

From Editor's Desk

Dear fellow CEEAMA Members, Greetings!!!

In the March Edition, when we made a remark about the Covid-19 threat staring at the world, little did we realise that our lives and the world around us will be changed so dramatically in next few weeks. While the developed countries are at a loss of idea as to how to handle the Covid-19 which is a declared pandemic now by WHO, India has performed much better so far in dealing with it, due to our policy of Humans first and Economy next.

The last 3 weeks of the lockdown have given us an opportunity to take a pause and look at our lives afresh. For many of us it's an opportunity given to do introspection, spend time with family members at home, pursue hobbies, etc. Of course, this lock down will have a huge adverse impact on our economy and the magnitude of it will only be clear once the life returns to normal.

On the night of 5th April 2020 @9pm when there was a nationwide black out, the Electrical Engineers and their teams ensured that in spite of sudden drop in the load demand on the National Grid, it's stability was handled in a professional way to avoid any grid failure. It's indeed true that the most difficult situations bring out the best in the people.

In this emergency situation, Administration Officers, Government Employees, Doctors, paramedics, other support staff, sweepers & cleaning workers and Police are selflessly working 24x7, risking their own lives and that of their family members, to defeat Covid-19. Their stories that we hear everyday are really inspiring! A big salute to these Warriors!!

Next few weeks CEEAMA will not have any events planned, however all of you are encouraged to participate in Webinars arranged by various Organisations, and utilise your time in upgrading your knowledge and skills.

Please do take good care of yourself and your near & dear ones.

Stay Home, Stay Healthy & Stay Safe!

Article : Strategic Planning For RELIABILITY and MAX UPTIME in Electrical Distribution Deepak Vaidya – Marine Electricals (India) Limited.



Reader's Forum

In response to our appeal to send answers to the practical questions raised by readers in last month's E-News, we are happy to inform that we have received several answers which are scrutinized by our technical team. The appropriate answers to the practical questions are provided here below for reader's benefit.

Question-1

Please explain the purpose of round table conference and what action CEEAMA takes to resolve issue taken up in Round table conference (I am especially interested in KVA billing RC).

Answer: The purpose of the round table is to do brainstorming on the issues which concern all stake holders like Consultants, Vendors, Contractors and Clients; one way or the other. CEEAMA takes up these issues with concerned Authorities and Experts who are involved in it.

RC on kVAh billing was arranged to discuss and check the awareness among all stakeholders. MERC had already ordered in their Sept 2018 notice that kVAh billing will start from 1st April 2020, which they have followed and kVAh billing has already started from 1st April in Maharashtra.

In Mumbai RC, a valid suggestion had come from some very senior retired officer advising Discoms not to change the meters, but they have already done so. PF incentive is not available now with kVAh billing.

CEEAMA RC minutes had reached MSEDCL head office which conveyed discomfort in consumers because of new kVAh billing. Due to consumer pressure, as a part of some relief measures, MSEDCL has offered slab wise bulk discount up to 2% on bills vide their order.

The end-user representative who attended the meeting probably also understood commercial side of the available solutions and their paybacks.

Question-2

We have few motor in our plant with Electronic motor controller. Please guide us in recommending what type of protection to be provided.

Answer: Earlier in industry, Motor used to be protected by Bi-metallic relay for thermal overload and Fuse/ Moulded case circuit breaker (MCCB)/ Motor circuit Protector (MCP) for short circuit protection. But now a days, bi-metallic relay is replaced by Intelligent motor controller which provide Thermal overload, current unbalance, ground fault, no. of motor operation, lock rotor protection and many more protections. This is a vast topic for discussion as what protection to be provided depends on size of motor also. We will try to publish article on this topic in E-news in future.



Strategic Planning For RELIABILITY and MAX UPTIME in Electrical Distribution Deepak Vaidya – Marine Electricals (India) Limited.

Introduction



In the Last decade there has been explosion of the information technology fuelled by spread of internet. Every day, we all are experiencing the changes in our lives brought in by change in the type of communication, speed of communication, ease of communication, language of communication. This has changed our way of thinking, relationships, business practices, habits, so on & so forth. This new era is bringing up almost limitless possibilities; new ideas are popping up every day. While everything seems to become easy and accessible to all, we are also facing some new challenges and difficulties, which all of us are aware of.

In the similar way, we have seen many breakthrough developments in engineering and specifically, electrical field.

At the turn of 21st century, we saw convergence of electronics in the electrical protection devices like breakers and motor management relays. This enabled metering and advanced protection units getting embedded in the Breakers. This was the start of the digitization in the electrical devices.

