



CEEAMA E-NEWS

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Volume 3 Issue # 21

Electrical Consultants' Newsletter

January 2021

From Editor's Desk

Dear fellow CEEAMA Members,

We are really delighted to bring to you the first Edition of 2021, that is January Edition of CEEAMA E-News.

At the outset let me wish All the Members a very happy, prosperous, peaceful, and healthy New year 2021!

At the beginning of this year the first thought that comes to our mind is, thank God the year 2020 is over! I am sure that in all our life we never had such a year which we all desperately wanted to end. All of us must have gone through some unbelievable and unforgettable experiences @ personal, professional, or social level in the year 2020. Please do share the same with us and we can publish them for the benefit of other Members.

As expected, the rollout plan for Vaccination has just been announced and its going to start from 16th January 2021. The dry runs are successfully done, and the entire health infrastructure is geared up to start one of the biggest vaccination exercises in the history of human race. First priority will be naturally given to front line health workers and warriors which is about 3 Crore people. As we know that every citizen may not need vaccination and around 30 Crore Indians will be vaccinated in next 6-7 months.

At the industry level, things have started to assume pace as the demand shows positive signs. Further the plans of project designs and launch is gaining momentum which gives us indication that all of us are going to get quite busy very soon. The improved GST collections are quite promising and indicate revival of economic activities. This also encourages us to rethink on holding CEEAMATECH Exhibition some time during summer of 2021. Though it would be premature to make any announcements at this stage, All the Exhibitors and their decision makers can certainly give some thoughts to it.

CEEAMA is continuing with efforts of knowledge sharing and enhancement by means of Webinars, and "There was no webinar held in the month of December 2020. We will try to organise more webinars in coming months." We once again appeal to all members to send their Technical Articles to us, so that the value of E News gets enhanced. Please also share your experiences of year 2020 with others.

We received very encouraging response to the "Technical Quiz", introduced last month. Our Quiz Master has arrived at the results and the same is published in this Edition. I am sure that all of you will find it interesting & participate in large numbers.

Best wishes from the Team, and don't forget to follow social distancing, stay safe & Remain healthy.

Warm Regards,

Abhay Pimpalkhare

Editorial Committee

Comments on “Section 22 Quality of Power - Draft Supply Code 2020” by MERC.

Article By:

Mr. Narendra Duvedi
Executive Director
Sas Powertech P.Ltd

On behalf of CEEAMA, we have submitted our comments and suggestions regarding this section formally. What follows is an edited version of our submissions. (The draft was circulated to members with CEEAMA ENEWS Dec 2020 issue)

Supply code document mainly covers technical relationship between consumer and distribution franchisee. This document also covers procedures for applying for new connections, technical requirements from a new installation etc. The penalties to be levied on either side and other standard charges are also covered in this document. The prevailing version of supply code as applicable to Maharashtra is SUPPLY CODE 2005, which was amended for few minor corrections during last 15 years. Now MERC has drafted a completely new version of this as **Supply Code 2020** and was available for comments till 29th Dec 2020. This version has introduced a totally new **Section Ref 22** regarding **POWER QUALITY**. Bilateral compliance requirements and penalties are spelled out in this section. MERC must be one of the first regulatory bodies in India to take initiative related to maintaining Quality of power and proposing the requirements as mandatory and deserve admiration.

With more and more automation being rolled out on shop floors and other industry vehicles, power quality requirements of consumers are increasingly demanding and will have to be met with. It is high time a mechanism is in place to decide ownership of power quality disturbances as they directly bring in huge monetary losses.

Detail Comments:

Under this section MERC has proposed that distribution Licensee and designated consumers should monitor following parameters of supply voltage in real time by installing recording type power quality meters (Applicable standards are given in draft).

- a) Voltage variations
- b) Flicker
- c) Unbalance
- d) Dips and swells
- e) Individual Harmonics and voltage THD
- f) Interruptions.

It is expected in the draft that such real time data has to be shared on a common internet-based portal to be launched by distribution Licensee. The distribution Licensee is expected to control above parameters in real time within prescribed window. The distribution Licensee is expected to pay penalties to consumer if these parameters are not maintained within prescribed limit.

A similar expectation from consumer demands current harmonic compliance as per IEEE 519 – 2014 and proposes penalty of Rs.0.50 per unit for the period for which the current harmonics are beyond the compliance limit.

In view of above following points should be noted.

