



# CEEAMA E-NEWS

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Electrical Consultants' Newsletter

October 2018

## From the Secretary's Desk



Dear All,

First of all, I thank all of you for the successful AGM of CEEAMA. As per the statics provided and circulated to all of member, it is quite evident that CEEAMA is progressing as per the goals and principles decided by CEEAMA.

CEEAMA has received the response to the communication with Energy minister. Chief Engineer PWD Maharashtra Govt. replied on behalf of Minister. In his letter it is stated that Govt is waiting to receive the norms of the same from Central Electricity Authority. (CEA). CEEAMA s replying to the letter and will pursue the matter till the norms are accepted and Engineers will get CESE accreditation.

Now our focus is on the upcoming CEEAMATECH-2019 exhibition. I appeal all of you to convey the name of one friend along with his mobile no or email address who is electrical engineer or connected with activities of electrical trade. CEEAMA will invite such references to visit CEEAMATECH-2019 in Feb 2019. The details can be send on my email namely [suhas.keskar@ceeama.org](mailto:suhas.keskar@ceeama.org). We also appeal you all to help us to book maximum stall in the exhibition. Use your good offices to pursue the vendor for participation in CEEAMATECH-2019.

Participation can be in any form like help for booking a stall, Write up or article in the issue.

Any technical information in your opinion useful to the members please share with us , we will publish the same either in CEEAMA-E-News or CEEAMA News to be printed during CEEAMATECH-2019, along with your name and photo. These articles published in the news will be hosted on CEEAMA website permanently.

I wish all of you a Happy Dussehra and Diwali !!!

With warm regards,  
**Suhas Keskar**  
 Hon. Secretary  
 CEEAMA

## What is New?

### Switched Reluctance Motors (SRMs)

Cage induction motors have been the most popular electric motors in India. The main advantages of cage induction motors are their simple construction, low price, simple maintenance, no commutator or slip rings and low torque ripple.

The switched reluctance SR Drive<sup>®</sup> system (SRM) is a poly phase doubly-salient electric motor with no winding and no excitation system on the rotor is patented design from Nidec USA.

The rotor's position relative to the stator is detected using a simple hardware sensor or by electronic 'sensorless' means. The controller then energizes each stator winding only when it can produce useful torque. By suitable timing of the stator excitation, the machine can operate as a motor or generator, with exceptional efficiency over a wide range of speed and torque.

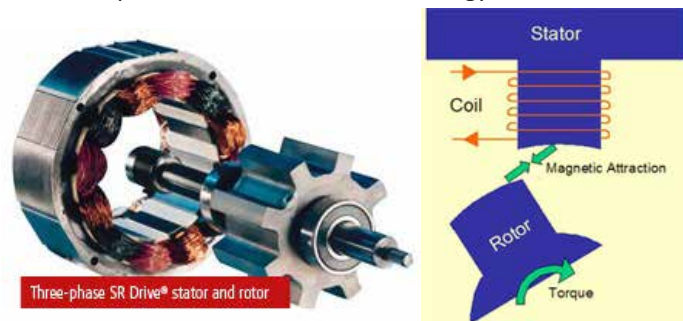
Low energy losses in both the rotor and power electronics eases thermal management and enhances reliability and efficiency, whilst the compact stator windings permit great flexibility in motor shape.

SRMs can provide the highest performance-to-cost ratio, have perspectives of applications in energy efficient drives, high speed drives or fault tolerant drives. Their main drawback is the need for keeping a small air gap and suppressing the torque ripple and acoustic noise.

U.S. Motors<sup>®</sup> brand switched reluctance motors operate in conjunction with a dedicated SR Drive<sup>®</sup> controller and provide industrial users with a number of advantages over conventional variable speed systems.

