comprised of 316L Stainless Steel, Alloy 825 or Alloy 625

Final Layer : an encapsulation layer can be comprised of FEP, PFA, ETFE, Polyolefin, Polyamide.

Cables Specification :

Voltage Rating V DC	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Conductor Gauge (AWG)	18	16	18	16	18	16	18	16	18	16	18	16
Conductor Type	Solid or Stranded											
Conductor Coatings	Bare, Tinned, Nickel Plated, Silver Plated											
Insulation	ETFE, ECTFE, FEP, PFA											
Filler	Polypropylene, FEP, PFA											
Armor Type	316L, Alloy 825,Alloy 625											
Max. Conductor Resistance Ohms/KFT 20°C	7	4.4	7	4.4	7	4.4	7	4.4	7	4.4	7	4.4
Max. Conductor Resistance Ohms/KFT 150°C	10.5	6.5	10.5	6.5	10.5	6.5	10.5	6.5	10.5	6.5	10.5	6.5
Capacitance pF/ft 20°C	26	27.2	32	29.3	36	34.9	26	27.2	32	29.3	36	34.9
Capacitance pF/ft 150°C	27.5	30.9	33.5	33.3	40.8	39.7	27.5	30.9	33.5	33.3	37.5	39.7
Min. Insulation Resistance Mohms/KFT	6500	15000	6500	15000	6500	15000	6500	15000	6500	15000	6500	15000
Cable Type	Polyolefin		Polyamide		ETFE		FEP		PFA			
Cable Color	Yellow		Black		Blue		Natural					
Max. working temperature, degC (degF)	150 (302)				175 (347)		200 (392)		250 (482)		300 (572)	
Min. storage and transportation temperature, degC (degF)	-48 (-54)				-100 (-148)		-110 (-166)					

Marine / Shipboard Cables

DEF STAN 02-526 (NES 526) and DEF STAN 02-527 (NES 527)

For use on onboard surface ships, submarines and crafts for power, control, lighting and communication and instrumentation circuits with or without fire survival characteristics.

Standards	:	NES 526 - Dual layer Insulated, Electron Beam Cross linked irradiated Electric cables NES 527 - Fire Survival, High Temperature, Fire retardant Halogen Free Sheathed Electron Beam Cross linked irradiated Electric cables
Construction	:	Single Core, Multi Core, Multi Pair & Triad, Unscreened or Individually Screened or Collectively Screened.
Voltage Grade	:	440 V AC
Conductor	:	Circular Electroplated, Annealed Tinned Copper
Temperature Range	:	- 30^0 C to + 105^0 C
Insulation	:	Dual Layer Electron Beam Cross linked irradiated materials / Silicone Rubber
Screening	:	Annealed Tinned Copper Braid
Outer Sheath	:	Electron Beam Cross linked irradiated LFH Compound
Protective Barrier	:	Glass Braid/Lacquer, Mica Glass Tape to meet the fire performance applicable for DEF STAN 02-527 (NES 527) cables.

IEC 60092-350, 353, 360 & 376, BS-6883, BS-7917

For use in shipboard & offshore application at marine environment and use for Power, Control, Instrumentation and Communication with or without fire survival characteristics.

Standards	:	IEC 60092-350 - Construction & Test methods of Power, Control and Instrumentation cables IEC 60092-353 - Power Cables for rated voltage of 1 kV & 3 kV IEC 60092-376 - Control & Instrumentation Cables for rated voltage of 150 V / 250 V IEC 60092-360 - Insulating and sheathing materials for shipboard and offshore cables. BS 6883 - Elastomeric insulated Cables for fixed wiring in ships & offshore units. BS 7917 - Elastomeric insulated fire resistant (Limited Circuit Integrity) Cables for fixed wiring in ships & offshore units.
Construction	:	Single Core, Multi Core, Single Pair, Multi Pair, Multi Triad and Quad Screened & Unscreened, Armoured & Unarmoured
Voltage Grade	:	150 V / 250 V AC, 0.6 / 1.0kV and 1.8/3.0kV AC
Conductor	:	Electroplated Annealed Bare / Tinned Copper of various classes
Temperature Range	:	-15^0 C to 95^0 C
Insulation	:	XLPE / EPR / HEPR, HF 90 / S 95
Screening	:	Al-Mylar Tape along with Drain Wire / ABC or ATC Braiding
Inner Sheath	:	SHF1 / SHF2 / SH / SF
Braid Armour	:	Copper (Bare or Tinned) / Copper alloy (Bare or Tinned) / GI Wire Braid with >90% coverage.
Outer Sheath	:	SHF1 / SHF2 / SH / SF

Complete In-house expertise & facilities to provide the entire range of High Temperature Insulations

High Temperature Cables

High temperature cables are used in areas where both working temperatures and ambient temperatures are too high. They are made with a wide range of conductors, insulating materials and screening materials depending on the temperatures and conditions under which the cable has to perform.