- Any power quality related issue if needs to be attended at Distribution level, will require exact knowledge of “System impedances and power flows” at strategic locations in vast distribution network. This information is not available with most of the utilities.
 - MERC Supply code 2005, which was released 15 years back, had inclusion of compliance requirements related to harmonic currents (as per IEEE 519 1992) to be drawn by consumers. It is worth noting here that distribution licensees have failed to implement those provision even today due to “Unclear” Directives in the document. Exact measurement method was not defined even then. Even today the awareness level of field staff of distribution licensees as well as most of the consumers is very less regarding this issue.
 - Section 22 of proposed code lists various compliance requirements, while 22.12.6 talks about real time data capturing through a proposed portal to be launched by distribution licensee. The power quality meters at various locations in distribution and at consumer premises are expected to communicate to this portal in a predetermined protocol and then the data exchange for “particular time stamps” is expected to be analyzed to fix the ownership of the “Power Quality Disturbance”
- a) The proposed arrangement appears to be “very ambitious” on “Internet infrastructure front”. There are more than 27000 HT consumers with MSEDCL alone, located at remote locations where even ONLINE billing also does not work with consistency – so expecting a strong and reliable internet connection with each HT consumer is expecting too much. Does this mean having an uninterrupted internet connection is “a must” for getting an HT electrical connection! If availability of the real time data is related to penalty, this is imperative. MERC should think about conflicts arising due to non-communication by meter / meters..
- b) This arrangement may face lot of hurdles due to lack of conceptual awareness regarding power quality parameters among stake holders from both the sides. (Remedy is intense and mandatory training)
- c) Actual as built power system parameter data and static and dynamic load flow analysis for the distribution network is a must for such analysis.
- d) With the ON FIELD scene as above, it is expected that compulsion of “Installing high end power quality meters” at this stage will only lead to generating huge business for meter manufacturers / portal developers and will not serve the purpose of attending the power quality issues.
- e) The entire proposed arrangement does not take into consideration prior “POWER SYSTEM STUDY” and understanding the pain areas. This is possible with system simulation on digital platform using known system parameters and loading patterns and running steady state and transient analysis software tools on system models.
- f) The proposed supply code talks about penalizing the stakeholders for “real time non-compliance related to power quality issues”. We are of the opinion that from utility side following steps are necessary before implementing real time monitoring and penalties.
- Training of stake holders.
 - A detail power system analysis,
 - knowledge of expected problems,
 - Feasibility study and budgeting to rectify the existing analyzed problems.

- g) Recently Maharashtra has implemented KVAH billing. Gradually the result of this would lead to avoidance of excess reactive power correction at consumer end to avoid excess billing in turn. The huge distribution network comprises of thousands of transformers and transmission lines which have their own reactive power requirement. With ever increasing SOLAR injection (Which predominantly feeds active power), reactive power requirement of the system is also increasing. If this reactive power is not supplied / compensated in real time, there will be unavoidable voltage disturbances in the system.
- h) Voltage quality and associated short time disturbances (Dips) are also caused by inrush currents drawn by large consumers during
- Starting of large capacity motors,
 - Synchronizing captive generation,
 - Energizing large transformers,
 - Excessive Fault clearance times allowed for clearing internal SC/EF faults
 - Capacitor connection / disconnection at upstream level and associated resonance.

The proposed draft does not suggest any clearly defined restrictions to be followed by consumers on above issues. **All progressive utilities in the world clearly define above parameters for different voltage levels and insist on simulation reports from consumers at project planning stage and before sanctioning the connection.**

- i) Another field observation suggests that many times upstream line tripping issues and voltage dips are observed due to
- Lack of proper feeder protection relay coordination.
 - Increased earth loop resistances at distribution substations due to lack of periodic maintenance.
 - Overloaded system section

Utilities need to be directed to take steps to avoid above issues and associated power quality problems before addressing consumer issues.

Ref Section 2 – 2.2 – q - Definition of Designated consumers:

“Designated Consumers” means the Consumers using or engaged in any of the following process i.e. Arc Furnace, Induction Furnace, Iron & Steel, Aluminium, Textile, Paper & Pulp, Chlor-Alkali, Petro-Chemical, Cement, Pharmaceuticals IT/ITES, Airports, Malls, Hotels, Banking, Railways/Metros or as may be specified by the Commission from time to time and connected at a supply voltage of 11 kV & above;

We request MERC to look into following related to the definition.

- a. Engineering Industries are not mentioned in “Designated Consumers”. These Industries use large loads employing sensitive electronics and automation – which rarely work on UPS. They are also susceptible to monetary losses due to voltage dips. Loss of production is a major concern for these Industries. They also can cause local disturbances.
- b. It is not clear from above definition of “Designated Consumers” – whether the category will depend upon connected load/MD/Voltage level or it will be applicable to all HT consumers.

