



सत्यमेव जयते

भारत सरकार/ Government of India
विद्युत मंत्रालय/ Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/ Central Electricity Authority
ग्रिड प्रबंधन प्रभाग/ Grid Management Division

सं.: 12/एक्स/एस.टी.डी.(सी.ओ.एन.एन)/जी.एम./2024/328

दिनांक: 04.07.2024

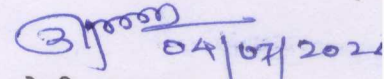
विषय: दिनांक 01.07.2024 (सोमवार) को दोपहर 02:00 बजे अध्यक्ष, के.वि.प्रा. द्वारा केन्द्रीय विद्युत प्राधिकरण विनियम (ग्रिड से कनेक्टिविटी के लिए तकनीकी मानक) के अनुपालन में आर.ई.जेनरेटर द्वारा हार्मोनिक फिल्टर की स्थापना के मुद्दे पर चर्चा करने हेतु बैठक का कार्यवृत्त।

Subject: Minutes of the Meeting taken by Chairperson, CEA, on 01.07.2024 (Monday) at 02:00 PM to discuss the issue of installation of Harmonic Filters by RE Generators in compliance to CEA (Technical Standards for Connectivity to the Grid) Regulations.

अध्यक्ष, के.वि.प्रा., की अध्यक्षता में दिनांक 01.07.2024 को दोपहर 02:00 बजे आयोजित बैठक का कार्यवृत्त आपकी जानकारी एवं आवश्यक कार्यवाही हेतु संलग्न है।

Please find enclosed herewith the minutes of the meeting held under the Chairmanship of Chairperson, CEA on 01.07.2024 at 02:00 PM., for information and necessary action

संलग्नक: यथोपरि।



(ओ.पी. सुमन)

निदेशक (ग्रिड प्रबंधन)

बैठक के सभी प्रतिभागियों को ई-मेल द्वारा प्रेषित

Minutes of the Meeting taken by Chairperson, CEA, on 01.07.2024 (Monday) at 02:00 PM to discuss the issue of installation of Harmonic Filters by RE Generators in compliance to CEA (Technical Standards for Connectivity to the Grid) Regulations.

List of the participants is enclosed at **Annexure-I.**

2. Welcoming the participants, Chairperson, CEA, stressed the need for timely installation of Harmonic Filters by Renewable Energy (RE) Project Developers for secured grid operation in compliance with the CEA (Technical Standards for Connectivity to the Grid) Regulations. Expressing his concern at the slow pace of compliance despite time extensions being allowed to RE Project Developers for installation of Harmonic Filters, he requested Member (GO&D), CEA, for information on the current status of the Harmonic Filters in RE plants which were allowed time extensions in the near past.

3. Member (GO&D), CEA, informed that of the total of 19 RE plants which were allowed First Time Charging/ Energization (FTC) with time extension for installation of Harmonic Filters, installation has been completed in only 5 Nos. of the RE Plants. He further informed that of the 8 Nos. RE plants which were given time extension until 31.03.2024, only 4 Nos. RE plants had completed the installation of Harmonic Filters till date and of the subsequent time extension allowed upto 30.06.2024 to 11 Nos. RE Plants, the Harmonic Filters have been installed in only 1 No. RE Plant. The project-wise details in this regard are attached at **Annexure-II.**

4. Chairperson, CEA, expressed concern about the non-observance of the undertakings given by RE Project Developers at the time of grant of FTC for the installation of Harmonic Filters within the time extension allowed for the purpose. He requested the RE Project Developers to outline the challenges being faced by them in ensuring timely installation of the Harmonic Filters.

5. Representative from Adani Green Energy Limited informed that the harmonic filters have already been installed in case of the three (3) RE plants connected to Khavda-I Pooling station and approval of Electrical Inspector was awaited. He further informed that the Harmonic Filters have also been installed in the two (2) RE plants connected to Bhadla & Fatehgarh-II Pooling stations and application for FTC has been submitted to NRLDC.

6. Representative from AVAADA cited the issue of difference between the simulation study results and the actual field measurements in respect of harmonics. Consequently, the harmonic filter requirement assessed from the simulation study results may not work in the actual field conditions as the order of the harmonics changes. He mentioned that the simulation study results depend on various factors such as the plant layout, equipment models, grid network data and software used for modelling etc. With the plant layout changing in line with the location of available land and supply chain issues with respect to the plant equipment, the layout gets firmed up after CON-TD4 is signed with CTUIL which is generally two (2) months prior to the Scheduled Commercial Operation Date (SCOD) of the RE Plant. He also informed that as the grid network data is not available and grid conditions change, it becomes all the more difficult to get the accurate results for harmonic filters in the simulation studies.

