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*Because the goodwill of those we serve is the foundation of our success it's a real pleasure at this holiday time to say "Thank You" as we wish you a full year of happiness and prosperity.*



*Our Greenfield Plant at Vadodara*

## FROM THE ED's DESK

Dear Friends,

We are going through a phase where the supply growth of power cables, due to capacity expansion, is greater than the demand growth, due to a slow down of investments in the infrastructure space, including the Power Sector, Real Estate and industry. As always, this leads to cut-throat competition in the industry for a smaller size of available business. And too often this is at the cost of compromises in quality, safety and the environment, in order to meet the price lines.

Our company remains committed to delivering quality cables to our esteemed customers, on time, while protecting the long term interests of our country. Sometimes this would mean saying no to price reductions to our loyal customers. To experience, first hand, the standards to which we manufacture our cables, we invite you to visit our Greenfield Facility at Vadodra, which is all set to welcome you. We expect that you will go back, enlightened and changed!

On behalf of our team, I wish you a Merry Christmas and a Very Happy and Prosperous New Year.

Best Wishes  
**Nikhil Gupta**



## CURRENT CARRYING CAPACITY

### SHORT TIME AND CYCLIC RATINGS

Very often it has been seen that load on cable is cyclic rather than sustained. Cables, particularly when buried, may take 24 hours or even longer for the temperature to build up to the equilibrium conditions on which sustained ratings are based. The heating of cable in operation is exponential and hence during sustained loading the rise in temperature is slow as it reaches to equilibrium. Hence maximum load for a few hours or load below maximum for a longer period needs to be known to calculate a current carrying capacity to suit the circumstances.

Cable diameter also plays major role in cyclic ratings, because as surface area increases with diameter, the rate of dissipation of heat is more. This is why, generally small size cables have a lower rating in air than in the ground, whereas the reverse applies for large size cables. Cables in air get heated up very quickly compared to buried cables. Hence installation condition of cables plays important role in calculating short time currents and cyclic loads over a 24 hour period, along with other factors like type and reproducibility of the cycle, the effect of any other cables in the vicinity and the thermal resistivity of the soil.

### CONCLUSION – CURRENT CARRYING CAPACITY

In cables, an important aspect is the selection of the optimum size of conductor to achieve most economical solution in terms of cost and subsequent operation of cable. While the continuous current carrying capacity is paramount, other factors such as voltage drop, cost of losses and ability to carry short-circuit currents must not

be neglected at the time of selection. The most convenient way to establish a rating for a particular cable design is to calculate amperage which can be carried continuously under prescribed standard conditions. Appropriate factors may then be applied to cater to the actual installation conditions and mode of operation. Two important parameters in establishing ratings for standard operating conditions for particular installations are the ambient temperature and the permissible temperature rise.

To conclude, fundamentally, the current carrying capacity of cable needs to be calculated keeping following points into consideration:

#### ■ RATING DETERMINATION

#### ■ CONSIDERATION OF LOSSES

- Conductor resistance loss
- Dielectric loss
- Loss in metal sheaths and armour

#### ■ THERMAL RESISTANCES

#### ■ IMPORTANT PARAMETERS WHICH AFFECT RATINGS

- Temperature
- Cable design
- Conditions of installation
- Effects of neighbouring cables

#### ■ AMBIENT AND CABLE OPERATING TEMPERATURES





## CURRENT CARRYING CAPACITY

### ■ EFFECT OF INSTALLATION CONDITIONS ON RATINGS

- Depth of burial
- Thermal resistivity of the soil

### ■ STANDARD OPERATING CONDITIONS AND RATING FACTORS

- Cables installed in air
- Cables laid direct in ground
- Cables installed in ducts

### ■ SUSTAINED RATINGS FOR CABLES

- Ambient temperature
- Excess current protection
- Selection of cable size
- Group rating factors
- Thermal insulation

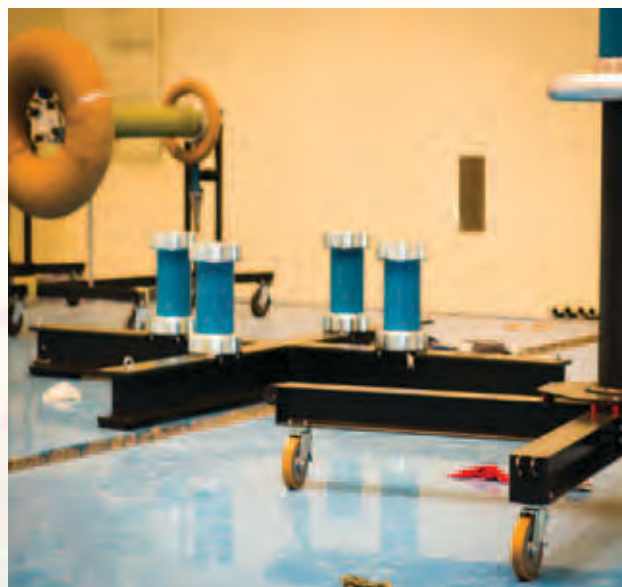
### ■ SHORT TIME AND CYCLIC RATINGS

Each of the above have a bearing on the Current Carrying Capacity of the Cable you buy. These were covered in the September 2011, February 2012 and August 2012 editions of C2C.