In both standard and custom designs, SR Drive<sup>®</sup> systems offer uniquely flexible, high-performance and cost-effective variable-speed solutions for all applications,

Source: <http://www.srdrives.com/technology.shtml>



Contributed By Mangesh Shirgaonkar

## What is New? : Switched Reluctance Motors (SRMs)

Article : Power factor calculations and power factor incentives changed by MSDCL

Organised by

**CEEAMA**<sup>TM</sup>

Consulting Electrical Engineers  
 Association of Maharashtra

# CEEAMATECH-2019

7<sup>th</sup> Exhibition & Conference on Electrical Industry

8<sup>th</sup> to 10<sup>th</sup> February 2019

Auto Cluster, Chinchwad, Pune

For more details Kindly Contact: [ceeamatech@fairact.in](mailto:ceeamatech@fairact.in)

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Article

**Power factor calculations and power factor incentives changed by MSEDCL**

**Ref: MERC order dated 12th Sept 2018 for Case No 195 of 2017.**

Several decades before MSEDCL had taken a decision of offering 7% incentive if consumer maintains monthly power factor at unity. If consumer overcompensates reactive power and net KVARh at the end of month are capacitive, even then this incentive was applicable. Digital tariff meters were programmed to read

KVAh = KWh if KVAh are found capacitive or leading at the end of billing cycle.

In predominantly nonlinear loading conditions (Loads using VFDs, rectifiers, SMPS etc), these leading KVAR create resonance and result into amplification of harmonic currents. Moreover, in many cases MSEDCL was supplying / accepting more KVA due to this leading PF, without generating KWh based revenue for the same. Knowingly or unknowingly consumers have been benefitted due to this for many years. Electrical system designers, users have not taken reactive power compensation seriously so far. Over compensation was providing maximum benefits to consumers. Number of capacitor steps, size of steps, step switching in real time as per requirement of reactive power was not dealt with due importance. This is serious requirement related to system voltage stability.

As per MERC tariff order dated 18th Sept 2018 for case 195 of 2017, MSEDCL has taken following decisions. HT, LT industrial and commercial consumers have received Sept 2018 bills based on these modifications.

1 Modified PF calculation method.

2 Slashed PF incentive from 7% to 3.5%.

3 MSEDCL will award this incentive only if PF as per new calculation method is greater than 95% and **RKVAH Lag >= RKVAH Lead.**

PF will now be calculated as bellow. (All figures from monthly billing cycle)

$$PF = \frac{KWH}{\sqrt{(KWH)^2 + (RKVAH\ Lag + RKVAH\ Lead)^2}}$$

- i. If PF as above is less than 0.90 then penalty shall be as per percentage given in MERC order.
- ii. If PF is greater than 0.95 and "KVARh Lag" consumption >= "KVARh Lead" consumption, then incentive shall be as per percentage given in MERC order.
- iii. **If PF is greater than 0.95 and "KVAh Lag" consumption < "KVAh Lead" consumption, then incentive shall not be applicable.**
- iv. If the RKVAH Lead reading is not available, then old procedure of PF computation will be followed.

The change in % of PF Penalty and Incentive is as below.

**Power Factor Incentive:**

PF	Old %	New %
0.95	0	0
0.96	1	0.5
0.97	2	1
0.98	3	1.5
0.99	5	2.5
1	7	3.5

**Power Factor Penalty (For lead as well as lag):**

PF	Old %	New %
0.90	0	0
0.89	2	1
0.88	3	1.5
0.87	4	2
0.86	5	2.5
0.85	6	3
0.84	7	3.5
...	...	...

Now to avoid penalties, to control harmonics and to get full incentive, consumers will have to maintain real time power factor at unity.

Proper calculations, measurements, deciding steps, using RTPFC (Real time power factor correction using thyristor switching) for fluctuating loads is a must now, else the industry will have to compromise 3.5% incentive or pay penalties up to 5% of energy charges.

**Commercial impact on consumers:**

Even if Power factor is maintained at unity as per new definition, as the PF incentive is reduced by 3.5%, at present industrial, per unit charges will increase by approximately Rs.0.25.

Leading power factor. Many consumers who were maintaining leading power factors to avail full incentive as per old system till date, have received Sept 2018 bills with penalties.

Technically speaking, this correction was long pending as excess injection of reactive power into grid, can cause system instability. Excessive harmonic currents can cause nuisance tripping at upstream levels. If real time power factor is maintained at unity, utility company can use their installed capacities to maximum extent and earn better revenues from the investment made in infrastructure. The situation calls for serious attention from all electrical consultants towards reactive power compensation, while designing new / retrofit / expansion projects.

