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Winning
THROUGH DIFFERENTIATION

"The festival of lights is just around the corner. Wish you all a Very Happy Diwali".

FROM THE ED's DESK

Dear Friends,

Safety, Quality, Environment and CSR are all engaging the minds of business leaders across India, even as the developed nations consider these as the minimum to remain engaged with customers. While we have some minimal legislations for Safety and Environment, and now CSR spending, Quality remains a figment of the beholder's mind. And hence, we see minimalistic cables co-existing with the best in class, and distinguishing one from the other is left to the conscience of the buyer.

At RPG Cables, we not only take each of these seriously, but we have also developed yardsticks and targets for continuous improvement. Some of these include:

- IGBC Green Certification (Platinum) for our Vadodara plant
- Integrated Management System (IMS) Certification for our Mysore plant
- Several Quality Awards under our belt
- Zero Lost Time Injury (LTI) goal
- High Performance Teams (HPT) with 'Earn and Learn' programs for poor children unable to afford higher education

We, at RPG Cables, spend an inordinate amount of time, money and effort in continually improving not only the quality of cables supplied to our customers, but also the building blocks of how these are made in our facilities and delivered to you: because we believe it's worth it! Additionally, we are also enhancing your understanding of cables through our "Infinity" Knowledge Sharing programs.

We have now successfully manufactured 220kV 2000 sq mm Copper cables at our facility at Vadodra. These are the largest size cables ever manufactured in India, and are currently under testing. We invite you to visit our facility some time and personally witness the testing.

Season's Greetings and Best Wishes,

Sincerely,
Nikhil Gupta

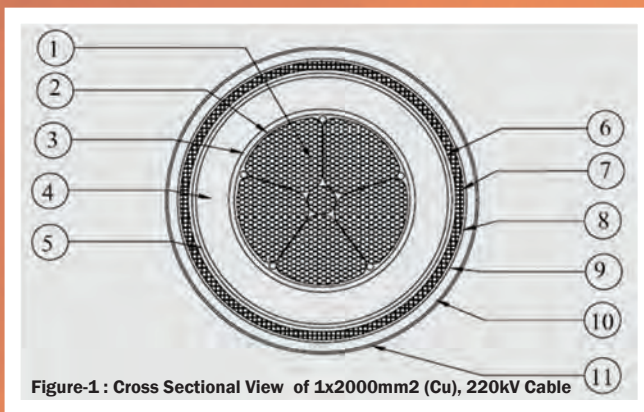


Figure-1 : Cross Sectional View of 1x2000mm2 (Cu), 220kV Cable

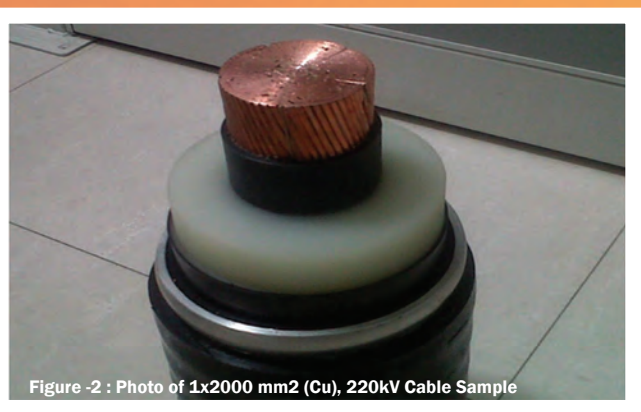


Figure -2 : Photo of 1x2000 mm2 (Cu), 220kV Cable Sample

RPG CABLES SUCCESSFULLY MANUFACTURED 220kV AT VADODARA

BACKGROUND :

RPG Cables (a division of KEC International Limited) is one of the leading HV & EHV Cable manufacturers in India, with state-of-art manufacturing facilities at its Vadodara Plant. The Company is an established manufacturer for EHV cables up to 132kV grade XLPE Cables, with credentials of hundreds of kilometres of EHV Cables up to 132kV grade supplied to various utilities and industrial customers over the last 20 years.

To tap the opportunity of growing demand of 220kV XLPE Cables in India, it was decided to manufacture these cables and get them tested for Type Test and Pre Qualification (PQ) Test in an international independent test laboratory to prove the capability of the Company and also to enhance its credentials and meet the qualification criteria.

The Company has successfully manufactured and tested this cable at its Vadodara plant recently.

SELECTION OF CABLE SIZE :

Specifications of utilities that are currently using 220kV XLPE cables were reviewed for selection of cable size. Most of the utilities are using 220kV XLPE cables of sizes up to 1200mm² with aluminium/copper conductor. However, we have selected cable size 2000mm² keeping in view the future requirements. The Type Test and PQ Test once completed on 2000mm² size cable will be valid for cables of lower sizes as well. RPG Cables is the first company in India to have manufactured 220kV XLPE Cable of 2000mm² size.