If you have missed these issues, do write to us for your copy.

Should you require any help in designing the correct cable for your unique requirement, our team will be happy to help you.

Ref: BICC Handbook



“Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives.”

— William A. Foster

## VADODARA - THE JOURNEY CONTINUES

### SYSTEMS APPROACH TO QUALITY

It is the belief of RPG Cables that world class equipment and world class people are not enough to achieve world class results sustainably. A system approach for safety, quality, efficiency, delivery and cost has to be implemented and audited continually in order to achieve an optimum interface between man and machine. Documentation such as daily production report, in-process control are regularly filled by the HPTs (High Performance Teams) to maintain track of the production target and any non conformance that are occurring in the process.

**Standard Work Instructions(SWI)** employed at each process is a detailed, documented and visual system by which associates develop and follow a series of predefined process steps.

It includes instructions to run the machine, tool selection (die, point, spanners etc.) reference material, reference photographs, highlights for Quality, Environment, Safety. The SWIs represent

the current best practices for HPTs to follow in the completion of their jobs.

All HPTs are free to suggest any updation in the SWIs to make it more relevant and enhance the efficiency. Checklists are prepared to monitor the skills of HPT member for their respective Teams. Check lists covers all operations in which the members should have thorough knowledge and defined skills.

**SQEDC** (Safety, Quality, Efficiency, Delivery, Cost) is a tool for visually monitoring of the key parameters on a particular process.

- Gives a focused approach to solve many minor issues which have the potential of becoming big problem for the operation of the plant.
- Helps debottleneck the process. Any gaps are removed through structured problem solving, accountability and solution focus.







## VADODARA - THE JOURNEY CONTINUES

- Tracks the daily attendance of the team which includes all the operators responsible for running a particular machine. Monitor the daily safety related incident/accident which has taken place and effective steps to counter it from happening in future
- Plan V/S actual production is tracked to understand the trend and improve the efficiency for the process.

**5S system** helps to eliminate waste, streamline production, and optimize efficiencies. 5S thinking, makes a commitment to put safety, organization and effectiveness ahead of profits. It has been initiated in the armouring area. Regular housekeeping is being monitored as a part of this initiation.

Also the shadow board is installed in close vicinity to the area of operation for the tools availability as well as to reduce the time during the machine operations.

## FROM THE NEWS DESK

As opportunities grow, so does our team. Recently RPG Cables has opened new Sales Offices in the North of India at Ludhiana and Jaipur, along with one in West at Nagpur. For details, please do contact:

- Mr. Yatinder Rana (Ludhiana): +919216594049
- Mr. Pradeep Chouhan (Jaipur): +917665000410
- Mr. Jayendra Maneck (Nagpur): +919823539153

Also, Mr. Bhushan Pawar has newly joined us in Pune as the Branch Head. He can be contacted at +919673996861





## REACHING OUT...

We are continually looking at different opportunities to serve our customers in our own unique way, and offer products and solutions expected by them. Here are some new initiatives taken by us.

### VISIT OUR GREENFIELD FACILITY AT VADODARA:

We are pleased to inform our readers that our Extra High Voltage Cables plant at Vadodara for manufacture of cables upto 220 kV is now up and ready and trial production has already commenced. In addition to our current range of cables, we will be able to offer the following additional specs:

- Aluminium Corrugated
- Milliken Conductors
- Aluminium Conductors upto 2500 sqmm
- Copper Conductors upto 2000 sqmm

It will be our pleasure to welcome you to our new Greenfield facility at Vadodara on your next visit to the city.

### CUSTOMER TRAINING

Even though it may look straight forward, there are many nuances in the design and manufacture of cables. These could have a significant bearing

on the initial cost of procurement and subsequent running costs of your facilities. We have a team of experts who can guide you in the selection and design of your requirements of cables.

As a part of our customer education program, we are happy to announce the first ever cables initiative by inviting the technical members of your Project/ Maintenance teams to our factory at Vadodara for a fully day long program on

### **“Design and Fundamental of Cables” On 24<sup>th</sup> January, 2013.**

Over a period of one year, we hope to train our customers in good practices of cable design and manufacture through this initiative.

Since seats are limited, we request you to nominate one to two persons in your organization for the above program. All costs at Vadodara towards the program will be paid by our company. You only have to make arrangements for travel and stay of your personnel.

Please write to [choudharynd@kecrpg.com](mailto:choudharynd@kecrpg.com) or call on 022-66670322 to reserve your seats for the program.

Please send your nominations by 10<sup>th</sup> January, 2013

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

Mrs. Mayuri Mangaonkar Dhumale, Ms. Neha Choudhary

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