

Fellowship Nite at Guinness Anchor

TEEAM held a fellowship nite at Guinness Anchor Berhad on 26th February 2007. The event was organised by the Membership Recruitment Sub-Committee to foster fellowship amongst members. Some 50 members were present to network and to renew acquaintance. It was an enjoyable evening with soft music and free-flow of beer. A sumptuous buffet dinner was also served.

TEEAM wishes to record its appreciation and thanks to Guinness Anchor Berhad for their generosity and warm hospitality.



A nite to remember - The objectives of networking and fellowship were no doubt achieved.



Yummy! - Members treated to a sumptuous buffet dinner, courtesy of Guinness Anchor Berhad.



Cheers! - (clockwise from left) Mr Lim Chun Nge (Internal Auditor), Mr Wong Teck Ming (Committee Member), Mr Chong Yoon Koon (Council Member), Mr Ong Ah Cheong (Council Member), Mr William Young Chee Keong (Council Member), Ms Agnes Keng (Assistant Executive Secretary), Mr Suresh Gorasia (Past President) and Mr Wong Tien Sung (Member).



Yum seng! - (seated from left) Mr Siew Choon Thye (Council Member), Mr Nicholas Mok (Member) and Mr Yap Ching Kiat (Vice President). (standing from left) Mr Ho Khai Hong (Council Member), Mr Jack Soon Lee Hock (Assistant Honorary Secretary), Mr Ooi Eng Guan (Council Member), Mr Danny Teo (Guinness Anchor Area Sales Manager), Mr Fong Mun Loon (Council Member), Mr Richard Lew Min Fatt (Council Member) and Mr Ong Ah Cheong (Council Member).



Building Wiring Installer Course

This Building Wiring Installer training programme is designed for the construction personnel involved in the low voltage installation of electrical wiring and related electrical equipment.

This course is for school leavers, technical personnel, electrical workers at construction site and apprentice wiremen.

The course is sponsored by CIDB which is subject to approval. Course participants who have achieved the skill competency requirement will be awarded with a certificate. In addition, a CIDB Green Card will also be issued.

For registration and further information, please contact the TEEAM Secretariat at
Tel: 603-9221 4417, 9221 2091 or
E-mail: teeam@po.jaring.my or teeam@streamyx.com
Website: www.teeam.com

TEEAM Solves Member's Problem

TEEAM successfully helped a member to get back their product sample. The company participated in a TNB tender for the supply of GSM modem but was unsuccessful in the tender. The member approached TEEAM when they could not retrieve their sample. TEEAM then took up the issue with the TNBD's Services & Material Management. The product sample was subsequently returned. TEEAM is glad to be able to offer our assistance and we will always look into the needs and problems of our members.



TRANSLITE

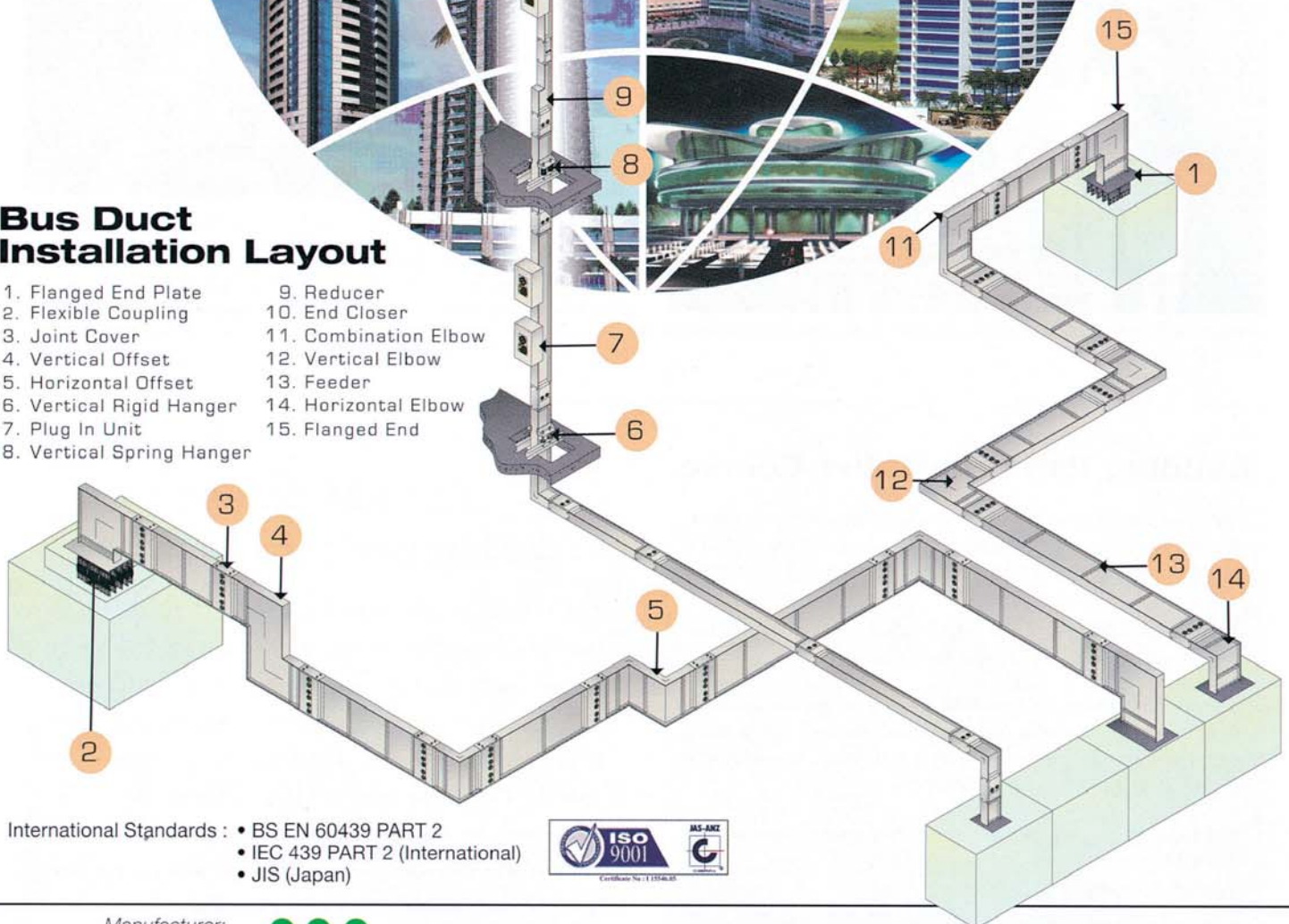
Maintenance Free Busduct

EMPOWERS THE WORLD



Bus Duct Installation Layout

- | | |
|---------------------------|-----------------------|
| 1. Flanged End Plate | 9. Reducer |
| 2. Flexible Coupling | 10. End Closer |
| 3. Joint Cover | 11. Combination Elbow |
| 4. Vertical Offset | 12. Vertical Elbow |
| 5. Horizontal Offset | 13. Feeder |
| 6. Vertical Rigid Hanger | 14. Horizontal Elbow |
| 7. Plug In Unit | 15. Flanged End |
| 8. Vertical Spring Hanger | |



International Standards : • BS EN 60439 PART 2
• IEC 439 PART 2 (International)
• JIS (Japan)



Manufacturer:



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Email: enq@multib.com.my / technical@multib.com.my Website: www.transliteinc.com

Badminton Tournament 2007

TEEAM organised a badminton tournament for members to vie for the championship on 20th & 27th May 2007 at Michael's Badminton Academy (MBA), Puchong. 26 pairs of men's doubles, 8 pairs of mixed doubles and 13 men's singles participated in the action packed racket game.