Soon followed by the spread of internet, getting real time data became the possibility and this opened many doors for analytics like energy management, asset management, predictive maintenance, etc. We now see many applications being developed around this. This brought in digitalization of the system

Now with Internet of Things (IoT), there is possibility of the individual devices in the system talking to each other, and this will not be limited to only electrical devices but lot many field devices, and may be even unconventional sensors. This opens up lot of opportunities to make systems more and more reliable and improve efficiency of the electrical substation systems. With this, we can achieve true digital transformation of the entire system.

At the same time there will be new challenges to be tackled, new thinking to be brought in and the way we work in future will change drastically.



Digital Transformation

The Smart systems in this digital transformation is driven by three basic elements as follows:



Of these three elements, the first two, Sensors and Connectivity, are technology and innovation driven and we will continue to get more and more innovative solutions to make the applications and usage easier, and faster.

Benefits of the digital transformation can be achieved only by harnessing people involved in the entire ecosystem, based on their rich experiences and pain points they have faced and also experienced people from other streams like application software analytics to analyze the huge data generated and direct the smart devices with actionable outputs.



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Not only this, we will also have to surely involve application experts, software experts, and experts from different unconventional fields.

Last but not the least, we will have to have mind open for experimentation without compromising on the basic safety of the equipment and overall safety of the personnel and the property. That means, as mentioned in the first point, we must have robust, tested and proven basic equipment in the first place.

Some concerns

While everything looks nice and futuristic, these are evolving ideas. We must also consider few concerns, while we embark on this new journey on unchartered path

- There is no standard solution, no known standard to validate accuracy, and reliability of the solution.
- Although many checks are in place, cybersecurity and privacy of data is still a concern.
- Reach, reliability and speed of internet.
- Availability of experts, and reskilling of people.
- Change in job patterns, and job losses.

We all are sure that despite these concerns the advantages offered Industry 4.0 /IoT are huge, may be unthinkable and these concerns will vanish as we get more and more into this technology.

Few examples of solutions/ applications

- Ambient
- Real time thermal Imaging in the switchboards



As we get more and more real time data on a large scale, we can imagine to have many applications not only in the domain we are operating but inputs and outputs to different verticals and domains to achieve:

- Improved Reliability of the system
- Optimized solutions for reducing cost
- Empowerment of people with actionable real time information.
- Creative new services
- New revenue stream

While there are many applications being developed and we have been using them day in and day out in our personal lives, replicating it in the industrial applications is not going to be simple, as we are dealing with the protection systems and safety equipment.

It will be more and more complex, considering the sheer number of devices getting connected, and the amount of information being collected, interdependency of the systems and complexity involved. At the same time we are at present seeing only tip of the iceberg and benefits are huge. There are limitless opportunities presented by Industry 4.0. Literally, imagination is the limit.

However, like in any technological revolution, we need to experiment with focused goals and with discipline to enjoy the benefits in longer run.

How to go about

Fix the basics first

While we embark on the journey of Industry 4.0, we must have fundamental basics in place.

All the equipment in the substation in the critical applications have to perform very complex operation. Hence these equipment must be procured from the reputed and knowledgeable suppliers having adequate design knowledge, infrastructure and the pool of experts and proven track record. The designs of the equipment they supply must be not only type tested but also certified and validated for adherence to relevant standards by international agencies to ensure comprehensive safety and not just couple of isolated type tests.

Second, IoT is developing technology, which offers flexibility to develop solutions specific to a particular need. Although over a period there is possibility of developing standardized solution, still it may have to be customized to a particular need. Hence defining precisely the problem well and expected results will be needed. Get every possible input and the data needed to get final results.

Third, to get full benefit of IoT, it is important that we harness all possible expertise in the entire ecosystem. All the people in the ecosystem need not necessarily have entire lifecycle knowledge and expertise regarding usage of the device in the system. Hence, we must harness cumulative expertise of all the people involved in the ecosystem. Starting from the manufacturer of IoT enabled devices, specifiers, assemblers, system integrators, erection and commissioning experts, maintenance personnel and of course the users.



Although basic real-time thermal imaging is already available, the data generated can be utilized for real time decision making like:

- Dynamic loading patters based ambient temperature
- Automatic forced cooling in case of temporary overloading /high temperature
- Harmonic load balancing
- Managing Multiple conventional and non-conventional power sources
 - Effectively manage distributed, intermittent energy sources like solar, and wind power sources along with conventional.
 - Online load and resource management.

In addition, there are many ideas being generated which utilize different un-conventional sensing technologies for improving the uptime and reliability of the electrical system for sensing the impending failure and alarming us viz. smell, sound, vibrations, etc.