Representatives of other RE Project Developers expressed their agreement with the submission made by representative of AVAADA.

7. CMD, Grid-India, emphasized that subsequent to initial installation of Harmonic Filters, the annual harmonic measurements must be conducted by RE plants as per CEA Grid Connectivity Regulations and the filters would need fine-tuning based on these measurements.

8. Chairperson, CEA, noted that the manner of conducting the simulation study for assessing the requirement of the harmonic filters needs to be improved for accuracy of study close to the actual operating/field conditions. Representative of Grid-India suggested that as one of the measures the field harmonic measurement data may be shared by the RE Project Developers with Grid-India for dissemination of information as guidance for the upcoming RE Projects in the vicinity of the existing RE Projects and getting connected to the same Pooling Station. This actual data of harmonics can be used in the simulation study by the upcoming RE Project Developers to improve the accuracy in assessment of the requirement of Harmonic Filters. Chairperson, CEA, suggested for measurement of harmonics by PQ (Power Quality) meters at all the ISTS sub-stations and data be shared with upcoming RE plants for better simulation accuracy in assessing the requirement of Harmonic Filters.

9. Representative from Renew Power highlighted the issue of high lead time of 4 to 5 months in supply of harmonic filters after placement of order and the dependency on Passive Filters for higher order harmonics mitigation. He further mentioned that there were challenges in manufacturing of smaller size filters and the non-availability of active filter suppliers in India for effective mitigation of higher order harmonics.

10. Representative from Serentica Renewables informed that in line with their commitment to NRLDC for installation of harmonic filters by 30.06.2024 at their solar plant connected to ISTS at Bikaner-II Pooling Station, the purchase order had been placed and work of installation is in progress. However, due to unfavourable weather conditions (extreme heat) in Bikaner, the installation activity is proceeding at a slow pace and is expected to be completed by the end of July,2024. He suggested that the timeline for installing the harmonic filters should be four(4) months from the date of CON-TD4 approval by CTUIL and this realistic timeframe will allow RE Project Developers to reasonably ascertain the configuration of the harmonic filters and subsequently place orders for their supply & installation.

11. Representative from TATA Power informed that their 170 MW RUMSL Neemuch Unit II Solar Project of TP Saurya Ltd. is under FTC approval. It was further informed that the purchase orders for harmonic filters have already been placed, but due to supply chain issues the delivery is expected by August,2024 and the installation will take another two months. It was requested that FTC may be allowed with timeline for installation of Harmonic Filters by 31st October,2024.

12. In the context of facilitating the installation of Harmonic Filters at the time of grant of FTC, representative of Adani Green Energy Limited suggested that in the initial stage the 5th Bypass Harmonic Filter can be considered for mitigation of harmonics and the other harmonics can be subsequently mitigated based on actual field measurement. Appreciating the suggestion placed forth, Chairperson, CEA, stated that the Study for standardisation of the process of installation of Harmonic Filters can be instituted and finalized by the Committee comprising

of CEA, CTUIL, Grid-India and major RE Developers & Study agencies. He advised Member(GO&D), CEA, for initiating appropriate action in the matter.

13. After the detailed deliberations and based on the submissions made by GRID-India, CTUIL and RE Developers, and in consideration of the issues of simulation studies & supply chain related to installation of Harmonic Filters in RE Plants, Chairperson, CEA, decided and directed the following: -

- (i) An extension up to 31st October 2024 is granted for completing the installation of the requisite Harmonic Filters by RE Plants which have either been granted provisional FTC or, the RE plants which are to be given connectivity/FTC for commissioning during the period upto 31st October,2024. The continuation of provisional FTC already granted and issuance of provisional FTC for RE Plants which are getting commissioned during the period upto 31st October,2024, would be subject to submission of an undertaking by all such RE Project Developers to Grid-India affirming the installation of Harmonic Filters in their respective RE Plants by 31st October,2024. In case of non-compliance of above, all such RE Developers will disconnect their plant from the grid and report the same to Grid-India. From 01.11.2024, RE plants will be considered for connection to the grid only after they fully comply with the provisions of CEA Regulations and other statutory Regulations. Thus, RE Developers must plan their installations accordingly.
- (ii) The measurement of harmonics shall be done at all the ISTS sub-stations and data may be shared with RE plants getting connected at these ISTS sub-stations for better accuracy of simulation studies to assess the requirement of Harmonic Filters. CTUIL shall include the requirement of installation of PQ meters in the bidding documents for all the upcoming ISTS substations. Further, in case of the existing ISTS sub-stations the PQ meters may be installed within 6 to 8 months period and the ISTS sub-stations in the process of erection & commissioning are also required to ensure installation of the PQ meters at the time of commissioning.
- (iii) There is a need to ensure accuracy of simulation studies with the actual field measurement for effective mitigation of harmonics by installation of appropriate Harmonic Filters. In this regard, Member (GO&D), CEA, shall constitute a Committee with members from CEA, CTUIL, Grid-India and major RE Developers & Study agencies, to suggest a standard mechanism for ensuring installation of Harmonic Filters at the time of grant of FTC/commissioning of RE Plants and fine tuning it during subsequent years. All RE Developers will continue the installation of filters as per the present system/Regulations. The outcome of the Study will be applicable only for the future cases after this Report is accepted by the appropriate authority.

