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भारत सरकार
Government of India
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee
18-ए, शहीद जीत सिंह मार्ग, कटवारिया सराय नई दिल्ली - 110016
18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016

No. NRPC/SE(O)/capacitors/2011-12

दिनांक 26.11.2011

To,

- 1) Sh. R.K.Singh, CM, POWERGRID NR-1, Fax-011-26601079
- 2) Sh. L.N.Nimawat, SE, RVPNL, Rajasthan; Fax- 0141-2740794
- 3) Sh. Vivek Pandey, Manager NRLDC ; Fax-011-26852747
- 4) Sh. C.M. Shylendra Kumar, ABB Ltd. Fax No. 080-22949339

Sub: Minutes of meeting for Group to recommend on specifications of capacitors, selection of vendors and to suggest innovative ideas for capacitive compensation in the grid-reg.

Sir,

A meeting of the sub group to recommend on specifications of capacitors, selection of vendors and to suggest innovative ideas for capacitive compensation in the grid for monitoring of procurement, installation and commissioning of capacitors in Northern Region was held on 23-11-2011. The minutes of this meeting can be downloaded from NRPC website at <http://www.nrpc.gov.in>.

Yours faithfully,
-Sd-
(Ajay Talegaonkar)
SE (O) and Assistant Secretary

**Record of Discussions in the first meeting of subgroup on innovative solutions for capacitors
held on 23.11.2011**

The meeting was chaired by SE (O), NRPC.


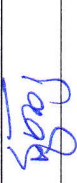


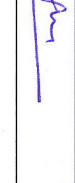
List of participants is enclosed at Annexure-I.

Following decisions were taken/conclusions were arrived in the meeting:

- (i) As regards problem of higher failure rates, IEEMA suggested that stringent clause could be kept in purchase order. After detailed deliberations, it was agreed that replacement of failed capacitor units should be done by the supplier in the ratio 1:2, if for capacitor units failing within one year and replacement for failure during subsequent years should be in the ratio of 1:1. The replacement warranty should be applicable for a period of 5 years from the date of supply.
- (ii) With regards to reducing time for replacing failed capacitor units, representative of IEEMA explained various options available for easy detection of failed capacitor as well as fast removal and installation of new capacitor. He stated that there are offline as well as online devices available in market and cost of these equipments is also nominal. The subgroup agreed that while issuing NIT, the procuring entity should have the option of seeking supply of these equipments along with capacitors. It was agreed that these devices would help in reducing downtime of capacitors.
- (iii) Regarding the mobile capacitor banks, representative of IEEMA stated that in some African countries mobile capacitors are in use. It was suggested that these types of capacitors could find use in the long time construction activities viz. Hydro stations where loads with poor power factor like welding is frequently connected. These capacitor banks are also being used in disaster management in countries like Japan. But in India these are not being used anywhere at present. One of the main drawbacks of mobile capacitors is that they may remain unused for most of the time and maintenance can be a problem. There was general agreement that to meet seasonal variation of reactive power demand, switched type of capacitors would be more appropriate. SE (O), stated that members of the subgroup should contribute information on mobile and switched capacitors so as to include in the report of the subgroup
- (iv) Regarding capacitor on lease, representative of IEEMA stated that this option was attractive at one point of time when depreciation rates for capacitors were very high. However, he stated that the issue would be discussed among members of IEEMA and shortly he would submit considered opinion of manufacturers on viability of this option.

- (v) Regarding switched capacitor, representative of IEEMA stated retrofitting fixed capacitors banks into switched type is one option and is being done for for some Discoms. SE(O), NRPC requested IEEMA to provide cost differential in fixed capacitors and switched capacitors. The subgroup recognized that switching can be manual as well automatic and it can be in different steps. On the request of SE(O), NRPC, representative of IEEMA agreed to submit draft of guidelines to decide whether or not to go for switched type of capacitor banks and if it is decided to go for switched capacitor banks to decide on number of steps. IEEMA would also provide good Operation and Maintenance practice which would be circulated to utilities by NRPC.
- (viii) The draft technical specification submitted by IEEMA were found to be in order. It was agreed that in addition to technical specifications, financial terms & conditions should also be added to Standard Specifications. IEEMA agreed to provide draft for consideration of the subgroup. It was agreed that the supplementary requirements like capacitor failure detection device, lifting device, Lightning Arrestor, isolator with earth switch, minimum spares and inventory requirement etc. would be included as part of technical specification. The financial terms and conditions would include warranty period, condition regarding replacement on failed capacitor units during warranty period etc. It was agreed that an attempt would be made to revise the standard specifications and circulate the same to members of the group by end of December 2011.
- (vi) It was deliberated that generally, capacitors are installed in following two ways:
 - (a) Through turnkey project, wherein procurement as well as installation work is done by turnkey implementer
 - (b) The DISCOM/Transco procures capacitors and a separate contract is awarded for their installation
- (vii) The group agreed on need to standardize the Qualifying Requirements (QR) for both the above mentioned ways of installing capacitors. It was agreed that NRPC Secretariat would try to get QR from DISCOMs/Transcos and thereafter group would attempt standardizing the same. In this regard, representative of IEEMA would also submit their suggestions.

List of Participants for meeting of sub-group for finalization of standard capacitor specifications on 23.11.2011

Name & Designation	Organization	Phone/Mobile	e-mail ID	Signature
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