Prepared By  
**NARENDRA DUVEDI**



## CEEAMA Activity

### 7th Annual General Meeting :

7th Annual General Meeting of the Members of Consulting Electrical Engineers Association of Maharashtra was held on Saturday, 29th September 2018, at Chembur Gymkhana, Phase 2, Room No.203/204, Road No. 16, Near Ambedkar Garden, Chembur, Mumbai - 400071, at 4.00 pm.

Key Feature:

- 50 members attended AGM.
- Discussions on Overall CEEAMA work for the year.
- Request to all members for Active participation in CEEAMA Activity for Growth & Betterment of Association.
- Announcement CEEAMATECH-2019 – Three-day Exhibition.


### Some Glimpse from the AGM



## BECOME A MEMBER A TODAY!

CEEAMA is a section 25 “Not for Profit Company” registered with Registrar of Companies

For more details Kindly Contact: [Admin@ceema.org](mailto:Admin@ceema.org) or Visit [www.ceema.org](http://www.ceema.org)

 <p><b>महाराष्ट्र शासन</b> मुख्य विद्युत निरीक्षक, मुंबई यांचे कार्यालय, उद्योग, ऊर्जा व कामगार विभाग, तिसरा मजला, प्रशासकीय इमारत, रामकृष्ण चेंबुरकर मार्ग, चेंबुर (पुर्व) मुंबई ४०० ०७१</p>	
E-Mail : ceimumbai.nrg-mh@gov.in	दुरध्वनी क्र. ०२२-२५२७४६१३
जा.क्र.मुविनि/तांत्रिक/ १४०८ /२०१८	दिनांक 9 AUG 2018

प्रति,

प्रधान सचिव (ऊर्जा)  
उद्योग, ऊर्जा व कामगार विभाग,  
मंत्रालय, मुंबई.

विषय :- केंद्रीय विद्युत प्राधिकरण (विद्युत पुरवठा व सुरक्षा संबंधी उपाययोजना),  
विनियम २०१० मधील विनियम ४४(२)(vii)(e)मधील विचलन(Deviation)

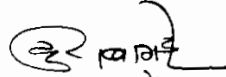
निवासी व व्यावसायिक ईमारतीत आयएसआय मान्यता प्राप्त अवरोधक द्रव  
असलेले रोहित्र वापरणेबाबत.

संदर्भ:- १) शासन आदेश क्र. संकीर्ण-२०१६/प्र.क्र.३२३/ऊर्जा-५, दिनांक १३/०८/२०१८

उपरोक्त विषयास अनुसरून संदर्भाकीत शासन आदेशान्वये व केंद्रीय विद्युत प्राधिकरण (विद्युत पुरवठा व सुरक्षा संबंधी उपाययोजना) विनियम, २०१० च्या विनियम ११६(२) मधील तरतुदीनुसार विषयांकित बाबतीत सदर आदेश निर्गमित करण्यात येत आहे.

हे आपल्या माहितीकरीता सविनय सादर

सोबत :- आदेश

  
(सु.रा. बागडे)  
मुख्य विद्युत निरीक्षक  
मुंबई

- प्रत :- १) उप सचिव (ऊर्जा-५), उद्योग, ऊर्जा व कामगार विभाग, यांना माहितीकरीता सादर.  
२) अधीक्षक अभियंता, प्रादेशिक विद्युत निरीक्षण मंडळ, मुंबई/पुणे/औरंगाबाद/नागपुर यांना माहितीकरीता व उचित कार्यवाहिकरीता रवाना.  
३) सर्व विद्युत निरीक्षक यांना माहितीकरीता व उचित कार्यवाहिकरीता रवाना.  
४) विद्युत निरीक्षक (सचिव, अनुज्ञापक मंडळ व उद्वाहन निरीक्षक) यांना माहितीकरीता व सर्व ठेकेदारांच्या निदर्शनास आणण्यास रवाना.  
५) इलेक्ट्रीकल कॉन्ट्रक्टर असोशिएशन ऑफ महाराष्ट्र व इलेक्ट्रीकल विदर्भ कॉन्ट्रक्टर असोशिएशन. यांना माहितीकरीता व उचित कार्यवाहिकरीता रवाना.  
६) महाराष्ट्र राज्य वीज वितरण / पारेषण / निर्मिती कंपनी मर्या. यांना माहितीकरीता व उचित कार्यवाहिकरीता रवाना.  
७) मे. टाटा कं. लि. / मे. रिलायन्स इन्फ्रा प्रा. लि. / मे. एस. एन. डी. एल. नागपुर/ मे. बी.ई.एस.टी. /मे. टॉरंट पावर भिवंडी यांना माहितीकरीता व उचित कार्यवाहिकरीता रवाना.