The Meeting ended with a Vote of Thanks to the Chair.

List of the Participants in the Meeting held in CEA on 01/07/2024 at 02:00 PM

Central Electricity Authority (CEA)

1. Sh. Ghanshyam Prasad, Chairperson (CEA)) **in Chair**
2. Sh. Hemant Jain, Member (Grid Operation & Distribution)
3. Sh. B. Lyngkhoi, Chief Engineer (Grid Management)
4. Sh. O.P. Suman, Director (Grid Management)
5. Sh. Sandeep Kumar, Deputy Director (Grid Management)
6. Sh. Sakil Ahmad, Assistant Director (Grid Management)

GRID-India

1. Sh. S R Narasimhan, CMD
2. Sh. Rajiv Porwal, Director (SO)
3. Sh. Vivek Pandey, Sr. GM
4. Sh. Abhijeet Prakash, Chief Manager

Central Transmission Utility of India Limited (CTUIL)

1. Sh. P. S. Das, Sr. GM
2. Sh. Ajay Kumar, Asstt. Manager
3. Sh. Roushan Kumar, Asstt. Manager

Representatives of RE Entities/ Developers

ACME Solar Holdings Pvt Ltd.

1. Sh. Yogesh Kumar S, VP-BD
2. Sh. Rishi Mishra, Sr.VP Engg

Adani Green Energy Limited

1. Sh. Ketan Dave, VP Engg.
2. Sh. Hiren Tailor, AGM
3. Sh. Sunny Kumar Singh, Asst. Manager

Ampin Energy

1. Sh. Anugrah Mishra, GM
2. Sh. Victor Bhattacharya, AGM

AVAADA

1. Sh. Vivek Jain, SGM
2. Sh. Vaibhav Chaturvedi, AM

Ayana Power

1. Sh. Rinku Yadav, Sr. Manager

JSW Energy

1. Sh. Paramjit Singh, AVP
2. Sh. Pritpal Singh, DGM

NTPC Ltd.

1. Sh. Siva Kumar V V, CGM
2. Sh. Ajay Dhamania, AGM
3. Sh. Animesh Manna, DGM

O2 Power

1. Sh. Soubhagya Dwivedi, AGM
2. Sh. Tushar Garg, Manager
3. Sh. Sai Kumar, DM

Renew Power

1. Sh. S. Vinod, SVP
2. Sh. Ravi Kant Sharma, AGM
3. Sh. Agam Kumar, AGM
4. Sh. Rajesh R Nair, Sr. Manager

Serentica Renewables

1. Sh. Kunal Kaistha, AVP-Regulatory
2. Sh. Prateek Rai, CM-Regulatory

Tata Power

1. Sh. Ashwini Kumar Patil, Chief O&M
2. Smt. Paramita Sahoo, Head-Policy Advocacy

TPREL

1. Sh. Sivanarayana V. G., Group Head-FQS
2. Sh. Mukund Kumar, Head – Engg.

**Details of the RE application given
extension to install harmonic filters**

01.07.24

GM Division, CEA

Summary

- Total applicants given extension to install harmonic filters- 19
 - Filter installed – 5
 - Filter not installed yet – 14

Summary

- Total applicants given extension up to 31.03.2024 - 8
 - Filter installed – 4
 - Filter not installed yet – 4
- Total applicants given extension up to 30.06.2024 - 11
 - Filter installed – 1
 - Filter not installed yet – 10

Details of applications

Sr. No	Name of applicant	Name of PS	Quantum (MW) for which CON-4 is applied	Date on which affidavit submitted	Last date as per affidavit	Present status
SR						
1	Renew Surya Ojas Private Ltd (RSOPL)	400/220KV Koppal PS	300		30.06.2024	(FTC was allowed without filter bank and Timeline was extended till 30.06.24 as per CEA/MNRE direction dated 26.03.24)
2	SERENTICA KOPPAL	400/220KV Koppal PS	195.8		30.06.2024	(FTC was allowed without filter bank and Timeline was extended till 30.06.24 as per CEA/MNRE direction dated 26.03.24)
WR						
1	Adani Renewable Energy Holding Four Limited	Khavda-1 PS	1000	30.12.2023	30.06.2024	Pending, 1. As per the MoM dt. 09.05.2024, Adani informed that the actual measurement report will be submitted by 25.05.2024 and PO is placed for filter. 2. Measurement report received on 08.06.2024. 3. Filter bank installed. Electrical Inspector approval awaited. FTC is in process.
2	Adani Renewable Energy Holding Four Limited	Khavda-1 PS	1250	21.03.2024	30.06.2024	1. FTC was allowed without filter bank and Timeline was extended till 30.06.24 as per CEA/MNRE direction dated 26.03.24 2. . Filter bank installed. Electrical Inspector approval awaited. FTC is in process.