Single Core high temperature hook-up wires & Multi Core / Multi Pair, Screened & Unscreened and Armoured & Unarmoured Cables

Construction : Single Core or Multi Core / Pairs

Voltage Grade : 250 V AC, 600 V AC & 1000 V AC (Rating as per MIL-16878, VDE, DIN, ANSI)

Conductors : Annealed bare and / or tinned copper conductor (up to 120° C)
Annealed silver plated copper conductor (up to 200° C)
Nickel plated conductors (up to 260° C)

Insulation

Insulation Material	Temperature Range	Characteristics
PTFE	- 200° C to 260° C	Excellent chemical resistance. High temperature stability
FEP	- 200° C to 200° C	Good chemical resistance Thin wall insulation due to good electrical properties
PFA	- 200° C to 250° C	Good chemical resistance, Thin wall insulation due to good electrical properties. Good flexibility
PTFE	- 150° C to 150° C	Mechanically tough
XL ETFE	- 150° C to 250° C	Good electric insulation, radiation resistance, ARC tracking and cold flow
PEEK	- 160° C to 250° C	Mechanically very tough High temperature and radiation resistance
Kapton Tape	- 250° C to 300° C	Very thin wall insulation. High temperature resistance
Silicon Rubber	- 40° C to 180° C	Flexible and abrasion resistance
Ceramic Yarn / Quartz Yarn Braiding	600° C	Chemically stable and higher thermal resistance
Special High Temperature Yarn	1000° C	Superior resistance to temperatures. excellent resistant against radiant heat.

Screening : Individual and / or overall with following options
- Aluminum Mylar / Copper Tape with Tinned Copper Drain Wire
- Braided with Bare or Tinned or Nickel Plated or Silver Plated Copper

Armouring : Steel galvanized wire, stainless steel wire, high strength steel wire braiding

Standards : JSS-51034, JSS-51038, UL-1581

Industry & Applications

Steel : Cables for blast furnace, electric arc furnace, hot & cold rolling mills, steel refining facilities etc.

Communication : High frequency co-axial cables for VHF, UHF and XHF transmission

Marine : Engine proximity wiring for good resistance to high temperatures, fuel oils, chemicals, saline air/water etc.

Petrochemical : Instrumentation & control, temperature sensing, fire warning etc.

Power : In proximity to the turbines, boilers, ash handling etc.

Type - P Cables

Type P Cables are specifically designed for installation and use in harsh environments found within offshore and onshore drilling rigs. These extreme environments may include severe cold, high heat, constant vibration, drilling mud, mechanical stress and salt corrosion.

Specification	:	IEEE - 1580 & IEC 60092 - 353
Temperature Range	:	90^0, 100^0, 110^0 & 125^0 C
Conductor	:	Flexible stranded tinned copper
Application	:	Powering Machinery, Communication Devices, Navigation Systems, Offshore Drilling Rigs, Shipboard Wiring and Marine Vessels
Cable Type	:	Multi Core, Single Core, Power, Control, VFD and Instrumentation Cables
Voltage Grade	:	300 V, 0.6 / 1.0 KV & 2 KV
Insulation	:	XLPO
Sheath	:	Extruded Flame Retardant, Oil & Abrasion Resistant Synthetic Elastomer
Armour (Optional)	:	Tinned copper or bronze wire braid

VFD Cables

VFD cables are used to connect the VFD drive to the variable frequency motors, drives precisely controls the speed and torque of the motors. During this operation of controlling the motor by changing the frequency there is every chance of lot of noise getting generated, induced voltage and sudden spikes generation and intense electric field around the conductor which can be suppressed with special design.

