



Mega Kabel Factory Process Manufacturing and Testing Lab Visit

by Ir. Dr Ng Kok Chiang

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CESIG organised a visit to Mega Kabel, a world class cable manufacturing facility in Malaysia on the 10th of August 2018. The factory visit was participated by 23 IEM members. When we arrived at Mega Kabel, we were first ushered into a room where safety briefing was carried out. Everyone was properly attired with safety vest and helmet before the factory visit.



Delegation briefed on the safety procedures and equipped with PPE prepared by Mega Kabel before the factory visit



Mr Melvin Yong explaining about the strander and the bunching process

The first things we saw was the strander where the bare copper wires were elongated into the right size, diameter, and cross sectional area. Then, these strands of wires were twisted and bunched together in an automated process. In the next stage of the production, the bunched bare copper wires were coated with PVC of different colours to be completed as single PVC cables. Each and every one of the coils were carefully packed and labelled with the serial number on the label. This was for quality control and to be able to trace back batches of cables delivered to customers.



Mr Melvin Yong showing the weight of a coil of cable made with quality manufacturing and explaining the strict adherence of Mega Kabel products to the standards set by SIRIM and Suruhanjaya Tenaga.



Mr Ho Hee Suang explaining the first process of the production of XLPE/PVC/Cu Cable

On top of that, we were also shown how XLPE/PVC cables were made. The process of production of armoured cables were also shown to us, including the first process of shaping the bunched cable into a triangular diced shape before being coated with insulation PVC material. Then, these cables were placed together to produce 3 cores or 4 cores cables before the armouring process of weaving the armoured steel wire around these multiple cores were done.



Ir Chin Kim Hai enlightening delegates on the automated processes in the factory

After visiting the factory and seeing all the processes of the production, we were then brought to the Mega Kabel lab where few tests were carried out. We were shown the insulation thickness test where the thickness of the insulation of the cables were measured and checked to conform to the standards and the ranges set by SIRIM. Besides that, we were also shown the double bridge test where 1 meter of the finished goods were stripped off the insulation to its bare copper to be examined for its conductivity. The resistivity of the bare copper must be within the range acceptable by the SIRIM Standard in miliohms. The calculation of this resistivity (taking into consideration multiplying factor set in the measuring machine) was also shown to us by the technical expert.



The lab where the insulation thickness was measured to make sure all cables produced adhered strictly to the standards set by SIRIM

After that, we were shown hands-on experiment of substandard cable performance versus standard cable performance when the rated current of the test cables were injected. Temperature measurements were taken for both cables and it was shown that the temperature rise in substandard cable can exceed the disintegration temperature of 70 degC of PVC insulation. Standard cable on the other hand showed a stable temperature of around 40s degC which was well below the maximum temperature of the PVC insulation material of the cable. It was also shown that even before the MCB could trip, the substandard cable would have been heated hot enough to cause fire.



The hands-on experiment to gauge the performance of Standard cable versus Substandard cable.

Finally, we were shown the high voltage test where all products from Mega Kabel were subjected to before they could be shipped out to customer. In this high voltage test, all cores of the cables and the armoured were tested for incidences of short circuit. After the short circuit test were passed, the insulation test was carried out to make sure the insulation stayed intact after the first test (high voltage test). The high voltage test and the insulation megger test were explained in detail to us.



Mr Ho Hee Suang explaining the high voltage test at Mega Kabel

We were very impressed with the automated process at Mega Kabel and the quality checks that were so stringent that the quality of the cables produced was uncompromised. We now understood why Mega Kabel is the country's leading cable manufacturer which is always in the highest demand. With dedicated staff and efficient automated processes, it is undeniable that Mega Kabel is one of the top cable manufacturers in Malaysia where all the cables produced can really be assured of the quality and performance.