This year, TEEAM was honoured to have YB Dato' Ir Donald Lim Siang Chai, Deputy Minister of Tourism Malaysia cum TEEAM Past President to officiate the opening of the tournament. Dato' Ir Donald Lim highlighted that sports tourism is one of the concepts to promote Malaysia. Some world-class sports events and recreational activities such as Le Tour de Langkawi, Formula One Championship and Golf Open were held in Malaysia in order to promote Malaysia to become a major sports tourism destination in the Asia-Pacific region and to catch the world's attention.

The Sports Committee later thanked Dato' Ir Donald Lim for his generosity to contribute some funds for TEEAM to sponsor the Men's Singles and Doubles Champions to represent Malaysia in the 14th Global Overseas Chinese Badminton Competition. The competition will be held in Zhongshan, China from 9th to 11th November 2007.

During prize presentation, the Sports Chairman, Mr Liang Kok Boon thanked all the generous sponsors for their support and enthusiasm. They are Chi-Tak Electrical (Sel) Sdn Bhd, EITA Holdings Sdn Bhd, Euro Electric Sdn Bhd, SP Multitech Sdn

Bhd and Translite Electric Sdn Bhd. A special word of thanks was recorded to all voluntary umpires, lines men and Committee Members for contributing to the success of the event. The results are listed on page 31.



Officiating the event - YB Dato' Ir Donald Lim Siang Chai (Deputy Minister of Tourism Malaysia cum TEEAM Past President) officiating the event by serving the first shuttle. Looking on (from left) are Mr Yong Kim Yun (TEEAM Internal Auditor), Mr Yap Wee Tong (TEEAM Sports Committee Member), Mr Michael Lee (MBA Director), Mr Liang Kok Boon (TEEAM Sports Chairman), Engr Fu Wing Hoong (TEEAM Deputy President), Mr Fong Mun Loon (TEEAM Council Member) and Mr Jack Soon Lee Hock (TEEAM Assistant Honorary Secretary).



For the album - A group photo taken after the opening ceremony.



Men's Single Champion - Mr Tan Kam Foo receiving his prize from Mr David Chong Ah Nyap (TEEAM Vice President). Under the TEEAM sponsorship, he will be representing Malaysia to take part in the 14th Global Overseas Chinese Badminton Competition in Zhongshan, China.



Men's Doubles Champion - (centre) Mr Au Kah Keong (Lee Hoe Electrical & Trading Sdn Bhd) and (right) Mr Chen Siang Long (Bandar Elektrik Sdn Bhd) receiving trophies from Mr Liang Kok Boon (TEEAM Sports Chairman). They defeated 1st Runner-up, Mr Lee Chee How (Alpha Automation (Sel) Sdn Bhd) and Mr Tan Kam Foo (Individual Member) by 21 over 19, 11 over 21 and 21 over 16. Under the TEEAM sponsorship, they will be representing Malaysia to take part in the 14th Global Overseas Chinese Badminton Competition in Zhongshan, China.

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..... Continue Badminton Tournament 2007



Players in action – Men's doubles final vying for the championship.



Syabas – The jubilant winners with the Sports Committee.

Mixed Doubles Champion – Ms Lim Wei Yuen and En Hafiz Mohamad Idris (Success Electronics & Transformer Manufacturer Sdn Bhd) receiving their prizes from Mr Yong Kim Yun (TEEAM Internal Auditor). They defeated Mr Ang Kien Aik and Ms Tong Geok Lan of SP Multitech Sdn Bhd by 21 over 11 and 27 over 25.

Results

Men's Singles Event

Champion

Tan Kam Foo

Individual Member

Sponsorship to 14th Global Overseas Chinese Badminton Competition in Zhongshan, China + Trophy

1st Runner-Up

Au Kah Keong

Lee Hoe Electrical & Trading Sdn Bhd
MBA Cash Voucher worth RM200.00
+ Trophy

2nd Runner-Up

Hui Kok Wai

Tenaga Poly Sdn Bhd
MBA Cash Voucher worth RM100.00
+ Trophy

3rd Runner-Up

James Chong Fook Choy

Autovation Sdn Bhd
Trophy

Men's Doubles Event

Champion

Au Kah Keong & Chen Siang Long

Lee Hoe Electrical & Trading Sdn Bhd & Bandar Elektrik Sdn Bhd
Sponsorship to 14th Global Overseas Chinese Badminton Competition in Zhongshan, China + Trophy

1st Runner-Up

Lee Chee How & Tan Kam Foo

Alpha Automation (Sel) Sdn Bhd & Individual Member
MBA Cash Voucher worth RM300.00
+ Trophy

2nd Runner-Up

Benn Lim Kim Chuan & Lew Chee Keong

Munpong Electrical Distributors Sdn Bhd & Enflex Dynamic Sdn Bhd
MBA Cash Voucher worth RM200.00
+ Trophy

3rd Runner-Up

Lim Lai Huat & Yap Yin Ken

Letrik P. J. Union Sdn Bhd
Trophy

Mixed Doubles Event

Champion

Hafiz Mohamad Idris & Lim Wei Yuen

Success Electronics & Transformer Manufacturer Sdn Bhd
MBA Cash Voucher worth RM400.00
+ Trophy

1st Runner-Up

Ang Kien Aik & Tong Geok Lan

SP Multitech Sdn Bhd
MBA Cash Voucher worth RM250.00
+ Trophy

2nd Runner-Up

Loh Wai Leong & Janice Leong Wai Mun

Powerlite M & E Sdn Bhd & ABB Malaysia Sdn Bhd
MBA Cash Voucher worth RM150.00
+ Trophy