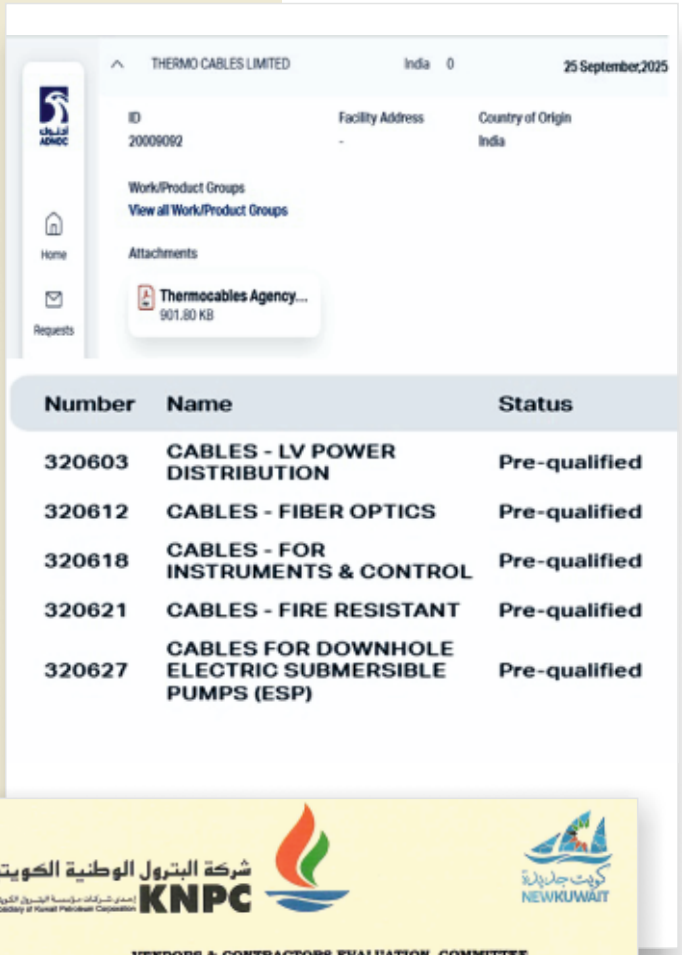
Construction	:	Metallic layer over the core/cable will reduce the noise/strong electric field around the core / earthing of all spikes generated during the operation.
Voltage Grade	:	Up to 1800 / 3300 V AC
Conductor	:	Circular electrolytic bare copper / tinned copper (stranded / flexible)
Insulation	:	XLPE or EPR or HEPR
Screening	:	Combination of copper tape and copper wire braid or double layer of copper tape and concentric braiding
Outer Sheath	:	PVC / ZHFR / SHF1 / SHF2
Application	:	This construction of metallic layer over the core/cable will reduce the noise / strongelectric field around the core / earthing of all spikes generated during the operation.

Co-Axial Cables (RG Series)

Radio Frequency or Signal Transmission Cables, Polyethylene Dielectric Insulation & Sheath material with Halogen Free, Fire Retardant with low smoke generation and low toxic properties.

Specification	:	Def Stan 02-512 (PT-5) & customer specification
Construction	:	Single Core, Multi Core Cables, Unscreened Collectively Screened
Primary Conductor	:	ABC / ATC / SPC & special conductors like CCS (Copper Clad Steel) etc
Temperature Range	:	- 30^0 C to +120^0 C
Insulation	:	Polyethylene / FEP Dielectric Compound
Outer Conductor	:	Aluminium Mylar Tape / Annealed Tinned / Bare Copper Braid if applicable
Outer Sheath	:	Special halogen free and fire retardant with low smoke generation and low toxic properties with E-beam curing process
Type of Cables	:	RG 11, RG 213, RG 188 etc.
Application	:	For use of VHF (Very High Frequency) signal transmission

International Approvals



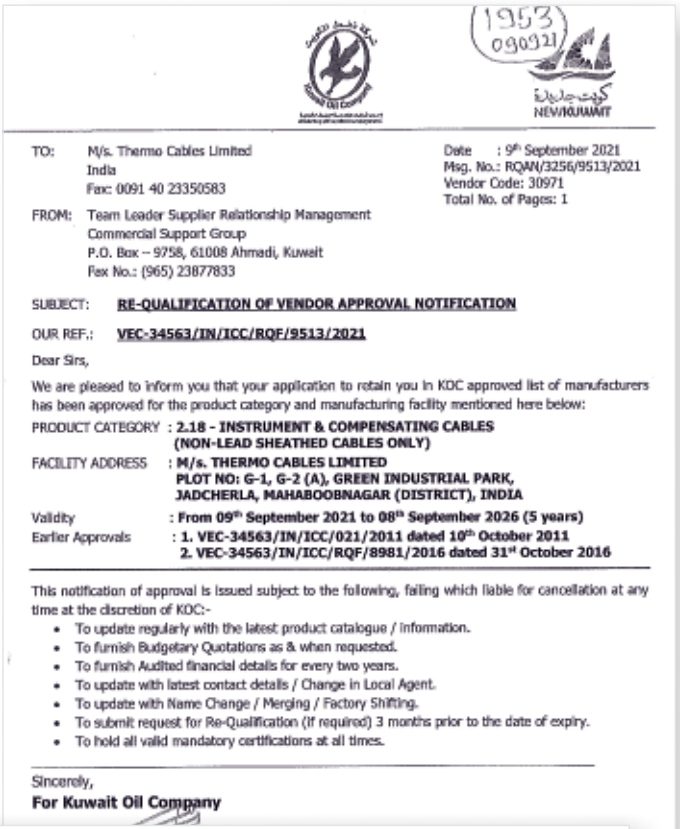
THERMO CABLES LIMITED India 0 25 September,2025