Details of applications

Sr. No	Name of applicant	Name of PS	Quantum (MW) for which CON-4 is applied	Date on which affidavit submitted	Last date as per affidavit	Present status
WR						
3	Adani Renewable Energy Holding Four Limited	Khavda-1 PS	400	26.03.2024	30.06.2024	1. FTC was allowed without filter bank and Timeline was extended till 30.06.24 as per CEA/MNRE direction dated 26.03.24 2. . Filter bank installed.Electrical Inspector approval awaited. FTC is in process.
4	Rewa Ultra Mega Solar Limited [Avaada Sunshine Energy Private Limited]	Pachora PS	200	23.02.2024	30.06.2024	(FTC was allowed without filter bank and Timeline was extended till 30.06.24 as per CEA/MNRE direction dated 26.03.24)
5	Rewa Ultra Mega Solar Limited [Beempow Energy Pvt. Ltd. (O2Power)]		350	27.03.2024	30.06.2024	(FTC was allowed without filter bank and Timeline was extended till 30.06.24 as per CEA/MNRE direction dated 26.03.24)

Details of applications

Sr. No	Name of applicant	Name of PS	Quantum (MW) for which CON-4 is applied	Date on which affidavit submitted	Last date as per affidavit	Present status
NR						
1	Ayana Renewable Power Three Pvt Ltd (ARPTPL)	Bikaner (PG)	300	22.03.2024	30.06.2024	Not installed before FTC (FTC was allowed without filter bank and Timeline was extended till 30.06.24 as per CEA/MNRE direction dated 26.03.24)
2	Adani Solar Energy RJ Two Pvt. Ltd. (Phalodi)	Bhadla (PG)	150	16.03.2024	30.06.2024	Installed, Applied for FTC on 25.06.24
3	Adani Solar Energy RJ Two Pvt. Ltd. (Devikot)	Fatehgarh-II (PG)	180	10.01.2024	31.03.2024	Installed, Applied for FTC on 25.06.24
4	Rising Sun Energy-K Pvt. Ltd.	Bhadla-II (PG)	190	29.09.2023	31.03.2024	Installed
5	AMP Energy Green Six Pvt. Ltd.	Bhadla-II (PG)	100	03.10.2023	31.03.2024	Installed
6	Amplus Grian One Volt Pvt. Ltd.	Bikaner-II (PBTSL)	300	29.09.2023	31.03.2024	Installed

Details of applications

Sr. No	Name of applicant	Name of PS	Quantum (MW) for which CON-4 is applied	Date on which affidavit submitted	Last date as per affidavit	Present status
NR						
7	Serentica Renewables India Private Limited (SRIPL4)	Bikaner-II (PBTSL)	400	13.02.2024	30.06.2024	Not installed before FTC (FTC was allowed without filter bank and Timeline was extended till 30.06.24 as per CEA/MNRE direction dated 26.03.24)
8	Altra Xergi Pvt. Ltd.	Fatehgarh-III	380	23.11.2023	31.03.2024	FTC was allowed without filter bank and Timeline was extended till 31.03.24 as per CEA MOM dated 25.09.24
9	Renew Surya Vihan Pvt. Ltd.	Fatehgarh-III	300	29.11.2023	31.03.2024	FTC was allowed without filter bank and Timeline was extended till 31.03.24 as per CEA MOM dated 25.09.24
10	Renew Surya Ayaan Pvt. Ltd.	Fatehgarh-III	300	15.12.2023	31.03.2024	FTC was allowed without filter bank and Timeline was extended till 31.03.24 as per CEA MOM dated 25.09.24
11	Renew Surya Roshni Pvt. Ltd.	Fatehgarh-III	380	05.01.2024	31.03.2024	FTC was allowed without filter bank and Timeline was extended till 31.03.24 as per CEA MOM dated 25.09.24
12	NTPC Anta Solar Plant	NTPC Anta	90	07.03.2024	30.06.2024	Not installed before FTC (FTC was allowed without filter bank and Timeline was extended till 30.06.24 as per CEA/MNRE direction dated 26.03.24)

Thank You