3rd Runner-Up

Loh Chee Khim & Ng Tiu Kim

Kejuruteraan Enertric Sdn Bhd & Kejuruteraan Letrik Tong Hup
Trophy

Sponsors

Chi-Tak Electrical (Sel) Sdn Bhd
100 pcs T-Shirt

YB Dato' Ir Donald Lim Siang Chai
RM2,000.00

EITA Holdings Sdn Bhd
RM1,000.00
15 cartons of Drinking Water

Euro Electrical Sdn Bhd
RM500.00

SP Multitech Sdn Bhd
Souvenir

Translite Electric Sdn Bhd
RM500.00

Global Warming - Do Your Part

Tips to Make a Difference

- 1 Use public transport or car pool instead of driving alone in your car to work or in running errands. It not only cuts your petrol bill but also helps cut carbon dioxide emission, the biggest culprit in global warming.
- 2 Keep the car engine properly serviced and maintained to produce less emission.
- 3 Cycle or walk around your neighbourhood while on errands. It is good exercise besides saving you the hassle of finding parking lots and burning extra fossil fuel.
- 4 Walk. Don't drive to the neighbourhood shop. If you must drive, then perform several chores at once.
- 5 Shop with your own cloth tote bags instead of using plastic bags. Buy products with the least packaging or which use natural materials as wrappers.
- 6 Take your own containers to buy cooked food. This helps to reduce use of recyclable plastic containers.
- 7 Don't waste water. Turn off the tap when applying soap. Water is going to be a scarce commodity. Don't use a hose to water your plant. Use watering cans instead.
- 8 Wash your car with a cloth and a bucket of water instead of hosing it down. You can save litres of water that can be better used for drinking and cooking.
- 9 Collect rain water in your porch and use it to wash the floor and water the plants. This helps to reduce water wastage and runoff.
- 10 Replace incandescent bulbs with compact fluorescent lamps which are said to consume only 25 per cent of the electricity used and last longer.
- 11 Turn off the air-conditioning when your house or room is sufficiently cooled.
- 12 You can cool down a sunbaked porch and brick walls by spraying water on them. This will reduce the need for air-conditioning in the living room.
- 13 Shower in the afternoon to minimise use of the water heater.
- 14 Switch off all electrical appliances when they are not in use especially fans, radios and televisions.
- 15 Avoid battery-operated gadgets or use rechargeable or solar rechargeable batteries if batteries are unavoidable.
- 16 Ironing clothes in bulk to cut down on electricity usage.
- 17 Collect a full load before doing your laundry. Line dry your clothes instead of using the dryer.
- 18 Draw the curtains or keep the windows shut at home to keep out the heat. Growing green plants indoors also helps to absorb the heat besides taking in carbon dioxide and producing oxygen.
- 19 Avoid burning candles or joss sticks unnecessarily as they emit fumes and gases that can pollute.
- 20 Avoid buying exotic flowers or plants that need lots of fertilisers. Chemical fertilisers are unkind to the environment. They pollute rivers and the soil.
- 21 Plant a vegetable patch or even grow them in pots. Eat organic fruits and vegetables.
- 22 Compost your food waste and use as nutrient-rich soil for your garden or flower pots.
- 23 Do not throw toxic household waste in the garbage or down the drain. Use non-toxic cleaning products in your house.
- 24 Cut down on the use of insect repellants in aerosol cans. Use mosquito netting and devices that are more environment-friendly to keep the pests out of your homes.
- 25 Get involved with nature clubs or non-governmental organisations involved in greening the earth or against pollution.



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Fax: 603-9283 8033, 9200 4584

E-mail: mantnp@po.jaring.my

Power Quality - Challenges and Opportunities in Electrical Industry - Part 5

This paper was prepared by Ir Chew Shee Fuee, TEEAM Immediate Past President.

Implications of De-registration of Electrical Contractors

With the development of de-regulation in the developed nations we will be following their footsteps. Singapore has de-registered their electrical contractors a few years ago. Malaysian electrical contractors are always stringently administered by the Energy Commission (Suruhanjaya Tenaga, ST). The reason is simple because of the need to ensure the utmost safety of construction and operation of electrical installations. This may change if de-registration of electrical contractors is to take place.

Our current registration requirements include companies as well as individuals. The individuals are the many categories of competent persons. Both companies and individuals are required in accordance to the Electricity Regulations. The current practice has been accepted by the industry and the only complaint has been the amount of fees charged annually for registration. The registration of companies also stipulate requirement of competent persons in the many categories of contractors. It is also known that some contractors have willingly allowed their licences to be used by parties who may not have qualified for registration with the ST. TNB has been seen to take some steps by registering their list of ST registered contractors in order to make sure those who apply for supply are suitably and genuinely registered with ST.

Besides registering with ST, electrical contractors are also registered with many governmental bodies as well as Government Linked Companies (GLCs) for other reasons. Therefore the issue of multiple registration has also been brought up as an issue. If there is a one stop agency to verify and accredit the capability of the contractors, that will be the ideal solution.

In contemplation of the move to de-register the electrical contractors, ST must be sure that companies are matured enough in the trade and can self regulate sufficiently. This is a big step taken by the ST and they will maintain control on licensing the competent persons only.

In principle this is a good step in the right direction. However there are worries that this will put the industry in a worse situation than before. We understand that ST is the primary registration body for electrical contractors. CIDB and others depend on ST's pre-qualification process to administer their registration of electrical contractors. If ST is no longer doing the qualification and monitoring process it will be impossible to ascertain the qualities of electrical contractors. There is however another school of thought that the industry shall now be self regulating.

My observation is that the Malaysian governmental administration is lacking in enforcement. Any de-regulation will have immediate and significant impact on the industry. It is tantamount to legalise the illegal players. Therefore it can be counter productive and will not benefit those who need these services. Electrical industry has been the most tightly regulated one for a good reason. This is to maintain a high level of safety in the construction and operation of electrical equipment and apparatus. Our current level of performance in this sector is acceptable but not ready for de-registration.

In UK where the trade has been self regulated it has faced many problems and currently with the influx of foreign workers the situation has been made worse. Due to competition in fees and charges those who are less qualified or inadequately qualified will be the ones that will create problems and low perception of

the legitimate ones in the same industry. The general public cannot distinguish who is a better and more competent contractor.

The control of licensed electrical workers alone may not be able to achieve the necessary control of effective and safe construction and operation of electrical installations. It is quite obvious that currently many licensed competent persons are willing to take risks and certified for others. In the context of a registered company this may be better administered. With the de-registration of electrical contractors any construction company can and will have their own companies to carry out the electrical installations because they eventually only need the certification of an individual who is licensed with ST.

Registration must serve its purpose and we can certainly make a simple conclusion whether we need to register the electrical contractors. Thailand did not have registration of electrical contractors. They face many problems and difficulties in providing safe installations. They are looking forward to register their electrical contractors.

It is recognised that our electrical installations are of reasonably good quality and safe to operate. All these are the results of mandatory requirements. Therefore any notion to move away from this practice warrants very serious and careful evaluations by all parties concerned.

Ir Chew Shee Fuee B.Sc. (Hons) (Strathclyde), PEng, CEng, FIEM, MIEE Member, IEEE Member, 1st Grade Electrical Engineer (Competent up to above 500 kV).

Ir Chew is the President of The Electrical and Electronics Association of Malaysia (TEEAM) for 2001 - 2003 and 2003 - 2005. He is the Past President of the Asean Federation of Electrical Engineering Contractors (AFEEC).

Ir Chew is the Managing Director of G. H. Liew Engineering (1990) Sdn Bhd and QATM Engineering Services Sdn Bhd. He graduated from the University of Strathclyde, Glasgow with a B. Sc (Hons) in Electrical & Electronics Engineering. He is a Professional Engineer and is also licensed by Energy Commission as a competent engineer (without voltage limits) and a service engineer to carry out electrical testing up to a voltage of 500 kV.

Ir Chew has 26 years experience in electrical control and relay protection. He is also specialised in electrical site tests on power equipment, electrical fault investigation, service and maintenance of electrical switchgear and relays. His work also includes electrical supervision of substations and electrical audit. He presents lectures on electrical apparatus and the protection system. He can be reached at E-mail: sfchew@ghliew1990.com

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TEEAM at NI Days 2007

TEEAM showed support at the National Instruments' Conference, NI Days 2007 held on 8th March 2007 at Marriott Hotel Putrajaya. The conference was themed "Virtual instrumentation and beyond: Meeting the challenges in test, control and design".

Some 200 participants attended the informative instrumentation conference. It featured a full-day interactive technical presentations and hands-on workshops on the latest technologies for test, control, design, measurement, automation and manufacturing. An exhibition was held in conjunction with the conference with interesting showcase of products, applications and services.