ID 20009092 | Facility Address - | Country of Origin India

Work/Product Groups
View all Work/Product Groups

Attachments
Thermocables Agency... 901.80 KB

Number	Name	Status
320603	CABLES - LV POWER DISTRIBUTION	Pre-qualified
320612	CABLES - FIBER OPTICS	Pre-qualified
320618	CABLES - FOR INSTRUMENTS & CONTROL	Pre-qualified
320621	CABLES - FIRE RESISTANT	Pre-qualified
320627	CABLES FOR DOWNHOLE ELECTRIC SUBMERSIBLE PUMPS (ESP)	Pre-qualified



1953 090921

NEW KUWAIT

TO: M/s. Thermo Cables Limited
India
Fax: 0091 40 23350583

Date : 9th September 2021
Msg. No.: RQAN/3256/9513/2021
Vendor Code: 30971
Total No. of Pages: 1

FROM: Team Leader Supplier Relationship Management
Commercial Support Group
P.O. Box – 9758, 61008 Ahmadi, Kuwait
Fax No.: (965) 23877833

SUBJECT: **RE-QUALIFICATION OF VENDOR APPROVAL NOTIFICATION**

OUR REF.: **VEC-34563/IN/ICC/RQF/9513/2021**

Dear Sirs,

We are pleased to inform you that your application to retain you in KOC approved list of manufacturers has been approved for the product category and manufacturing facility mentioned here below:

PRODUCT CATEGORY : **2.18 - INSTRUMENT & COMPENSATING CABLES (NON-LEAD SHEATHED CABLES ONLY)**

FACILITY ADDRESS : **M/s. THERMO CABLES LIMITED PLOT NO: G-1, G-2 (A), GREEN INDUSTRIAL PARK, JADCHERLA, MAHABOOBNAGAR (DISTRICT), INDIA**

Validity : **From 09th September 2021 to 08th September 2026 (5 years)**

Earlier Approvals : **1. VEC-34563/IN/ICC/021/2011 dated 10th October 2011**
2. VEC-34563/IN/ICC/RQF/8981/2016 dated 31st October 2016

This notification of approval is issued subject to the following, failing which liable for cancellation at any time at the discretion of KOC:-

- To update regularly with the latest product catalogue / information.
- To furnish Budgetary Quotations as & when requested.
- To furnish Audited financial details for every two years.
- To update with latest contact details / Change in Local Agent.
- To update with Name Change / Merging / Factory Shifting.
- To submit request for Re-Qualification (if required) 3 months prior to the date of expiry.
- To hold all valid mandatory certifications at all times.

Sincerely,
For Kuwait Oil Company

شركة البترول الوطنية الكويتية
KNPC
A Subsidiary of Kuwait Petroleum Corporation

NEW KUWAIT

VENDORS & CONTRACTORS EVALUATION COMMITTEE

M/S. THERMO CABLES LTD.
PLOT NO.G1, G2 (A) GREEN INDUSTRIAL PARK
JADCHERLA, DIST-MAHABOOBNAGAR -509301
INDIA

DATE: 19th May 2021
REF: COM-EC&PQ-21-0525
FILE NO: V 4790

SUBJECT: VENDOR APPROVAL – RE-QUALIFICATION

GENTLEMEN,

REFERENCE TO YOUR PREVIOUS APPROVAL LETTER DATED 29/05/2016, YOUR COMPANY IS RE-QUALIFIED AS A VENDOR EFFECTIVE 19/05/2021 FOR THE SUPPLY OF THE FOLLOWING PRODUCT(S) FOR K.N.P.C REFINERIES:

PRODUCT DESCRIPTION

73 40 CABLE, INSTRUMENTS (INCLUDING THERMOCOUPLE WIRE & CABLE)

THE COMPANY (VENDOR) CODE ALLOCATED TO YOUR COMPANY IS 177128.

PLEASE ENSURE TO QUOTE THIS CODE AND ABOVE FILE NO. ON ALL YOUR FUTURE CORRESPONDENCE.

VERY TRULY YOURS,

BANDAR M. AL-QAHTANI
CHAIRMAN V & CEC

MH/HAA/NFH/smk

THIS LETTER SUPERSEDES OUR LETTER DATED 29TH MAY 2016

NOTE: APPROVAL VALIDITY IS UP TO 28TH MAY 2026 (APPROVED SINCE 29TH MAY 2011)
RFI #12878

PLEASE REFER OVERLEAF FOR INSTRUCTIONS

Page 1 of 1

Head Office : Kuwait National Petroleum Company - P.O. Box : 70 Safat 13001, Safat - Kuwait - Tel.: 23959000 www.knpc.com C.R : 8140 Capital : KD. 1,587,800,000