CABLE CONSTRUCTION :

Cable construction with Copper conductor, Triple layer Dry Cured XLPE Insulation, Corrugated Aluminium metallic sheath and HDPE outer sheath with longitudinal and radial water tightness was chosen to manufacture,

which is widely preferred construction for EHV cables. Cable components are shown in cross sectional view and photograph below.

S. No.	Components/ Description
1.	Annealed Plain Copper conductor, Milliken conductor (2000 mm2)
2.	Semi-conducting Binder tape over conductor
3.	Conductor Screening of Extruded Semi-conducting layer
4.	XLPE Insulation
5.	Insulation screening of Extruded Semi-conducting layer
6.	Longitudinal Water barrier of Semiconducting water blocking tapes (s)
7.	Metallic Sheath (Corrugated Aluminium Sheath)
8.	Corrosion resistant coating over metallic sheath
9.	Corrosion protection tape
10.	Black HDPE Outer sheath
11.	Extruded conductive coating over HDPE outer sheath

MANUFACTURING PROCESS & QUALITY CONTROL :

The Conductor is 2000mm² Milliken Copper Conductor consisting of 5 segments. Profile of segments and tools were well designed to have a perfect shape of segments. All the segments were then assembled in a drum twister and taped to have a perfect shape of the conductor. The drum twister is from M/s Cortinovis, Italy, especially suitable for assembly of conductor segments of Milliken conductor.

The triple layer XLPE insulation (Semiconducting Conductor Screen, XLPE Insulation and Semiconducting Insulation screen) was extruded in Completely Dry Cure & Dry Cool (CDCC) Triple extrusion process through a

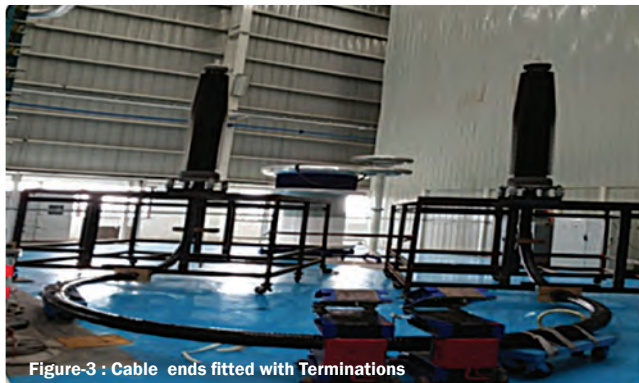


Figure-3 : Cable ends fitted with Terminations



Figure-4 : Test Loop for Heating Cycle Voltage Test

RPG CABLES SUCCESSFULLY MANUFACTURED 220kV AT VADODARA... contd.

Common Crosshead in CCV Line. The CCV line installed at the Vadodara plant is an advanced extrusion line of Maillefer Finland make, specially designed for the manufacturing of cables up to 400kV grades, equipped with Entry Heat Treatment (EHT) process for best eccentricity control and to ensure roundness of the cable.

The insulation was carried out in 1000 class clean environment with bottom opening and gravity feeding of XLPE insulation & Semiconducting compounds to avoid any contamination and foreign particles coming into contact with insulation.

The CCV line also has an X-ray on line dimensional monitoring and display to have better dimensional control.

After the triple layer insulation, the insulated core was kept in de-gassing oven for release of trapped gases (by-product of cross linking process), before the application of metallic sheath.

After de-gassing of core, the XLPE insulation was tested for transparency to check and ensure that insulation is free from voids. The XLPE insulation was also tested for Hot Set Test to check and ensure cross linking of XLPE insulation.

After de-gassing, further protective layers – longitudinal water barrier, Metallic sheath, corrosion protection layer over metallic sheath and HDPE outer sheath were applied as per the construction given above.

Cables was manufactured under strict quality checks and inspections at each stage – right from Raw Materials to In Process and Finished Cable stage.

TESTING OF FINISHED CABLE :

After completion of the manufacturing process, the cable (full drum length) was tested for Routine Tests as per International Standard IEC 62067.

S. No.	Details of Tests	Test Requirements	Test Results
1	High Voltage Test	318 kV for 30 Minutes	Withstood
2	Partial Discharge Test	< 10 pC	Observed value <2pC at 1.5 U ₀ (190kV)
3	Measurement of Conductor Resistance	Max DC resistance: 0.009 Ω/Km at 20°C	Observed conductor resistance <0.009 Ω/Km at 20°C
4	DC Voltage Test on Outer Sheath	25kV (DC) for One minute	Withstood

The cable is now under in-house Type Testing as per IEC 62067.