Mini robots on display – "NI LabView" a powerful graphical programming software can build and program robots to do work.



NI Day on 8th March 2007 – Strong support from the industry.



During break time – Overwhelming response at NI showcase.



Interesting materials – Visitor at TEEAM's booth.



TEEAM's support at NI Days 2007 – Members from Scadatech Engineering, Mr Johnson Lukose (right) and Mr Lee Thian Poh at TEEAM's booth. With them is Ms Winnie Khong (TEEAM Executive Secretary).



Golf Competition 2007



Date : 9th August 2007 (Thursday)
Tee off Time : 8:00 am
Venue : Tropicana Golf & Country Club and
Seri Selangor Golf Club,
Selangor Darul Ehsan

Registration: Contact TEEAM Secretariat
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A GOOD ELECTRICAL CONNECTION BEGINS WITH THE CONNECTOR

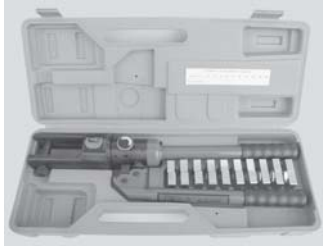
Malaysian Standard MS 1540:2002



SPECIFICATION FOR THE MATERIAL, MARKING AND DIMENSIONS OF CRIMP TYPE CABLE LUGS FOR USE WITH COPPER CONDUCTORS IN LOW VOLTAGE APPLICATIONS

Importance of using Cable Lug compliant with MS 1540:2002

- To prevent joints and terminations from overheating which will cause **power loss** and even **high risk to fire**
- To prevent inferior, sub-standard and questionable quality cable lugs to be used in the electrical installation
- To have standardized cable lugs to suite the crimping die
- Suitable for cable compliant with IEC 228



CP-240 Hydraulic Crimping Tool
Dies: 16mm² to 240mm²



CP-400 Hydraulic Crimping Tool
Dies: 50mm² to 400mm²



CP-630 Hydraulic Crimping Tool
Dies: 185mm² to 630mm²



Bimetal Lug & Link
Size: 16mm² to 630mm²
Tested to IEC 1238-1:1998



CK-10
1.5 to 10mm²



CH-630 Hydraulic Indent Tool
Al. Ferrule & Bimetal
300mm² to 630mm²



CH-240 Hydraulic Indent Tool
Al. Ferrule & Bimetal
16mm² to 240mm²



CK-16
1.5 to 16mm²



BC-150 Bar Cutter
Max. 10mm (thickness)
Max. 150mm (width)



CP-630 Foot/Hand Pump
Max. Pressure:
700Bar/10,000p.s.i



1HP-EP Electric Pump
Max. Pressure:
700Bar/10,000p.s.i



CC-630 Cable Cutter
Up to 630mm² Cu/Al
Stranded Cable



BB-150 Bar Bender
Max. 150mm (width)



HC-52 Hole Cutter
Dies: 16.8mm – 52mm



HP-20 Hole Puncher
Dies: 10.5, 13.5,
17.5 & 20.5mm



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Techniques to Achieving Good Electrical Connections

Executing a good electrical connection

A good electrical connection is one that is able to conduct current safely at a low temperature, resulting in energy saving, and can last for many years (30 years or even longer).

There are generally three important factors in executing a good electrical connection:

1. Type of Connectors,
2. Crimping Tools and Dies (compression method) used, and
3. Workmanship (quality of work)

Right Connectors

Conway's tagline says it all: "A Good Electrical Connection Begins with the Connector". Connectors are either made of copper or aluminium and both have their own respective attributes.

Copper Conductors

Copper connectors are used to join or end a copper conductor. These connectors are made of copper that comes in a high conductivity copper tube with suitable thickness. A lug will have sufficient palm area and barrel length, whilst a link should have sufficient link length, and plated with Tin to prevent corrosion.

Copper has many grades. For electrical purposes, the Electrolytic Copper (E.Cu) with purity 99.9% and conductivity 99% I.A.C.S. is always used.

Using low quality recycle copper is not recommended as the conductivity is 50% to 85%. Referring to the comparison chart between compliant and non-compliant cable lugs according to MS 1540:2002 (Chart 1), for the same size of cable lugs, when conductivity is low and the wall thickness is less, the current capacity of the cable lug is greatly affected.

	Cable Lug Compliant to MS 1540:2002	Non-compliant Cable Lug	Cable Lug Compliant to MS 1540:2002	Non-compliant Cable Lug
Size	300mm ²		240mm ²	
Max. PVC Wire Current Rating in 3 Phase	561 A		485 A	
Weight	299 gram	215 gram (less 28.1%)	212 gram	137gram (less 35.3%)
Length	110.1 mm	101.5 mm (less 7.8%)	103.7 mm	91.1 mm (less 12.1%)
Wall Thickness	3.9 mm	3.2 mm (less 17.9%)	3.3 mm	2.6 mm (less 21.2%)
Conductivity	99%	57% (less 42%)	99%	83% (less 16%)
Results	Current rating is 561A	224 A (less 59.9%)	Current rating is 485 A	304 A (less 37.2%)

Chart 1: Comparison between Compliant and Non-compliant Cable Lugs

As for the 240mm² cable lug, the compliant lug registered a current capacity of 485A while the non-compliant lug at only 304A, a 37.2% less in the current capacity.

Currently there are many type of inferior cable connectors imported into Malaysia, some of which are either not suitable to Malaysian cables, or may be inferior in quality. This may result in high

temperature (energy loss) at the connections, or even burning the connectors. The only way to prevent this is to use a standard. With this in mind, the Malaysian Standard was developed and obtained during year 2002, MS1540 for Cable Lug and later MS1779 for Cable Link in year 2005.

Aluminium Conductors

The right aluminium connectors to use are those with electrical grade aluminium raw material ALLOY 1050 or 1350. It has purity level of 99.5%, and conductivity is 60%. In a non-electrical grade aluminium due to low purity, the conductivity is about 40% to 50% or even lower.

Since aluminium conductivity is much lower than copper, the wall thickness for aluminium connector will naturally be thicker than copper connectors. It is also bigger in size. In purchasing or using of aluminium connectors, one should always specify the material to AL99.5 or type tested to IEC 1238-1.

Crimping Tools and Dies

The second important factor in executing a good electrical connection is using the right crimping tools and dies. A proper tool and die are necessary to perform a good connection, but simply buying an international branded tool is not good enough. One must consider a matching die before purchasing the tool.