Customer	Vendor Code
ADNOC	20009092
Emirates National Oil Company (ENOC)	1001101538
Borogue	3394
Kuwait Oil Company (KOC)	30971
Kuwait National Petroleum Company (KNPC)	177128
Petroleum Development Oman (PDO)	104158
Petronas	1125426A
PTT Exploration and Production-Public Company Limited (PTTEP)	309104
Dolphin Energy Ltd	112792
SIBUR	61293
Advance Petrochemical	201463
FARABI	9000403
TASNEE	S11312730.
Dry Docks	99393
Aluminium Bahrain B.S.C. (ALBA)	7791
GE	SQ-076734.2
MAADEN	20230002
National Water Company (NWC)	40317
Saudi Arabian Railway (SAR)	4895
KOCH Engineered Solutions	SPS000472
NEOM	S10764408

International Certificates

DNV

Certificate no.:
TAE00004YX; TAE00004YY;
TAE00004YZ; TAE00004Z0;
TAE00004Z1; TAE00004Z2;
TAE00004Z3; TAE00004Z4

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Low Voltage Cable & the Electric Power Cable

with type designation(s):
BFOU (I/C); RFOU (I/C); XLPE (FS); XLPE (Non-FS)
BFOU; RFOU; XLPE-FS; XLPE-NON FS

issued to
Thermo Cables Ltd
Jedcherala, Telangana, India

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.
Rated voltage 150/250V ; 0,6/1KV and 1,8/3KV
Temp. class (°C) 90

Product description

Type: BFOU (I/C) / RFOU (I/C)

Construction

Conductors:	Tinned, stranded copper class 2 or class 5
Core insulation:	Mica tape + EPR / EPR
Ind. shielding:	Al Mylar tape with drain wire
Overall shielding:	Al Mylar tape with drain wire
Inner sheath:	SHF2
Metal covering:	Tinned copper or galvanised steel wire braid
Outer sheath:	SHF2

Type: XLPE (FS) / XLPE (Non-FS)

Construction

Conductors:	Tinned, stranded copper class 2 or class 5
Core insulation:	Mica tape + XLPE / XLPE
Ind. shielding:	Al Mylar tape with drain wire
Overall shielding:	Al Mylar tape with drain wire
Inner sheath:	SHF1
Metal covering:	Tinned copper or galvanised steel wire braid
Outer sheath:	SHF1

Type: BFOU / RFOU

Construction:

Conductors:	Tinned, stranded copper class 2 or class 5
Core insulation:	Mica tape + EPR / EPR
Screen:	Lapped inner covering + copper wire braid screen
Inner sheath:	SHF2
Metal covering:	Tinned copper or galvanised steel wire braid (not for single core variants)
Outer sheath:	SHF2

Type: XLPE-FS / XLPE-NON FS

Construction:

Conductors:	Tinned, stranded copper class 2 or class 5
Core insulation:	Mica tape + XLPE / XLPE
Screen:	Lapped inner covering + copper wire braid screen
Inner sheath:	SHF1
Metal covering:	Tinned copper or galvanised steel wire braid (not for single core variants)
Outer sheath:	SHF1

Issued at **Hamburg** on **2024-12-17**
This Certificate is valid until **2029-12-16**.
for **DNV**
DNV local unit: **India CMC MES**

ABS

CERTIFICATE NUMBER	24-0067792-PDA
EFFECTIVE DATE	20-Sep-2024
EXPIRY DATE	19-Sep-2029
ABS TECHNICAL OFFICE	Singapore Engineering Services

CERTIFICATE OF

Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

THERMO CABLES LIMITED

located at

PLOT NO. G1,G2(A&B), G9/A, G9/B AND G10, GREEN INDUSTRIAL PARK, JADCHERLA, DIST. MAHABUBNAGAR , MAHABUBNAGAR, TELANGANA, India, 509301

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product:	Cable
Model:	LV Power & Control Cables and Instrumentation Cables
Endorsements:	
Tier:	2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 19/Sep/2029 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping
Gaoyang Wu, Engineer/Consultant

Lloyd's Register

Page 1 of 2
Certificate No: LR22262269TA
Issue Date: 14/07/2022
Expiry Date: 13/07/2027

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	**Thermo Cables Limited**
Address	28, Nagarjuna Hills,, Punjagutta,, Hyderabad, Telangana, 500082, India
Place of Production	Thermo Cables Limited D-44,45,48,49 & 50 Phase -V, IDA, Jeedimetla, Hyderabad, Telangana, 500055, India
Place of Production	Thermo Cables Limited G1, G2, (A&B), Green Industrial Park, Jedcherla, Mahaboobnagar Dist., 509301, India
Type	Marine Cable
Description	XLPE Insulated Shipboard Cables
Trade Name	Refer to the Appendix for details
Application	Fixed wiring on ships and offshore installations
Specified Standard	Manufacturer's specification, IEC 60092-350, IEC 60092-351, IEC 60092-353, IEC 60092-360, IEC 60092-376, IEC 60228, IEC 60332-1-2, IEC 60332-3-22, IEC 60754-1/2, IEC 61034