For electrical Type Tests, the cable sample was first tested for Bending Test. The cable is being tested for electrical tests using 2 Nos. 220kV Porcelain Terminations (Ref: Figure 3). The Porcelain Terminations were installed by expert jointers of termination supplier.

Cable was tested for Partial discharge test after installation of terminations and then the test loop was put into Heating Cycle Voltage Test, which is in progress (Ref: Figure 4).

Non-Electrical Tests as per IEC 62067 are also in progress parallelly. The in-house type testing is expected to be completed by October 2013.

Immediately upon completion of in-house Type Testing, the cable shall be sent to an independent test laboratory of international repute for complete Type Tests and PQ Test on cable system, as per IEC 62067.



REACHING OUT

INFINITY AT MYSORE

We organised our customer engagement program “Infinity” at our Mysore facility in September. More than 50 customers such as L&T, BARC, ABB and a team of contractors from Coimbatore participated in the event and made it huge success. We had several questions from the users which made it an interactive session. This was a great opportunity for our customers not only to see the largest and the most diversified cables factory in India at Mysore, but also the only cables factory in India with an Integrated Management System encompassing ISO 9000, 14000 and 18000 standards, and learn about cable design, manufacturing process and installation.

KENGEN 2013

We participated in an exhibition in Kenya-‘KENGEN 2013’ in September. KENGEN is basically a generation

company; and KPLC and KETRACO are the main users of cable. The exhibition presented a great opportunity for us to showcase our products and technology to the East African market. It helped us display our capabilities and access to these utilities. Our stall was visited by the Chairman of KENGEN, with his MD and a team of 100 members.

ELECTRICAL CONTRACTORS MEET IN KOLKATA

A seminar was arranged for the Electrical Contractors’ Association of Eastern India in Kolkata, which was keenly followed by Shri Sadhan Pande (Minister of Consumer Affairs, Govt. of West Bengal) and Shri Dibyendu Basu (President-Electrical BNCCI).





RPG ANNUAL CONFERENCE 2013

In the previous year, most optimists harboured hopes of a global economic revival. However, looking at the current adverse scenario, they will revisit their thoughts. It is certainly pointless to wager on any external stimulus. Therefore, what is it that we must do differently? In fact, we must do exactly that—We Must Differentiate.

Back in the 19th century, reinventing the wheel was a trend, today it is routine. In fact, today it is the formula to be a winner. Differentiation is nothing new, but it continues to be an effective management tool. And, some of the examples of successful 'differentiated strategies' have become corporate folklore.

The bigwigs at RPG congregated at the RPG Annual Conference 2013 to brainstorm on how to maintain this pattern—winning through differentiation. "There may be some uncertainty in the days to come. There will also be difficult market situations. We don't have

much of a choice really. We have to combat it," said RPG Group's Chairman Harsh Goenka, as he raised the curtain for the Annual Conference. The two-day event was held at Hotel Grand Hyatt in Mumbai on September 25-26. 'Winning through Differentiation' was the theme for the Annual Conference.

The conference welcomed a host of highly knowledgeable and experienced guest speakers. The list included prominent executives such as Rajeev Dubey, Group HR & After-Market and Member of the Group Executive Board, Mahindra & Mahindra Ltd; Nitin Paranjpe, CEO & Managing Director, Unilever; and, Aditya Ghosh, President & Executive Director, Indigo. The Guest Speakers, with their exhaustive experiences in business strategy, effectively worked out differentiated strategies for their respective businesses.



“There may be some uncertainty in the days to come. There will also be difficult market situations. We don’t have much of a choice really. We have to combat it.”

- Harsh Goenka
Chairman, RPG Group

FROM THE NEWS DESK

GOLD AWARD WON BY OUR TEAM AT VADODARA

RPG Cables at Vadodara participated in the ‘24th Annual Convention of Quality Circle Forum of India, Vadodara’. Our team participated with the following two case studies:

- 5S Implementation under 5S category
- Capacity Utilisation Improvement under Lean Quality Circle category

What is specially noteworthy is that even after participating for the first time, both the presentations bagged the Gold Award.



WELCOME ABOARD /ON THE MOVE

- We welcome Mr. Yogendra Tiwari, “Head – Technical” at Vadodara plant. He has joined us after his stint with Universal Cables and Cable Corporation of India.
- Mr. Pradeep Chouhan has moved from Jaipur to Jodhpur office.
- We have shifted our Vadodara office to the new address as given below:
307-B, 3rd floor, Atlantis, Besides Central Sqaure, Sarabhai Main Road, Vadodara-390 007.



For additional information/details/queries and to subscribe to C2C, please write to:

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