The hexagon die is usually used for a copper connector. For Aluminium connectors, an indent die is used. Having the right dies is more important than the tools. The German "Din" standard die is not suitable for the Malaysian Standard applications. A customised die suitable for Malaysian connectors is required. Connector manufacturers will always recommend the right size of die and this is usually shown in the catalogue of connectors as illustrated in Chart 2 below:

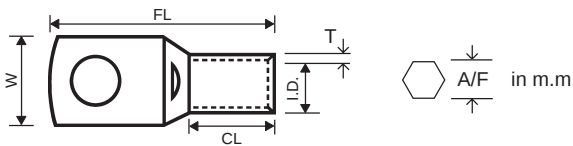
Low Voltage Cable Lug for Copper Conductor								
Crimp Type for Hexagon and Indent Die								
High Conductivity Copper: 99% I.A.C.S								
Copper Purity: 99.9%								
Finishing: Tin Plated								
"Type Tested To MS 1540:2002"								
								
Conductor Size-Stud Hole	FL	CL	ID	T	W	Crimping Tool	Hexagon Die A/F	No. of Crimps
2.5mm ² – M5	19	7.0	2.3	0.8	8.0	CK-10	Indent	1
35mm ² – M5	42	15.0	8.4	1.2	16.0	CP-240	9.1	1
185mm ² – M5	78	32.0	19.0	2.6	35.0	CP-240/CP-630	20.0	2/1
630mm ² – M5	143	52.0	34.5	5.1	64.0	CP-630	37.0	3
* All dimensions in mm								

Chart 2: Crimp Type for Hexagon and Indent Die

There are various schools of thought on whether the indent type compression is superior to the hexagon type compression. However, results from scientific experiments show that there is absolutely no



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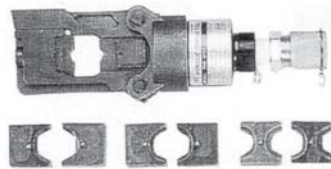


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..... Continue Techniques to Achieving Good Electrical Connections

difference in using the hexagon die or indent die, when matching connector and die are used. Case in point, countries like USA, Australia and Germany all use the hexagon die for Aluminium connectors, whilst France, Italy and Malaysia use the indent die. The current trend around the world seems to favour indent dies for small conductors and hexagon ones for larger conductors. Manufacturers of electrical compression terminals and joints will have a good understanding of the best way to compress their own connectors and therefore it is recommended that they be approached when advice is necessary.

Workmanship

The human factor is equally important in achieving a good electrical connection. It is vital that wiremen and electricians be willing to work according to manufacturer's instructions. After removing the insulation and cleaning the conductor if necessary, the wireman or electrician plays an important role in selecting the same size connector and die to execute a good full crimp by using the right crimping tool. For bigger connectors, crimping should be done more than once, or according to manufacturer's instructions as shown in the connector products catalogue. In Malaysia, precise tool and die is now easily available. Therefore, when quality connectors are selected, and work is carried out in compliance to standard procedure, all joints and termination can easily achieve good electrical connections.

Different type of critical connections and procedure

Aluminium Conductor

To connect aluminium conductors, aluminium lugs are needed for termination, and aluminium ferrules are required for the joints. Aluminium conductor oxides when exposed in the air even after a very short time. Colourless and cannot be detected by the eye, the oxide forms corrosion between contact areas. Therefore it is always necessary to clean the conductor with a steel brush after removing the insulation. Contact grease must be applied on the spot to prevent oxidation before crimping it with an aluminium die. Jointing compound or contact grease is always provided in the barrel of aluminium connector.

Aluminium Conductor to Copper Conductor

Due to the coupling effect when aluminium comes in contact with copper, corrosion will happen in a short time. Currently the best solution is to use Aluminium-Copper Bi-metal connectors. A bi-metal lug should be used for termination and Bi-metal link for joining copper with aluminium conductors.

Copper Braid/Fine Wire

Copper braid or fine wire is not easy to be pushed into the connector. Oversized connector is used for easy entry, however it is not suitable to use hexagon die to crimp. The result is always under-crimping and conductor can be pulled out easily or over-crimping when an

under-sized die is used resulting to damaged connectors. Therefore the hexagon die is not suitable for this type of connection. The indent die is strongly recommended for this purpose. For heavy duty connection, a long barrel connector is required with multi crimping.

Square Bar or Special Shape Conductors

To meet the connection requirement, standard hexagon die is not suitable to be used. Tailor-made die is necessary. Connector manufacturer or tools manufacturer should be able to provide this service.

Narrow Palm Cable Lug

For smaller contact area or space, such as a connection of MCCB, a narrow palm connector is required. Usually the cable lug manufacturer can supply various types of palm for smaller stud holes. Cutting and filling of cable lug is not the right practise as it will damage the entire cable lug. Due to unavailability for smaller stud hole, advance order is recommended.

Big Stud Hole Cable Lug

When bigger stud hole is required due to the bolt size, a big stud hole cable lug is necessary. The manufacturer can always supply bigger palm with the right stud hole cable lugs. Simply drilling to enlarge the hole will reduce the contact area and also the surface area for the bolt to sit on. Due to unavailability for bigger stud hole, advance order is recommended.

Transition Joint

A transition joint is required to join big conductors to smaller conductors. For copper conductors, a transition cable link can be used. For aluminium conductors, use aluminium transition cable link. For joining aluminium to copper conductors, a bi-metal transition cable link is required.

XLPE Compacted Conductor

Due to the compacted condition of each strand of wire, the total outside diameter of a XLPE compacted conductor becomes smaller than normal conductors. For the same size connector, the lug or link will feel loose. This is alright because a matching die will have the right compression ratio. The result of compression is also acceptable. Using the next smaller size connectors by feeling whether it is matching is not correct. As the XLPE compacted conductor is higher in current capacity, under size connectors will lower the capacity of the connection. This will cause higher temperature or burn the connection.

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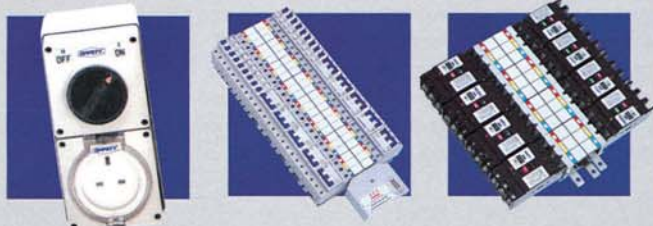
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New Members

The following new members have been approved and accepted by the TEEAM Council (as at 16th June 2007). A warm welcome to all the new members and special appreciation is extended to those who introduced these new members. For those who are not yet members.....why wait? Join us and find out how our Association can offer our services to you.