Ping Yuan Qi
Senior Specialist - Technical Support Office to Lloyd's Register Singapore Pte Ltd
A member of the Lloyd's Register group

9 North Buona Vista Drive, #02-01, Metropolis Tower 1, 138588, Singapore

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

TA01.1.0.0

Indian Register of Shipping

Certificate No.: 2023WAQC024

WORKS APPROVAL CERTIFICATE

This is to certify that based on the existing manufacturing facilities and satisfactory assessment of manufacturing and quality control procedures by our Surveyors, the name of

Thermo Cables Limited,

(i) D-44, 45, 48 & 49, Phase – V, I.D.A, Jeedimetla, Hyderabad – 500 055 (TS)
(ii) Plot no. G1, G2 (A&B) Green Industrial Park, Jadcherla- 509301, Dist: Mahboobnagar (TS)

is retained in the list of approved works in accordance with the relevant requirements of rule(s)/standard(s)/code described below.

WORKS TYPE	:	ELECTRICAL CABLE
PRODUCT TYPE	:	ELECTRICAL CABLE
APPLICABLE RULE(S)/STANDARD(S)/CODE:		SEE ANNEXURE - I
SCHEDULE OF APPROVAL	:	SEE ANNEXURE I

This Certificate is Valid until : **23/08/2028**

PLACE OF ISSUE: **MUMBAI**
DATE OF ISSUE: **25/08/2023**
LOCAL SURVEY OFFICE: **VIZAG**

FOR, INDIAN REGISTER OF SHIPPING
Pramit Panigrahi
Sr. Principal Surveyor

This certificate supercedes the Previous Certificate No : 2018WAQC024 issued on : 24/08/2018 ,being renewal to the certificate.
Initial Certificate Details : 2013WAC020

This Certificate is issued upon the following terms and conditions as laid down in the Society's Regulations:-
Whilst Indian Register of Shipping, a Classification Society, along with its subsidiaries and associates (hereinafter referred to as the Society) and its Board/Committees use their best endeavors to ensure that the functions of the Society are properly carried out, in providing services, information or advice neither the Society nor any of its servants or agents warrants the accuracy of any information or advice supplied. Except as set out herein neither the Society nor any of its servants or agents (on behalf of each of whom the Society has agreed this clause) shall be liable for any loss damage or expense whatever sustained by any person due to any act or omission or error of whatsoever nature and however caused of the Society, its servants or agents or due to any inaccuracy of whatsoever nature and howsoever caused or any information or advice given in any way whatsoever by or on behalf of the Society, even if held to amount to a breach of warranty. Nevertheless, if any person uses services of the Society, or relies on any information or advice given by or on behalf of the Society and suffers loss damage or expenses thereby which is proved to have been due to any negligent act omission or error of the Society, its servants or agents or any negligent inaccuracy in information or advice given by or on behalf of the Society then the Society will pay compensation to such person for his proved loss up to but not exceeding the amount of the fee charged by the Society for that particular service, information or advice.
Any notice of claim for loss, damage or expense, as referred to above, shall be made in writing to the Society's Head Office within six months of the date when the service, information or advice was first provided, failing which all the rights to any such claim shall be forfeited and the Society shall be released and discharged from all liabilities.

Form No : IRS_WAC_QC (Rev 2)