Summary:

- 1) Proposed real time ONLINE Portal based monitoring of power quality parameters, appears to be of very limited use unless simulated power system study is available with utilities. It will be difficult for utilities to analyze and resolve the issues.
- 2) Consumers are expected to install the meters within 12 months, whereas utility is expected to complete the same in 3 to 5 years – so meaningful data exchange cannot start before 5 years. This along with point 1 above suggests that implementation only will result into huge business for meter manufacturers without solving the problems.
- 3) The consumer is a major stakeholder in maintaining power quality parameters. The proposed code does not put any restriction on DYNAMIC USE of available electricity by the consumer. (Except for maintenance of power factor and current harmonic compliance)
- 4) Accuracy, repeat calibration and security of these proposed Power Quality Meters to be installed at consumer premises, will be a major issue if the data made available by them is to be related to penalties.

Suggestions:

- 1) Distribution Licensee may be advised to undertake simulated power system study to understand system parameters and anticipate power quality disturbances and find out system level solutions.
- 2) Distribution Licensee may be advised to install recording power quality meters at strategic feeders for example major Industrial areas etc on priority.
- 3) Simulation data and recorded parameters may be correlated and possible remedies should be implemented within distribution network to minimize the disturbances.
- 4) This supply code should define “dynamic power quality parameter restrictions” on consumers. These will include effects of inrush currents and faults at point of common coupling.
- 5) Once above steps are followed, all HT consumers may be advised to install similar meters and then data exchange / penalties etc can start.
- 6) As regards current Harmonics compliance, template of reporting format may be displayed by distribution licensee on his website and all HT consumers may be advised to submit self-compliance reports once in a year. Distribution Licensee may qualify private agencies who can perform such compliance audits and submit the reports based on their qualifications and availability of required instruments.

We are hopeful that the submission will get due consideration.

Testing of all equipment components and parts imported for use in the 18NOV

No.9/16/2016-Trans-Part(2)

Government of India

Ministry of Power

Shram Shakti Bhawan, Rafi Marg, New Delhi - 110001

Dated the 18th November, 2020

ORDER

Subject: Testing of all equipment, components, and parts imported for use in the power Supply System and Network in the country to check for any kind of embedded malware/trojans/cyber threat and for adherence to Indian Standards-Regarding

Reference is invited to this Ministry's Order No.25-11/6/2018-PG dated 2-7-2020 (copy enclosed) on the above subject, wherein inter-alia it was decided that any import of equipment/components/parts from "prior reference" countries as specified or by persons owned by, controlled by, or subject to the jurisdiction or the directions of these "prior reference" countries will require prior permission of the Government of India.

2. In this regard, it is decided that in such cases, where work order have been placed on or before the date of issue of MoP order (i.e. 02.07.2020), equipment/components/parts from "prior reference" countries may be imported subject to following conditions:-

- a. The imported equipment must be examined by CPRI or appropriate testing laboratory on arrival.
- b. It should also be ensured that imported equipment will not have any adverse impact (both on account of cyber security as well as quality point of view) on transmission Grid

3. This issues with the approval of competent authority.

Encl: As above



(Sanjeev Jain)

Under Secretary to the Govt. of India

Tel: 011-23730264

To:

1. All Ministries/Departments of Government of India (as per list)
2. Secretary (Coordination), Cabinet Secretariat
3. Vice Chairman, NITI Aayog
4. Comptroller and Auditor General of India
5. Chairperson, CEA
6. CMD of CPSEs/Chairman of DVC &BBMB/MD, EESL/DG, NPTI/ DG, CPRI/ DG, BEE
7. All ASs/JSs/EA, MOP
8. NIC, Ministry of Power for uploading on the website.

Copy to:

1. PS to Hon'ble PM, Prime Minister's Office
2. PS to Hon'ble MOS(I/C) for Power and NRE
3. Sr PPS to secretary (Power)

Dated 02/07/2020

ORDER

Power Supply System is a sensitive and critical infrastructure that supports not only our **national defence, vital emergency services** including health, disaster response, **critical national infrastructure** including classified data & communication services, defence installations and manufacturing establishments, logistics services but also the **entire economy** and the **day-to-day life** of the citizens of the country. Any danger or threat to Power Supply System can have catastrophic effects and has the potential to cripple the entire country. Therefore, the Power Sector is a **strategic and critical sector**.

The vulnerabilities in the Power Supply System & Network mainly arise out of the possibilities of cyber attacks through malware / Trojans etc. embedded in imported equipment. Hence, **to protect the security, integrity and reliability of the strategically important and critical Power Supply System & Network** in the country, the following directions are hereby issued :-

(1) All equipment, components, and parts imported for use in the Power Supply System and Network shall be tested in the country to check for any kind of embedded malware/trojans/cyber threat and for adherence to Indian Standards.