Arihant Products No. 3541, G.I.D.C., Shanker Tekri, Jamnagar - 361004, Gujarat, India. Tel: 91-288-256 1425 Fax: 91-288-256 0453 E-mail: info@arihantbrass.com Website: www.arihantbrass.com Contact Person: Mr Ankur Chheda <i>Business: Manufacturer & exporter of precision brass and metal components.</i>	Power Plug Busduct Sdn Bhd No. 52/54, Jalan Satria 7, Taman Perindustrian JB Perdana, 81300 Skudai, Johor Bahru, Johor Darul Takzim. Tel: 607-511 4254 Fax: 607-511 4260 E-mail: alvin@ppbc.com.my / ong@ppbc.com.my Website: www.ppbc.com.my Contact Person: Mr Alvin Lau <i>Business: Manufacturing of busduct, busbar trunking system and copper products.</i>
Atlas CSF Sdn Bhd No. 21 & 22, Jalan Damar SD 15/1, Bandar Sri Damansara, 52200 Kuala Lumpur. Tel: 603-6272 8840 Fax: 603-6272 9691 E-mail: atlasales@atlas-csf.com Website: www.atlas-csf.com Contact Person: Mr Raymond Lee Kok Sang <i>Business: Data centre turn-key projects.</i>	LEDtronics Sdn Bhd No. 32, Jalan Tago 9, Taman Perindustrian Tago, Bandar Sri Damansara, 52200 Kuala Lumpur. Tel: 603-6275 5991 Fax: 603-6275 5992 E-mail: sales@ledtronics.com.my Website: www.ledtronics.com.my Contact Person: Mr Victor Wong <i>Business: LED display.</i>
Hongshang Heat Shrink Sdn Bhd No. 44A, Lorong Angsa, Berkeley Garden, 41150 Klang, Selangor Darul Ehsan. Tel: 603-3343 2688 Fax: 603-3343 4688 E-mail: hshs@tm.net.my Contact Person: Mr Anthony Lee <i>Business: Trading & manufacturing of heat shrinkable insulation products.</i>	Mega-Mem Engineering Sdn Bhd No. 2, Jalan TPK 2/4, Seksyen 1, Taman Perindustrian Kinrara, 47100 Puchong, Selangor Darul Ehsan. Tel: 603-8076 1601, 8076 1602 Fax: 603-8076 1603 E-mail: megamem@streamyx.com Contact Person: Mr Kong Tuck Hing <i>Business: Switchboard manufacturer.</i>
KVV Bersatu Electrical Malaysia Sdn Bhd No. 19A, Jalan Indah 2/2, Taman Puchong Indah, 47100 Puchong, Selangor Darul Ehsan. Tel: 603-8060 8195 Fax: 603-8060 8195 E-mail: kalaivanan_05@yahoo.com Contact Person: Mr Kalai Vanan a/l T. Perumal <i>Business: Electrical contractor.</i>	Powerlite M & E Sdn Bhd No. 27-2, Plaza Crystalville 1, Jalan 22A/70A, Desa Sri Hartamas, 50480 Kuala Lumpur. Tel: 603-6201 8226, 6201 2088 Fax: 603-6201 6225 E-mail: plme@streamyx.com Contact Person: Mr Foo Choo Sin <i>Business: M&E contractor.</i>
Tan Kam Foo Block 22-04-11, Desa View Tower, Off Jalan Genting Kelang, 53100 Kuala Lumpur. Tel: 603-8942 6999 Fax: 603-8948 7999 Mobile: 012-295 8897 E-mail: tkamfoo@yahoo.com <i>Business: Cable support system, underfloor/flushfloor, fluorescent light fitting.</i>	Chan Chong Tak No. 17, Jalan Bahagia 5, Taman Sri Bahagia, Batu 7½, Cheras, 56000 Kuala Lumpur. Mobile: 012-268 2756 E-mail: cj7_rene@yahoo.com <i>Business: M&E construction for various type of building & services.</i>



SIEF 2007, Korea

Seoul International Electric Fair 2007
10th – 13th October 2007

SIEF is the leading event in Korea for the power generation, transmission and distribution sectors. Held annually, it regularly attracts over 11,000 visitors and boasts over 170 exhibitors. SIEF 2007 will highlight power generation, transmission and distribution equipment; motors & generators; switchgears & controlgears; electrical stationary apparatus; electric cables and wires; testing equipment; electrical accessories; and IT implementation of electrical equipment.

SIEF 2007 will serve the Korean electrical and electronic industry. TEEAM intends to organise a trade delegation to visit the exhibition. Members who are interested may contact the TEEAM Secretariat for details.

Tel: 603-9221 4417, 9221 2091

E-mail: teeam@po.jaring.my or teeam@streamyx.com

For detailed enquiries on SIEF 2007, please contact:

Korea Electrical Manufacturers Association (KOEMA)

Tel: 82-2581-8601 Fax: 82-2581-8605

E-mail: sief@sief.co.kr Website: www.sief.co.kr

Export & Import Performance of E&E Products

Exports

- In 2006, exports of E&E products recorded a 6.2 per cent growth to RM281.01 billion from RM264.7 billion in 2005. Semiconductor devices, ICs, microassemblies, transistors and valves, valued at RM93.49 billion, accounting for 33.3 per cent, continued to be the main export items within the E&E sub-sector.
- Growth in Malaysia's E&E exports was driven by:
 - strong global market demand in 2006, mainly for consumer electronics such as digital home electrical appliances (plasma screen TVs, MP3 players, video games, home theaters and digital cameras) as a result of the change in lifestyle;
 - the growing popularity of the internet as well as new development and applications in multimedia, which contributed to higher demand for semiconductor devices, ICs, micro-assemblies, transistors and valves, parts for office machines and automatic data processing (ADP) machines and telecommunication equipment and parts.
- Within the E&E sub-sector, major export items in 2006 were:
 - electrical machinery, apparatus, appliances and parts, valued at RM125.72 billion or 44.7 per cent share of the total E&E exports. Semiconductor devices, ICs, micro-assemblies, transistors and valves, which constituted 74.4 per cent of this product category, registered a growth of 3.9 per cent to RM93.49 billion from RM89.97 billion;

Composition of E&E Exports

Description	2006			2005	
	Value (RM Billion)	Share (%)	Change (%)	Value (RM Billion)	Share (%)
Total E&E Exports	281.01	100.0	6.2	264.70	100.00
Electrical Machinery, Apparatus & Appliances & Parts	125.72	44.7	-1.1	127.15	48.0
Semiconductor Devices, ICs, Micro-assemblies, Transistors and Valves	93.49	33.3	3.9	89.97	34.0
Electrical Apparatus for Electrical Circuits and Printed Circuits	15.74	5.6	-30.7	22.70	8.6
Electrical Machinery & Apparatus	8.43	3.0	10.9	7.60	2.9
Electrical & Non-electrical Household Equipment	3.17	1.1	12.1	2.83	1.1
Equipment for Distributing Electricity	2.70	1.0	26.8	2.13	0.8
Electrical Power Machinery & Parts	1.88	0.7	10.8	1.70	0.6
Electro-diagnostic Apparatus, Medical & Radiological Apparatus	0.30	0.1	32.3	0.23	0.1
Office Machines & ADP Machines & Parts	102.57	36.5	18.2	86.77	32.8
ADP Machines	59.86	21.3	11.0	53.94	20.4
Parts for Office Machines & ADP Machines	41.85	14.9	29.4	32.33	12.2
Office Machines	0.87	0.3	74.4	0.50	0.2
Telecommunications & Sound Equipment	52.72	18.8	3.8	50.78	19.2
Telecommunication Equipment & Parts	33.63	12.0	19.6	28.11	10.6
Sound Recorders	7.66	2.7	-8.1	8.34	3.1
Radio Broadcast Receiver	6.70	2.4	-7.5	7.25	2.7
Television Receiver	4.73	1.7	-33.2	7.08	2.7