Infrastructure

Machinery

Name of the Machine	Name of the Machine
Rod Break Down Machine (9 Die)	HOIST 'E' - 19 B Laying - 2 Nos
Rod Break Down Machine (11 Die)	HOIST 'G' - 30 Armouring - 2 Nos
Rod Break Down Machine (13 Die)	HOIST 'G' - 30 B Armouring
Skip Stranding Machine - 2 Nos	HOIST 'F' - 37 Laying
Electroplating Tinning Machine - 2 Nos	HOIST 'F' - 37 B Laying - 2 Nos
Multi Wire Drawing Machine 30 mm	HOIST 'K' - 40 Armouring
Multi Wire Drawing Machine 8 Wire - 2 Nos	HOIST 'H' - 48 Armouring - 2 Nos
Fine Wire Drawing Machine - 4 Nos	HOIST 'H' - 48 B Armouring - 2 Nos
Mixing Machine 75 mm - 3 Nos	HOIST 'J' - 72 B Armouring
Kneader Line - 2 Nos	HOIST 'F' - 96 Armouring
75 L Kneader	HOIST 'K' - HV Area
Ring Marker	HOIST 'L' - Drum Twister Area
High Speed Core Rewinding - 4 Nos	HOIST 'O' - RBD Area
Taping Machine - 7 Nos	HOIST 'I' - Despatch - 2 Nos
Vertical Taping Machine - 6 Nos	Chain Hoist 'A' - G I Rewinding - 2 Nos
Horizontal Taping Machine - 12 Nos	Chain Hoist 'C' - Simon Taping - 4 Nos
Single Twist Bunching Machine	High Speed Bunching Machine - 10 Nos
400 Single Twist Bunching Machine	Chiller - 2 Nos
Tandem Extrusion Line (Ø50 + 65/35 mm	Chiller 5 TR
Tandem Extruder Line (Ø80+ Ø100/Ø35)	Chiller 10 TR - 2 Nos
Tandem Extruder Line (Ø35+ Ø50/Ø35)	Chiller 20 TR
Extruder Machine 20 mm Bi Color	PVC Mixer
Extruder Machine 45 mm	High Speed Mixer 60 kg
Extruder Machine 45 mm Bi Color	High Speed Mixer 120 kg
Extruder Machine 65 mm - 9 Nos	High Speed Mixer 200 kg
Extruder Machine 70 mm	16 A High Speed Braiding - 3 Nos
Extruder Machine 70/35 mm	16 F High Speed Braiding - 2 Nos
Extruder Machine 75 mm - 3 Nos	24 High Speed Braiding - 2 Nos
Extruder Machine 80 mm - 4 Nos	24 A High Speed Braiding - 5 Nos
Extruder Machine 100 mm	24 E High Speed Braiding - 4 Nos
Core Rewinding Machine - 7 Nos	24 F High Speed Braiding
Cooling Tower - 6 Nos	48 High Speed Braiding
GI Rewinding Machine - 20 Nos	3 HP Air Compressor
Ceramic Butt Welding Machine	10 HP Air Compressor - 3 Nos
Butt Welding Machine - 15 Nos	15 HP Air Compressor
Electron Beam Accelerator - 2 Nos	20 HP Air Compressor - 2 Nos
Pairing Machine - 4 Nos	25 HP Air Compressor
Pairing Back Twist Machine	100 HP Air Compressor - 3 Nos
Laying Machine (7 Bobbins)	Brazing Machine - 4 Nos
Laying Machine (7 Bobbins) - Single Twist	H V Testing - 3 Nos
Laying Machine (13 Bobbins)	Drum Twister Machine
Laying Machine (19 Bobbins) - 4 Nos	630 Single Twister Machine 7 Bobbin
Laying Machine (37 Bobbins) - 3 Nos	800 Single Twister Machine 12 Bobbin
Laying (42 Bobbin)	1250 Single Twister Machine 19 Bobbin
Armouring Machine (30 Bobbin) - 2 Nos	DT 500 Buncher Machine
Armouring Machine (40 Bobbin)	Scissor Lift 2 ton
Armouring Machine (48 Bobbin) - 4 Nos	Steam Boiler
Armouring Machine (72 Bobbin)	PVC Grinder
Armouring Machine (96 Bobbin)	Hydraulic Press
Extruder Sheathing Machine 80 mm - 2 Nos	PT Stranding & Taping Machine
Extruder Sheathing Machine 100 mm	Silicone Rubber Mixing Machine
Cable Rewinding Machine - 5 Nos	65/150 Two Stage Extruder (Compounding Line)
GI Rewinding Strip Machine - 2 Nos	60 KVA UPS
Off Line Annealer	80 KVA UPS - 2 Nos
Nickel Plating - 2 Nos	100 KVA UPS
Pointing Machine - 2 Nos	120 KVA UPS
Fork Lift - 2 Nos	160 KVA UPS
Auto Clave	200 KVA UPS
HOIST 'A' - Skip	250 KVA UPS - 2 Nos
HOIST 'B' - 54 Stranding	320 KVA DG Set
HOIST 'P' - Stores	365 KVA DG Set
HOIST 'C' - 7 B Laying	600 KVA DG Set
HOIST 'E' - 13 Laying	Inkjet Printers - 36 Nos
HOIST 'E' - 19 Laying - 2 Nos	Laser Printers - 4 Nos

