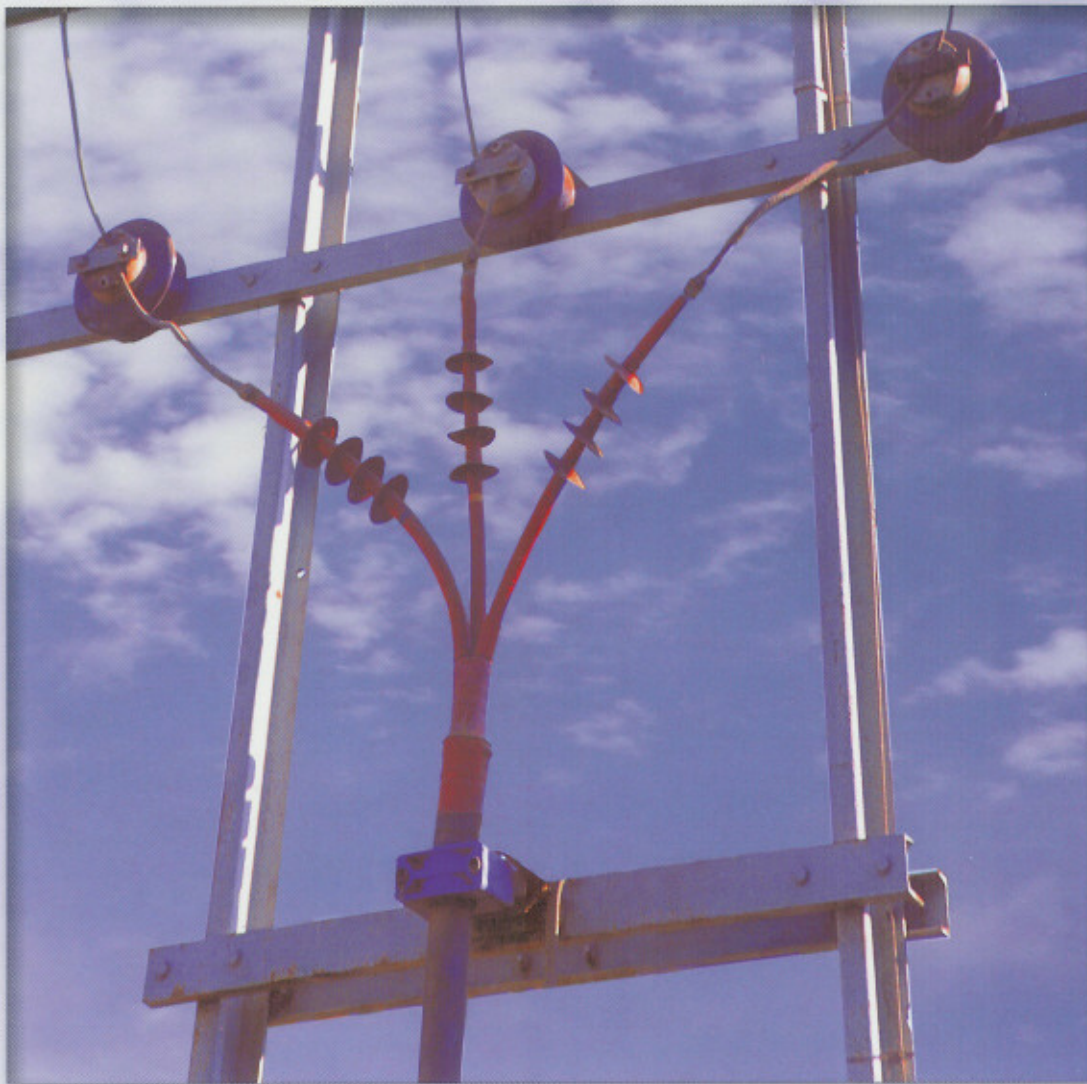




IKEBANA
ENGINEERING LTD.