(2) All such testings shall be done in certified laboratories that will be designated by the Ministry of Power (MoP).

(3) Any import of equipment/components/parts from "prior reference" countries as specified or by persons owned by, controlled by, or subject to the jurisdiction or the directions of these "prior reference" countries will require prior permission of the Government of India

(4) Where the equipment/components/parts are imported from "prior reference" countries, with special permission, the protocol for testing in certified and designated laboratories shall be approved by the Ministry of Power (MoP).

This order shall apply to any item imported for end use or to be used as a component, or as a part in manufacturing, assembling of any equipment or to be used in power supply system or any activity directly or indirectly related to power supply system.

This issues with the approval of Hon'ble Minister of State for Power and New & Renewable Energy (Independent Charge).


(Goutam Ghosh)
Director
Tel: 011-23716674

To:

1. All Ministries/Departments of Government of India (As per list)
2. Secretary (Coordination), Cabinet Secretariat
3. Vice Chairman, NITI Aayog
4. Comptroller and Auditor General of India
5. Chairperson, CEA
6. CMDs of CPSEs/Chairman of DVC & BBMB/MD, EESL/DG, NPTI/DG, CPRI/DG, BEE/
7. All ASs/JSs/EA, MoP

Copy:

1. PS to Hon'ble PM, Prime Minister's Office
2. PS to Hon'ble MOS(IC) for Power and NRE
3. Sr. PPS to Secretary(Power)

Please follow below link for the above document_

LINK _ <http://powermin.nic.in>

RESULTS OF TECHNICAL E-QUIZ
DECEMBER 2020



Mr. Dinesh Redekar

Mr. A V Prasanna

Mr. Vilas Vaidya

Mr. Rohan Deshpande

Mr. Somnath Gupta

Mr. Sandeep Kumar Ashwal

Mr. Kartikey Singh

CEEAMA - Technical E-Quiz

JANUARY 2021

1. Which method is used for the lighting calculations?
 - A. Watts per square meter method
 - B. Lumen or light flux method
 - C. Point to point method
 - D. All of these
2. Which among these is a type of internal wiring?
 - A. Cleat Wiring
 - B. CTS or TRS Wiring
 - C. Conduit Wiring
 - D. All of these
3. The illumination level in houses is in the range.
 - A. 10-20 lumen/m²
 - B. 30-50 lumen/m²
 - C. 60-100 lumen/m²
 - D. 100-140 lumen/m²
4. Lumen / Watt is unit of Luminous Intensity.
 - A. TRUE
 - B. FALSE
5. The Utilization factor of light for indoor applications is greater than that for outdoor applications.
 - A. TRUE
 - B. FALSE
6. What type of earthing is used by transmission lines?
 - A. Plate earthing
 - B. Rod earthing
 - C. Strip earthing
 - D. All of These
7. Which type of earthing is also called as 'fire earthing'?
 - A. Plate earthing
 - B. Rod earthing
 - C. Strip earthing
 - D. All of These

8. The size of the earth or ground wire is based on the____?
- A. Maximum fault current carrying through the ground wire.
 - B. Rated current carrying capacity of the service line.
 - C. Depends on the soil resistance.
 - D. Both A & C
9. Static UPS requires ____?
- A. Only Rectifier
 - B. Only Inverter
 - C. Both Rectifier & Inverter
 - D. None of These
10. Which of the device is employed in substation to limit the short circuit current in the power system?
- A. Shunt Condenser
 - B. Reactor
 - C. Series Capacitors
 - D. Shunt Capacitors

Rules for the QUIZ:

- The Quiz will be open for 10 days from the date of EMAIL.
- Each correct answer received on DAY 1 will get 100 points
- Next days the points will reduce as 90 – 80 – 70 and on 10th day points will be ZERO even if the answer is correct.
- All participants will receive E certificate signed by CEEAMA President with the points earned mentioned on the same.

Please use following google form link to participate in the QUIZ.

LINK_ <https://forms.gle/rKLnDARKdRQtpih48>

"Thank you all for the overwhelming response to the E-NEWS in general and E-Quiz in particular.

MCQ based quiz is always tricky and surprisingly can take us aback when we realise our conceptions (mis-conceptions) about the subject / system / product.

The aim of the feature was to create inquisitiveness in your mind and help you check your technical quotient quickly. The response will also help us to present articles and webinars on subjects which are important, but which lack enough awareness / knowledge in general.

It can open a pandora box for our discussions and arguments and probable solutions. Engineering evolves with conception. It gets fuelled with community discussions and capitalist actions. All stakeholders start realising the need to take a closer look and help improve standards as we have seen in the past century. Surely it makes the world a better place.

Wish you all a better luck this time.

Do spread the word."



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