

INDIAN RAILWAYS

CENTRE FOR DESIGN & DEVELOPMENT

CHITTARANJAN LOCOMOTIVE WORKS

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No. C-D&D/T/05 (Part-I)

Date: As Signed

M/s BHEL Ltd., P.B.No.2606,Mysore Road, Bangalore-560 026
M/s Medha Servo Drives Private Limited, Hyderabad – 500 076
M/s Siemens Ltd., Nasik, Maharashtra – 422 010
M/s Autometers Alliance Ltd., Noida, Uttar Pradesh – 201 307
M/s ABB India Ltd., Bangalore- 560 001
M/s CG Power and Industrial Solutions Limited, Mumbai - 400 030
M/s Cummins India Limited, Pune – 411 045
M/s Hind Rectifiers Limited, Mumbai- 400 078

Sub: Development of new HOG converter with augmented capacity to cater to full electric load of rake with standby.

Ref. (i) Railway Board's letter no. 2005/Elect(TRS)/440/18/4(HOG) dated 06.12.2024
(ii) RDSO letter no. EL/11/5.5/6 dated 20.12.2024

1.0 Presently, IR is procuring standalone 2X500 kVA IGBT based Hotel load converters as per CLW spec. no. CLW/ES/3/IGBT/0490 (Alt.D), Rev.1 and IGBT based composite converter as per CLW/ES/3/IGBT/0518 (Alt.B).

2.0 Railway Board vide ref. (i) has directed to explore the possibility of developing a 2X600 kVA HLC (whether standalone or integrated with composite converter) so as to utilize nearly existing capacity of 2X622.5 kVA hotel load winding of main transformer for having some cushion for future increase in the load of one or two more coaches.

3.0 Accordingly vide ref.(ii), RDSO has issued a draft revision to relevant clauses to the existing CLW spec. no. CLW/ES/3/IGBT/0490 (Alt.D), Rev.1 for standalone 2X500 kVA IGBT based Hotel load converters to ensure the optimal utilization of 2X622.5 kVA hotel load winding capacity of the main transformer (Copy Enclosed).

4.0 In view of the above, it is requested to examine the relevant clauses and submit your comments to this office at ceednd@clw.railnet.gov.in and dyceedd@clw.railnet.gov.in within 15 days from the issue of this letter. Other clauses of the spec. no. CLW/ES/3/IGBT/0490 (Alt.D), Rev.1 will remain unaltered.

DA: RDSO letter no. EL/11/5.5/6 dated 20.12.2024 (03 Pages)


(Pankaj Kumar)
Dy.CEE/D&D-I

File No.RDSO-EL/0/TPS(HOG)/1/2020-O/o PED/SE/RDSO

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Govt. of India - Ministry of Railways
 Research, Designs & Standards Organization,
 LUCKNOW - 226011

No. EL/11.5.5/6

Dated: As signed

Principal Chief Electrical Engineer,
 Chittaranjan Locomotive Works,
 Chittaranjan - 713 331

(Kind Attn.: Shri Avijit Chakraborty, CEE/D&D)

Sub: Development of New HOG converter with augmented capacity to cater to full electric load of rake with standby.

Ref: RB letter No. 2005/Elect(TRS)/440/18/4(HOG) dtd. 16.12.2024 (copy enclosed).

Vide reference above, Railway Board has directed to explore the possibility of developing a 2x600 kVA HLC (whether standalone or integrated with a composite converter) so as to utilize nearly the existing capacity of 2x622.5kVA hotel load winding of main transformer for having some cushion for future increase in the load of one or two more coaches.

Presently, standalone 2x500 kVA IGBT based hotel load converters are being procured as per CLW Specification No. CLW/ES/3/IGBT/0490 (Alt. D), Rev.1, and Composite Converters with Traction and Hotel Load Converter are being procured as per CLW specification No. CLW/ES/3/IGBT/0518 (Alt. B).

In view of the above, a draft revision to the relevant clauses to the existing CLW Specification No. CLW/ES/3/IGBT/0490 (Alt. D), Rev.1 to ensure the optimal utilization of the 2x622.5 kVA hotel load winding capacity of the main transformer has been prepared and enclosed as Annexure-2 along with profile of HLC Output power (kVA) vs. OHE (kV) is enclosed as Annexure-1.

CLW may undertake revision of the specification and further development of higher capacity Hotel Load Converter as advised by Railway Board.

Encl: As above.

-sd-

For Director General (Electrical)

Copy to:

1. Secretary (Elect./RS), Railway Board, Rail Bhawan, New Delhi - 110 001 : (Kind attn.: Shri V. Venkatasubramanian, EDEE/RS)
2. Principal Chief Electrical Engineer, Banaras Locomotive Works, Varanasi - 221004
3. Principal Chief Electrical Engineer, Patiala Locomotive Works, Patiala - 147 003