IKÉBANA



**Heat Shrinkable Terminations and Joints
for 1-C & 3-C Power Cables up to 36 kV**

About Us

Ikebana Engineering Limited is a Thailand based company established in 1992 for the manufacture of Heat Shrinkable Cable Accessories. At its fully vertically integrated manufacturing facility in Bangkok **Ikebana** manufactures heat shrinkable joints and termination systems for cables up to 36 kV. These systems comprise of components such as breakouts, sheds, boots, heat shrinkable tubes for medium/low voltage applications and heat shrinkable end caps for a complete range of cables. **Ikebana** accessories are widely used in more than twenty five countries in five continents. **Ikebana** is reputed in these markets for zero defect product quality and responsive service. Its Medium Voltage heat shrinkable components are used by many reputed companies in their MV termination systems in Europe.

Ikebana joints and termination systems up to 36 kV are designed and type tested to perform for indoor and outdoor conditions as specified in DIN VDE 0278/ CENELEC standards. These products are also certified by TISI (Thai Industrial Standards Institute).

Quality Management Systems of **Ikebana Engineering Ltd.** have been assessed and registered against BS EN ISO 9002 (1994), the scope being manufacturing of heat shrinkable cable accessories. The company holds UKAS (UK), ANSI-RAB (USA) and DSM (Malaysia) certificates of ISO 9002.

IKEBANA

Joints

IMPACT RESISTANCE

Protection to inner HV parts from impacts provided by wrap around steel mat.

Electrical stresses over the in-line connector limited by application of high permittivity mastic.

INSULATION BUILD-UP

Restoration of insulation and screen over the inline connector effected by multiple layers of insulating tubes of high dielectric strength and a semiconductive tube.

STRESS CONTROL

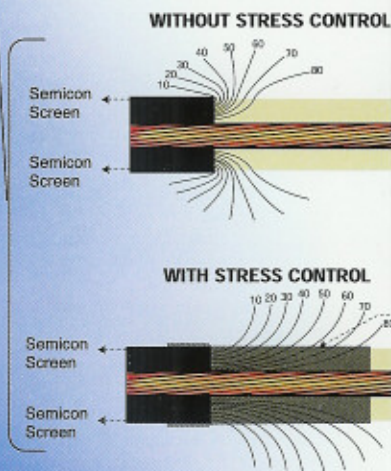
High electrical stress near screen-cut section avoided by Stress Control Tube with controlled impedance characteristics, which remain constant over the range of conductor operating temperature.

ARMOR BOND

Proven electrical continuity arrangement provided for limiting temperature rise of armor bonding assembly, during flow of earth fault currents.

CORROSION

Protection to corrosion pro semi-rigid tul hot melt adh of water.



- ❑ Straight and cross-bonded design for single core cables.
- ❑ Customized design for restoration of inner sheath.

Termination

- ❑ Suitable for 3-core and 1-core, XLPE and PILC MIND cables for indoor and outdoor applications.
- ❑ Conforms to Class-1 as defined in IEEE-48.

PROTECTION FROM MOISTURE INGRESS

Positive environmental sealing provided at interfaces by application of synthetic rubber based anti-tracking sealant against ingress of moisture.

PROTECTION FROM TRACKING, WEATHERING AND CHEMICALS

Provided by Non-Tracking Tubes in conjunction with molded components, which form part of the termination system. The tubes and components are designed to withstand detrimental effect of long term exposure to severe UV radiation, rain and corrosive atmosphere.

STRESS CONTROL

High electrical stress near screen-cut section avoided by Stress Control Tube with controlled impedance characteristics which remain constant over the range of conductor operating temperature.

PROTECTION FROM FLASHOVER FAILURES

Optimum creepage and high ratio of "creepage to flash-over" attained by Creepage Extension Sheds in Outdoor Terminations.

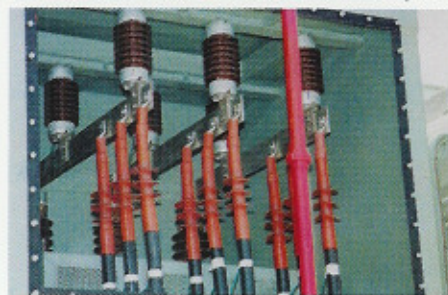

 XLPE Insulation
 Conductor
 XLPE Insulation
 Stress Control Tube
 XLPE Insulation
 Conductor
 XLPE Insulation

EARTH BOND

Proven armor earthing arrangement provided for limiting temperature rise of earthing assembly during flow of earth fault currents.