- office machines and ADP machines and parts, with a share of 36.5 per cent, expanded by 18.2 per cent to RM102.57 billion from RM86.77 billion;
- telecommunications and sound equipment, with a share of 18.8 per cent, increased by 3.8 per cent to RM52.72 billion from RM50.78 billion.
- Products within E&E which registered double-digit growth were:
 - ADP machines, which expanded by 11 per cent to RM59.86 billion;
 - Parts for office machines and ADP machines, by 29.4 per cent to RM41.85 billion;
 - telecommunication equipment and parts, 19.6 per cent to RM33.63 billion;
 - electrical machinery and apparatus, 10.9 per cent to RM8.43 billion.
- All regional markets recorded growth in E&E exports, except for Eastern Europe, which declined by 8.7 per cent.
- Growth in E&E exports were recorded in the following regional markets:
 - North America, which increased by 5.6 per cent to RM88.11 billion in 2006;
 - North East Asia expanded by 1 per cent to RM67.5 billion. Substantial increase of 25.4 per cent was recorded in the exports of E&E to the PRC;
 - ASEAN recorded growth of 2 per cent to RM60.86 billion, mainly attributed to higher exports to Singapore, Thailand and the Philippines;
 - The EU, increased by 19.6 per cent to RM44.62 billion. Major markets which contributed to double digit growth in exports to the region include the Netherlands, Germany, France, the UK and Finland.
- In 2006, encouraging growth in exports of E&E products was also seen in the new regional markets of:
 - Latin America, which grew by 30.9 per cent to RM4.46 billion from RM3.4 billion. This was mainly to Mexico, Brazil, Panama and Argentina;
 - South Asia, by 8.8 per cent to RM3.81 billion from RM3.5 billion. The main markets were India and Pakistan;
 - West Asia, by 28.1 per cent to RM3.64 billion from RM2.84 billion. The main export destinations were Turkey, Saudi Arabia, Qatar and Iran;
 - Africa, by 18.5 per cent to RM951.7 million from RM802.8 million. South Africa was the main market accounting for 58.7 per cent of total E&E exports to this region.
- The USA, Singapore, Hong Kong SAR, the PRC and Japan remained the top five individual export destinations for Malaysia's E&E products. These markets collectively absorbed 66.9 per cent of E&E exports in 2006.

..... Continue Export & Import Performance of E&E Products

- The USA, with a 30.6 per cent share, was Malaysia's largest E&E export market in 2006. E&E exports to the USA increased by 4.8 per cent to RM85.93 billion from RM81.97 billion in 2005.
- Major E&E products exported to the USA were:
 - ADP machines, valued at RM32.47 billion or 37.8 per cent of total E&E exports to the country;
 - Parts for office machines and ADP machines, which grew by 151.6 per cent to RM16.7 billion, accounting for 19.4 per cent share;
 - Semiconductor devices, ICs, micro-assemblies, transistors and valves, with a share of 13.9 per cent, increased by 4.1 per cent to RM11.95 billion.
- Based on the statistics from the US department of Commerce, for the period January-November 2006, Malaysia accounted for 8.8 per cent of the USA's total imports of E&E products. Malaysia replaced Japan as the third major source of imports, after the PRC and Mexico.
- Singapore was the second largest export market for E&E products in 2006, with a share of 16 per cent. Valued at RM44.94 billion, exports to this market grew by 2.4 per cent from RM43.89 billion in 2005.
- Malaysia has been the main import source of E&E products for Singapore. Major E&E export items to Singapore were:
 - semiconductor devices, ICs, micro-assemblies, transistors and valves, which increased by 10.3 per cent to RM22.55 billion. These items accounted for 50.2 per cent of total E&E exports to Singapore. Higher exports of semiconductors to Singapore were due to greater demand for this product to meet the increased production of telecommunications and mobile products;
 - telecommunication equipment and parts increased by 37.7 per cent to RM6.64 billion, with a share of 14.8 per cent;
 - parts for office machines and ADP machines, valued at RM6.54 billion, accounting for 14.6 per cent share.
- In 2006, total E&E exports to Hong Kong SAR declined by 10.4 per cent to RM21.58 billion. The decline was due mainly to lower exports of semiconductor devices, ICs, micro-assemblies, transistors and valves which decreased by 17.7 per cent to RM15.05 billion. The relocation of production facilities from Hong Kong SAR to the PRC had led to the direct import of these products by the PRC.
- Malaysia was ranked fifth major source of imports of E&E products for Hong Kong SAR, accounting for 4.7 per cent of Hong Kong SAR's total imports of E&E products. Malaysia was the leading supplier of E&E products among ASEAN to Hong Kong SAR.
- The PRC accounted for 6.8 per cent of Malaysia's total E&E exports in 2006. Exports increased by 25.4 per cent to RM19.17 billion. Exports of semiconductor devices, ICs, micro-assemblies, transistors and valves, increased by 33.4 per cent to RM10.47 billion, accounting for 54.6 per cent of total E&E exports to the PRC.
- Malaysia was ranked as the fifth major import source of E&E products for the PRC in 2006, contributing to 6.4 per cent of the PRC's total imports of E&E products. Among ASEAN, Malaysia was the leading supplier of E&E products to the PRC.
- E&E exports to Japan had decreased by 1.5 per cent to RM16.47 billion in 2006 from RM16.72 billion in 2005. Lower exports were recorded for parts for office machines and ADP machines, which

decreased by 5.9 per cent to RM1.86 billion, telecommunication equipment and parts (by 3.2 per cent, RM1.54 billion), sound recorders (by 38.2 per cent, RM1.1 billion) and electrical machinery and apparatus (by 10.8 per cent, RM1 billion).

- Main E&E exports to Japan which registered increases in 2006 were semiconductor devices, ICs, micro-assemblies, transistors and valves, collectively valued at RM5.73 billion, an increase of 14.5 per cent, followed by ADP machines (RM1.71 billion) by 44 per cent and radio broadcast receiver (RM1.6 billion), by 2 per cent.
- Malaysia was ranked the sixth major source of imports of E&E products for Japan in January-November 2006, and among ASEAN, it ranked second after Thailand.

E&E Exports by Region

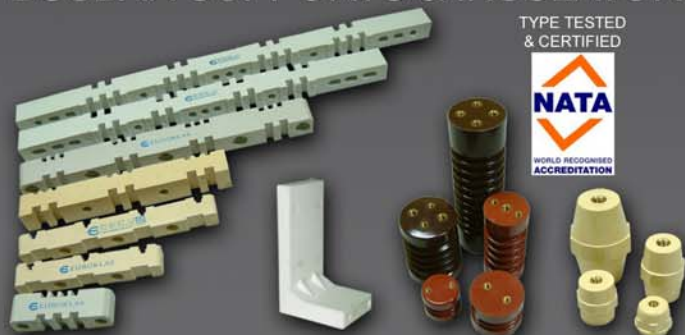
Destination	2006			2005	
	Value (RM Billion)	Share (%)	Change (%)	Value (RM Billion)	Share (%)
E&E Exports	281,006.4	100.0	6.2	264,698.9	100.0
North America	88,105.2	31.4	5.6	83,451.8	31.5
USA	85,928.7	30.6	4.8	81,967.9	31.0
North East Asia	67,496.1	24.0	1.0	66,852.3	25.3
Hong Kong SAR	21,584.0	7.7	-10.4	24,085.5	9.1
PRC	19,171.0	6.8	25.4	15,292.0	5.8
Japan	16,472.7	5.9	-1.5	16,718.1	6.3
Taiwan	5,571.9	2.0	-7.1	6,000.6	2.3
ROK	4,672.2	1.7	-1.5	4,741.3	1.8
ASEAN	60,855.3	21.7	2.0	59,691.3	22.6
Singapore	44,944.1	16.0	2.4	43,891.8	16.6
Thailand	10,582.8	3.8	2.1	10,367.5	3.9
Philippines	2,898.1	1.0	10.5	2,623.3	1.0
Indonesia	1,696.0	0.6	-16.7	2,035.2	0.8
Vietnam	601.2	0.2	-7.2	648.0	0.2
EU	44,624.3	15.9	19.6	37,324.6	14.1
Netherlands	13,953.8	5.0	25.9	11,086.8	4.2
Germany	7,430.0	2.6	7.7	6,897.2	2.6
France	6,087.6	2.2	17.1	5,197.0	2.0
UK	5,690.0	2.0	24.0	4,586.8	1.7
Finland	1,939.6	0.7	28.8	1,506.1	0.6
Latin America	4,455.5	1.6	30.9	3,403.5	1.3
Mexico	2,636.8	0.9	38.9	1,898.6	0.7
Brazil	812.1	0.3	23.1	659.6	0.2
Panama	255.2	0.1	29.9	196.4	0.1
Argentina	156.6	0.1	5.3	148.8	0.1
Chile	108.7	0.0	-20.9	137.4	0.1
South Asia	3,806.6	1.4	8.8	3,499.8	1.3
India	3,286.0	1.2	8.0	3,042.5	1.1
Pakistan	310.9	0.1	2.9	302.2	0.1
West Asia	3,634.0	1.3	28.0	2,839.2	1.1
UAE	1,972.0	0.7	16.9	1,686.4	0.6
Turkey	579.0	0.2	56.8	369.2	0.1
Saudi Arabia	374.4	0.1	9.5	341.9	0.1
Qatar	326.9	0.1	160.4	125.6	0.0
Iran	132.7	0.0	70.2	78.0	0.0
Africa	951.7	0.3	18.5	802.8	0.3
South Africa	558.2	0.2	25.4	445.2	0.2
Egypt	127.5	0.0	6.7	119.5	0.0
Morocco	58.4	0.0	39.1	42.0	0.0
Eastern Europe	586.9	0.2	-8.7	643.1	0.2
Russia	361.0	0.1	-25.5	484.3	0.2
Ukraine	129.0	0.0	19.7	107.7	0.0
Romania	27.2	0.0	-3.4	28.2	0.0