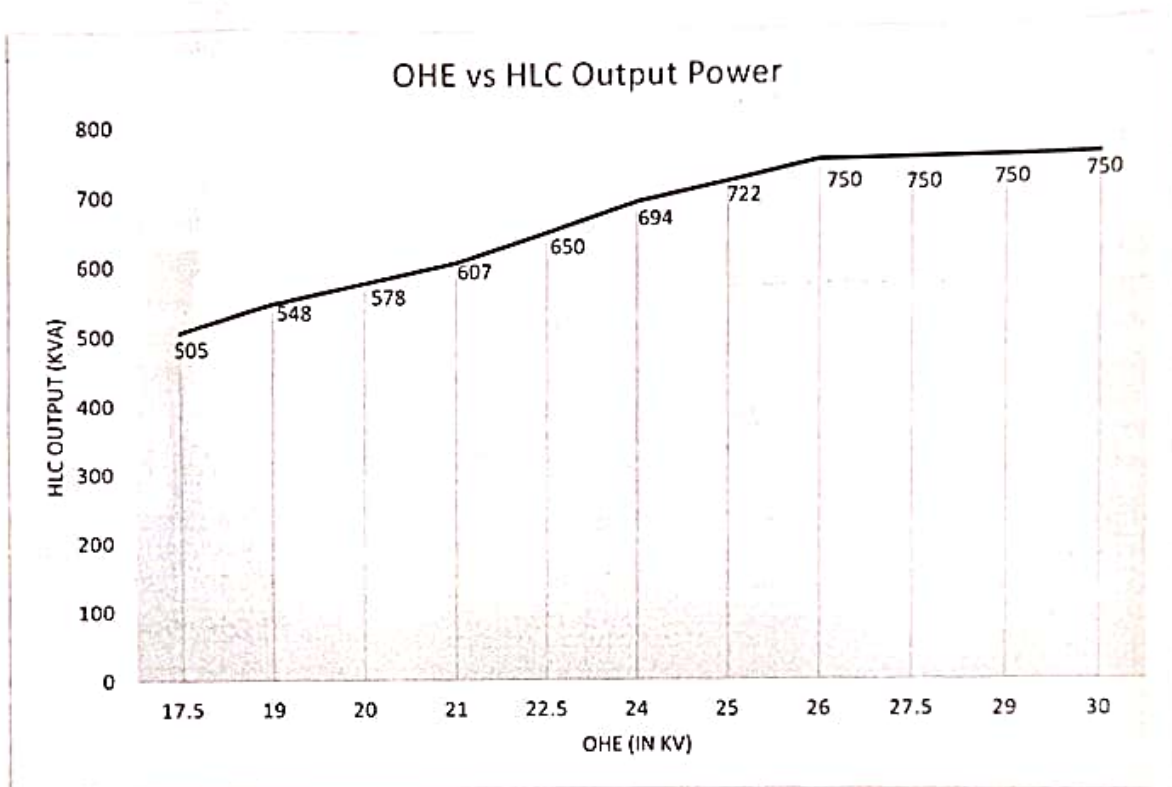
Digitally Signed by Amit
 Kumar Saraf

Date: 20/12/2024 (17:51:04)

Reason: Approved

OHE vs Power Availability of proposed Hotel Load Converter with Existing Transformer

OHE Voltage (kV)	17.5	19.0	20.0	21.0	22.5	24.0	25.0	26.0 to 30.0
Output Power (kVA)	505	548	578	607	650	694	722	750



Annexure - 2

Draft revisions to the relevant clauses in CLW specification No. CLW/ES/3/IGBT/0490,
Alt.D, Rev.1

Claus e No.	Existing Clause	May be modified as
3.1.1	The Supplier shall supply the 2 X 500 kVA IGBT based Hotel Load Converter of approved design conforming to the various operational and functional requirements.....	The Supplier shall supply the 2 X 750 kVA IGBT based Hotel Load Converter of approved design conforming to the various operational and functional requirements...
8.2	Capacity: 2X500 KVA (Two units of 500 KVA per locomotive) at power factor not less than 0.8. Note: Rated capacity of each converter shall be 500 kVA for OHE voltage range of 17.5kV to 30kV. It shall not be possible to regulate the duty cycle of the loads.	Capacity: 2X750 kVA (Two units of 750 kVA per locomotive) at power factor not less than 0.8 Note: Rated capacity of each converter shall be 750 kVA for OHE voltage range of 26.0 kV to 30kV. However, at OHE voltages below 26.0 kV, the power degradation (kVA) shall be linear in proportion to the voltage reduction such that it shall not be less than 500kVA at 17.5 kV. It shall not be possible to regulate the duty cycle of the loads.
8.13 (o) all respects each with 500 kVA capacity housed preferably in a single cubicle of dimensions given in the drawing..... all respects each with 750 kVA capacity housed preferably in a single cubicle of dimensions given in the drawing.....
8.18	Each 500kVA converter shall be housed in single cubicle. Space available for mounting the converter in the.....	Each 750kVA converter shall be housed in single cubicle. Space available for mounting the converter in the.....
10.1	The scope of supply covers design and development of complete loco-set i.e. 2 nos. of 500 KVA (IGBT) based.....	The scope of supply covers design and development of complete loco-set i.e. 2 nos. of 750 kVA (IGBT) based.....
10.8	Commissioning of complete set of 2 nos. of 500 kVA IGBT based Hotel Load Converter on the locomotive.	Commissioning of complete set of 2 nos. of 750 kVA IGBT based Hotel Load Converter on the locomotive.
11.15 (c)	Input power factor and the efficiency shall be measured by using power analyser at rated load of 500 kVA.	Input power factor and the efficiency shall be measured by using power analyser at rated load of 750 kVA.
11.16 .10	The hotel load converter shall be loaded to rated full load current and nominal output voltage corresponding to 500 kVA rating of converter with input voltage corresponding to 17.5 KV of OHE for at least 6 hours.....	The hotel load converter shall be loaded to rated full load current and nominal output voltage corresponding to 750 kVA rating of converter with input voltage corresponding to 26 kV of OHE for at least 6 hours.....