**महाराष्ट्र शासन**

मुख्य विद्युत निरीक्षक, मुंबई यांचे कार्यालय,  
उद्योग, ऊर्जा व कामगार विभाग,  
तिसरा मजला, प्रशासकीय इमारत, रामकृष्ण चेंबुरकर मार्ग,  
चेंबुर (पुर्व) मुंबई ४०० ०७१

E-Mail : [ceimumbai.nrg-mh@gov.in](mailto:ceimumbai.nrg-mh@gov.in)

दुरध्वनी क्र. ०२२-२५२७४६१३

जा.क्र.मुविनि/तांत्रिक/ १४०९ /२०१८

दिनांक 29 AUG 2018

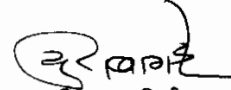
**आदेश**

केंद्रीय विद्युत प्राधिकरण ( विद्युत पुरवठा व सुरक्षा संबंधीत उपाययोजना ) विनियम, २०१० च्या विनियम ११६ (२) मधील दिलेल्या अधिकारांचा वापर करून पुढीलप्रमाणे विचलन आदेश जारी करण्यात येत आहे.

केंद्रीय विद्युत प्राधिकरण (विद्युत पुरवठा व सुरक्षा संबंधीत उपाययोजना) विनियम, २०१० च्या विनियम ४४(२)(vii)(e) मध्ये खालीलप्रमाणे सुधारणा करण्यात येत आहे.

" निवासी व व्यापारी इमारतीमधील वीज संच मांडणीमध्ये केवळ शुष्क रोहित्र किंवा आयएस १६०८१:२०१३, आयएस १६०९९:२०१३, आयएस १३५०३:२०१३, किंवा आयएस १६६५९:२०१७ प्रमाणित विद्युत अवरोधक तेलाने भरलेले सील्ड टाईप रोहित्र वापरण्यात यावेत."

सदर विचलन आदेशास शासन आदेश क्र. संकीर्ण २०१६/ प्र. क्र. ३२३/ उर्जा -५ दिनांक १३/०८/२०१८ अन्वये, केंद्रीय विद्युत प्राधिकरण (विद्युत पुरवठा व सुरक्षा संबंधीत उपाययोजना) विनियम, २०१० च्या विनियम ११६ (१) चे तरतुदीनुसार शासन मान्यता देण्यात आली आहे.

  
मुख्य विद्युत निरीक्षक  
मुंबई



Government of Maharashtra  
Office of the Chief Electrical Inspector  
Industries, Energy & Labour Department  
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e-mail : ceimumbai.nrg-mh@gov.in

Phone- 022-25274613

No.CEI/TECH/847 /2018

Date- 29 AUG 2018

### Order

In Exercise of the powers conferred vide Regulation 116(2) of Central Electricity Authority (Measures Relating to Safety and Electric Supply) 2010, the deviation in respect of matter referred in 44(2) (vii) (e) is being allowed as given below:-

**"Only Dry type transformers or transformers filled with insulating liquid qualifying under IS 16081:2013, IS 16099:2013, IS 13503:2013 or sealed type transformers filled with insulating liquid qualifying under IS 16659:2017, shall be used for installations inside the residential and commercial buildings"**

This deviation has been allowed by the Government of Maharashtra vide order no. Misc- 2016/ CR 323/ Energy-5 dated 13/08/2018 In exercise of the powers conferred by provisions of the regulation (116) (1) of Central Electricity Authority (Measures Relating to Safety and Electric Supply) 2010.

Chief Electrical Inspector  
Mumbai