Testing Equipment

Name of the Machine - Range/LC
Fourier Transmission infrared Spectrometer (FTIR)
Profile Projector
Digital Thermometer With Sensor - 2 Nos
Hot Air Ageing Oven
Hot Air Oven 6 Nos - Up to 250° C & 300° C
Hot Set Oven
Ozone Resistance Test Equipment
Smoke Density Apparatus - 3 Nos
Oxygen & Temperature index Apparatus - 2 Nos
Flammability Tester - 3 Nos
Cold Chamber - 2 Nos
Cold Bend Cold Impact Test Set - 20° C to +25° C
Hot Set Test Apparatus - 3 Nos
Toxicity Index Test Equipment
Halogen Acid Gas Emission Test Apparatus
pH & Conductivity Test Equipment - 2 Nos - 0 to 14 pH
Abrasion Resistatnce Tester - 2 Nos
Electronic Tensile Tester - 3 Nos - 0 to 1000 N
Dielectric Breakdown Tester & Leakage Current Tester
High Frequency Spark Tester - 8 Nos - 0 to 15 KV AC
Main Frequency Spark Tester - 2 Nos - 0 to 15 KV AC
Digital Micro Ohm Meter 5 Nos - 1 mΩ to 19.999 kΩ (2 Nos.) & 1 mΩ to 1.9999 kΩ (1 No.)
H V Tester 4 Nos - 0-5 / 10 KV
Million Mega Ohm Meter 4 Nos - 1 MΩ to 100 GΩ
Million Mega Ohm Meter 2 Nos - 1 MΩ to 50 TΩ & 2 MΩ to 20 GΩ
Digital L C R Q Meter
Thermal E M F Error Test Apparatus - 0 to 200 mV DC
Digital M V Source Cum Meter - 0 to 199.9° C
Digimatic Caliper - 0 to 300 mm
Acid Gas Generation Apparatus 2 Nos
Swedish Chimney Test Equipment
Water Immersion Test Equipment - Up to 100° C
4 Cell Ageing Oven with Data Scanning Logger 2 Nos - 16 Channels
Heating Oven - Up to 200° C
Thermal Stability Test Apparatus
Water Absorption Test Apparatus Gravimetric
Electronic Balance 2 Nos - 0 to 180 gms
Electronic Weighing Machine - 10 gms to 3 kgs
Kelvin Bridge - 0-11 Ω
Torsion Testing Machine (Digital Control Meter - Up to 99999 Count)
Fire Survival Test Equipment
Static Noise Rejection Ratio Meter - 60 to 100 dB
H V Break Down Tester - 0 to 2.5 KV DC
Transfer Impedance Tester
Steel Rule - 0 to 1 Metre
Steel Test Mandrel Set
Condition Chamber 2 Nos - 20° C to 40° C (Temp.) & 40 to 80 RH
Insulation Resistance Tester - 0 to 1000 MΩ / 500 V
Hydro Meter 4 Nos - 0.700 - 1.000 g / ml
Digital Stop Watch 5 Nos - 0 - 24 hrs
Mutual Capacitance Meter - 1.999 nF - 1999.9 nF
Length Counter Meter - Up to 99999 mtr
Tear Resistance Die
Coating Thickness Measurement Meter
Digital Multimeter 4 Nos - MΩ
Inductance Decade Box - 10 mH - 10 H
Capacitance Decade Box - 10 pF - 10 μF
Wet & Dry Thermometer 2 Nos - 40° C to +50° C
Glass Thermometer 05 Nos - 10° C to + 110° C & - 10° C to 250° C
Thermometer 02 Nos - 195° C to 205° C
Digital Anemo Meter - 0 - 45 m/s
Digital Thermo Hygrometer 02 Nos - 0 to 95° C / 20 to 99% RH
Senior Double Kelvin Bridge
UV Radiation Test Apparatus
Notch Propagation Tester (Analog)
Water Bath (Size 120 cm X 90 cm X 60 cm)
H V Probe Milimeter
Abrasion Resistance Tester
Dynamic Cut Through Tester
Cable Analyzer
Universal Testing Machine
PC Based Crosstalk Attentuation & Impedance Meter Attenuation 0.1 to 20 dB, Cross talk (- 40 to 100 dB), Impedance 199.9Ω to 1.999kΩ

OUR CUSTOMERS

Thermo Cables Ltd

An ISO 9001, 14001 & 45001 Certified Company

28, Nagarjuna Hills, Punjagutta, Hyderabad - 500 082
Telangana, India +91 40 44429292 +91 40 23350583

info@thermocables.com; exports@thermocables.com

Overseas Offices:

Exports	+91 9392860962	ramdas@thermocables.com
KSA	+966 535676154	sbhosle@thermocables.com
London	+44 7798771519	exports@thermocables.com
Germany	+49 (0) 15124124557	exports@thermocables.com

Plant - I
D - 44, 45, 48, 49 & 50
Phase V, IDA, Jeedimetla
Hyderabad - 500 055 Telangana, India
+91 40 23095058 / 7745 +91 40 23090661

Plant - II
G 1, G 2 (A & B), G 9 (A & B) & G 10
Green Industrial Park
Jadcherla, Mahabubnagar - 509 301
Telangana, India

Baroda	9676375143	baroda@thermocables.com
Bengaluru	9341002070	bangalore@thermocables.com
Chennai	9094539439	chennai@thermocables.com
Delhi	9313438322	delhi@thermopads.com
Hyderabad	9396745763	mpr@thermocables.com
Kolkata	9339336204	kolkata@thermocables.com
Mumbai	9320643117	mumbai@thermocables.com
Pune	7709011059	pune@thermocables.com

www.thermocables.com

TCL/Br/05.01/25