PROTECTION
 metallic parts from
 ived by impact-resistant,
 es internally coated with
 sive for blocking entry

1-core Indoor termination in service
AMATA EGCO POWER PLANT in Thailand, 1997



Performance specifications for Ikebana Joints and Termination Systems for Power Cables Upto 36 kV (Um)

Type tested in recognized independent laboratories
to stringent DIN VDE 0278/CENELEC standards.

	Test Voltage in kV Um (Maximum Phase to Phase Voltage)					Result
	7.2	12.0	17.5	24.0	36.0	
Test Sequence 1						
* DC voltage dry withstand /15 minutes	21.5	36.0	52.0	72.0	108.0	No failure or flashover
* AC voltage dry withstand /5 minutes	16.0	27.0	39.0	54.0	81.0	No failure or flashover
* AC voltage wet withstand (Only for outdoor terminators/1minute)	14.5	24.0	35.0	48.0	72.0	No failure or flashover
* Partial discharge at ambient temperature	6.0	10.0	15.0	20.0	30.0	Maximum Partial discharge: 10 pC
* Impact at ambient temperature (Only for joint)						Insulation resistance > 10 ³ MOhm
* Impulse voltage at 95 ⁰ C	60.0	75.0	95.0	125.0	170.0	No failure or flashover
* Electrical heat cycling (3 cycles)	9.0	15.0	23.0	30.0	45.0	No failure or flashover
* Partial discharge at 95 ⁰ C	6.0	10.0	15.0	20.0	30.0	Maximum partial discharge: 10 pC
* Partial discharge at ambient temperature	6.0	10.0	15.0	20.0	30.0	Maximum partial discharge: 10 pC
* Electrical heat cycling (113 cycles)	9.0	15.0	23.0	30.0	45.0	No failure or flashover
Immersion (Only for outdoor terminators)	OK	OK	OK	OK	OK	10 cycles
* Partial discharge at 95 ⁰ C	6.0	10.0	15.0	20.0	30.0	Maximum partial discharge: 10 pC
* Partial discharge at ambient temperature	6.0	10.0	15.0	20.0	30.0	Maximum partial discharge: 10 pC
* Impulse voltage at ambient temperature – 10 impulses	60.0	75.0	95.0	125.0	170.0	No failure or flashover
* AC voltage dry withstand /15 minutes	9.0	15.0	23.0	30.0	45.0	No failure or flashover
Test Sequence 2						
* DC voltage dry withstand /15 minutes	21.5	36.0	52.0	72.0	108.0	No failure or flashover
* AC voltage dry withstand /5 minutes	16.0	27.0	39.0	54.0	81.0	No failure or flashover
* Thermal short circuit (conductor)	OK	OK	OK	OK	OK	2 short circuits to raise conductor temperature to 250 ⁰ C in 5 seconds.
* Dynamic short circuit	-	-	-	-	-	One short circuit for currents more than 63 KA
* Impulse voltage at ambient temperature – 10 impulses	60.0	75.0	95.0	125.0	170.0	No failure or flashover
* AC voltage dry withstand /15 minutes	9.0	15.0	23.0	30.0	45.0	No failure or flashover
Test Sequence 3						
* Humidity test 300 hours (Only for indoor termination)	4.5	7.5	11.0	15.0	22.5	No substantial failure or flashover
* Salt fog test 1,000 hours (Only for outdoor terminations)	4.5	7.5	11.0	15.0	22.5	No substantial damage

Quality Policy

"Ikebana Engineering Limited and all its employees
are committed to provide products of high standard of quality
to meet the requirements of all the customers.

Our standard is to do it right the first time."



Certified by



Authorized Agent/Distributor:



**IKEBANA
ENGINEERING LTD.**

IKEBANA ENGINEERING LIMITED, Ratchaburi Industrial Estate, 155/47 Moo 4, Petkasem Rd.,
Chetsamian, Photharam, Ratchaburi, Thailand. Tel. +66 32 375 811-813 Fax. +66 32 375 810
website: www.ikebana-heatshrink.com Email: snabar@ikebana-heatshrink.com