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..... Continue Export & Import Performance of E&E Products

Imports

- Imports of E&E products increased by 7.5 per cent to RM207.58 billion in 2006 from RM193.18 billion. This sub-sector accounted for 51.6 per cent of total manufactured imports.
- Major E&E imports were:
 - semiconductor devices, ICs, micro-assemblies, transistors and valves, valued at RM114.72 billion, accounting for 55.3 per cent share. Main import items under this category were parts of electronic ICs and micro-assemblies, which expanded by 8.8 per cent to RM43.19 billion;
 - parts for office machines and ADP machines (RM26.57 billion, 12.8 per cent);
 - electrical apparatus for electrical circuits and printed circuits (RM17.68 billion, 8.5 per cent);
 - telecommunication equipment and parts (RM14.54 billion, 7 per cent). Parts and accessories for TVs and radio were the major item, valued at RM6.06 billion;
 - electrical machinery and apparatus (RM13.67 billion, 6.6 per cent). Electric signaling apparatus was the major import item, valued at RM4.71 billion.
- Collectively, these items accounted for 90.2 per cent of total E&E imports in 2006.
- In 2006, the major sources of imports for E&E products were the PRC (RM35.47 billion, 17.1 per cent share), the USA (RM34.12 billion, 16.4 per cent), Japan (RM25.12 billion, 12.1 per cent), Singapore (RM23.1 billion, 11.1 per cent) and Taiwan (RM16.24 billion, 7.8 per cent). These countries accounted for 64.6 per cent of Malaysia's total E&E imports in 2006. The PRC replaced the USA as the main source of imports for E&E products in 2006.

Import Composition of E&E Products

Description	2006			2005	
	Value (RM Billion)	Share (%)	Change (%)	Value (RM Billion)	Share (%)
Electrical Machinery, Apparatus & Appliances & Parts	153.45	73.9	9.4	140.28	72.6
Semiconductor Devices, ICs, Micro-assemblies, Transistors and Valves	114.72	55.3	8.5	105.72	54.7
Electrical Apparatus for Electrical Circuits and Printed Circuits	17.68	8.5	9.6	16.14	8.4
Electrical Machinery & Apparatus	13.67	6.6	13.5	12.04	6.2
Electrical Power Machinery & Parts	3.60	1.7	15.3	3.13	1.6
Equipment For Distributing Electricity	2.24	1.1	27.6	1.76	0.9
Electrical & Non-electrical Household Equipment	1.16	0.6	9.6	1.06	0.5
Electro-diagnostic, Apparatus, Medical & Radiological Apparatus	0.37	0.2	-16.2	0.44	0.2
Office Machines & ADP Machines and Parts	37.42	18.0	2.1	36.63	19.0
Parts for Office Machines & ADP Machines	26.57	12.8	4.9	25.34	13.1
ADP Machines	10.50	5.1	-4.5	10.99	5.7
Office Machines	0.35	0.2	16.7	0.30	0.2
Telecommunication & Sound Equipment	16.71	8.1	2.7	16.27	8.4
Telecommunication Equipment & Parts	14.54	7.0	2.0	14.25	7.4
Sound Recorders	1.28	0.6	-7.7	1.39	0.7
Television Receiver	0.58	0.3	72.6	0.34	0.2
Radio Broadcast Receiver	0.31	0.1	7.2	0.29	0.1

Source: Malaysia's Trade Performance 2006 published by Malaysia External Trade Development Corporation (MATRADE).



Wiremen Course - PW 1

Introduction

This Wiremen Course (PW 1) is designed to impart the needed skill and knowledge of electrical wiring works to the apprentice wiremen, and it is conducted in accordance with the syllabus for wiremen from the Energy Commission, Malaysia.

Eligibility

- Malaysian citizen
- Not less than 18 years of age
- Completed Form 3 level in government assisted schools
- Letter of recommendation from the employer
- Two (2) years working experience in electrical wiring with Electrical Contractors or Private Wiring Units REGISTERED with the Energy Commission, Malaysia.

Course Content

- Acts and Regulations
Electricity Supply Act 1990. Electricity Regulations 1994. Wiring Regulations

2. AC and DC fundamentals

Measurement units. Power, current, voltage, inductance, capacitance. Series and parallel circuits.

3. Electrical drawings

Electrical layout diagram, wiring circuit diagram, schematic diagram, electrical symbols.

4. Cables, termination and joint

Types of wiring cables. Current carrying capacity. Types and methods of wiring joint.

5. Protection

Fuse, miniature circuit breaker and earth leakage circuit breaker. Types, operation and rating.

6. Electrical appliances

Water heater, discharge lamp, door bell, etc. Trace and rectify faults.

7. Administer safety practice

Apply first aid treatment. Safe usage of tools and equipment.

8. Test and measurement

Multi-tester, clamp tester, earth resistance tester and insulations tester. Operation and applications.

9. Wiring

Technique and methods. Types of final circuits. Consumer unit. Earthing. Lightning arrestors. Trace and rectify faults.

Course Fee

Course fee per participant is:
RM 1,800.00 (member)
RM 1,960.00 (non-member)

Examination & Certification

Candidates who pass all the tests will be awarded the Certificate of Competency as a Wiremen (PW 1).

For registration and further information, please contact the TEEAM Secretariat at:
Tel: 603-9221 4417, 9221 2091
E-mail: teeam@po.jaring.my or teeam@streamyx.com
Website: www.teeam.com



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