Conclusion

In last two decades we have come a long way from basic integration of electronics into electrical devices enabling digitization to utilizing its site-specific applications.

The benefits of the industry 4.0/ IoT will offer limitless possibilities. There is going to be digital transformation using the wide variety of the applications that are already a reality and many more will pop up in near future.

The costs and complexity of digitized products is decreasing at fast pace, cybersecurity regulations are evolving and internet is spreading everywhere, and the speed is increasing day by day.

All this will enable to improve the reliability uptime in the electrical substations and also help to optimize the overall substation equipment.

However, we must not overlook basic functionality of important substation equipment like Switchboards and transformers by ensuring full certification and type testing to ensure proven designs.





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No.CE/COMM/Tariff/MYT20-25/9061

Date:03/04/2020

COMMERCIAL CIRCULAR NO.323

Subject: Revision in Electricity Tariff w.e.f. 1st April 2020 and implementation thereof. [For Control Period FY 2020-21 to FY 2024-25]

Ref: MERC Order in Case No. 322 of 2019 dated 30 March 2020.

The Maharashtra Electricity Regulatory Commission, in exercise of the powers vested in it under Sections 61, 62 and 86 of the Electricity Act, 2003 (EA, 2003) and all other powers enabling it in this behalf, and after taking into consideration all the submissions made by MSEDCL and in the public consultation process, and all other relevant material, has approved the Truing-up of ARR for FY 2017-18 and FY 2018-19, Provisional Truing-up of ARR for FY 2019-20 and ARR and Tariff of Control Period FY 2020-21 to FY 2024-25 vide Order in Case No. 322 of 2019 dated 30 March 2020.

Accordingly, the guidelines as under are issued for implementation of the said Order of the Hon'ble Commission without prejudice to the right of MSEDCL to take any action as provided in the law.

1. Applicability of Tariffs

a) The revised Tariff as per this Order shall be applicable from 1 April, 2020 and will be continue to be in force till further Orders.

b) Where the billing cycle of a consumer is different from the date of applicability of the revised tariffs, the tariffs Should be applicable for the consumption on pro-rat basis. The bills for the respective periods as per the existing And revised tariffs shall be calculated based on the pro rata consumptions (units consumed during the respective Periods arrived on the basis of average unit consumption per day multiplied with number of days in the respective Period falling under the billing cycle).

2. Special Interim Dispensation in view of epidemic Covid19:

To mitigate to some extent the difficulties being faced by the Electricity consumers of Maharashtra and all out efforts to contain the spread of Corona Pandemic;

a) Commission issued a practice direction on 26/3/2020 whereby meter reading and physical bill distribution work was suspended and utilities were asked to issue bills on average usage basis till the current crisis gets subsided.

b) To put a moratorium on payment of fixed charges of the electricity bill by consumers under Industrial and commercial category for next three billing cycles beginning from the lockdown date of 25/3/2020.

3. kVAh Based Billing:

a) Hon'ble Commission allows MSEDCL to implement kVAh based billing for HT Consumers at present. The same shall be effective from 1 April, 2020.

PLEASE DOWNLOAD THE BELOW LINK OF COMMERCIAL CIRCULAR NO.323

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Reader can refer to below link for further study in Intelligent motor controller by reputed vendors; Motor controller UMC100 provided by ABB:

https://new.abb.com/low-voltage/products/motor-controllers/universal-motor-controllers/umc100

Motor Controller SIMOCODE provided by Siemens

https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10024436?activeTab=order®ion Url=WW

Motor Controller TeSys provided by Schneider:

https://www.se.com/ww/en/product/LTMR08CBD/motor-controller-ltmr-tesys-t---24-v-dc-8-a-for-canopen/

Question-3

Tin plating of conductor for MV and LV XPLE cable is always required, or it is required for specific application? Whether plain aluminum or copper conductor can be used in saline atmosphere plant?

Answer: Tin platting of conductor for cable is generally not required for commercial used cables. The cable conductor normally used is plain conductor. However, Metal coatings are often applied to the surface of individual wire strands in electrical conductors to improve solderability, reduce oxidation (corrosion) or improve electrical properties at high frequencies. Tin plated conductor is mainly used for cable used in marine atmosphere or where highly saline atmosphere is present.

We have not received questions in this month; maybe due to COVID-19, but hope to receive few more questions in coming days or months.

We would like to hear from you on following by writing to us at admin@ceeama.org

- 1) Feedback on this issue.
- 2) Suggestions for new topics you would want to be discussed in E-News
- 3) Your own article to be published in E-News.

