The Chief Mechanical Engineers
All Indian Railways except NFR

Sub: Innovations and system improvements in Indian Railways

CME/NFR through his MCDO for the month of May, 2012 has informed that
NFR has carried out three innovations/system improvements on the freight side:

i) Fabrication of kit trolley
ii) Provision of Anti spark spanners
iii) Special gauge for measuring thickness of Collar Ring seat
portion of Axle Box Rear Covers.

The same are enclosed for your kind information.

(Ashesh Agrawal)
Exec. Dir. Mech. Engg. (Frt.)

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1.0 **Achievements**

1.1 For the first time on Indian Railways, an HHP loco with GTO based Traction Control System has been retrofitted with an IGBT based AC-AC Traction Control System at Diesel Loco Shed, Siliguri.

Loco No. 12065 WDG4 which was originally fitted with a GTO based traction system has now been converted to IGBT based traction system and the loco horse power has been enhanced from 4000 to 4500.

This modification has been done as per RDSO Instruction Bulletin No. MP.IB.EM.01.02.11 issued in April’2011. The IGBT based TCC cabinets were received from DLW. The retro-fitment work was completed in 32 working days. Loco was released on 26th May 2012 and has successfully completed trial runs.

The modification involved changing of entire TCC1 and TCC2 cabinet of older GTO based TCC and their replacement with IGBT based TCC cabinets. Also the existing ECC-1 cabinet was replaced with a new one.

The retrofitment work involved skill and expertise in removal and fitment of sophisticated electrical components, fabrication work and associated cabling work.

As compared to GTOs, IGBTs based Traction Control System have compact design, consume less power, have higher reliability, and are more maintenance friendly.

With this IGBT based traction system retrofitment initiative by shed, the issue of shortage of GTO’s due to obsolescence is addressed.
3.3 Dibrugarh Workshop has commissioned one traversor (80t capacity) at a total cost of Rs 175.8 Lakhs. This is an additional traversor sanctioned in M&P programme 2008-09, was purchased through COFMOW and has been commissioned within three months of its receipt.

4.0 Innovation and system improvements

4.1 Rangia Division has procured and supplied one set of Anti Spark spanners to Bongaigaon Refinery (BRPL) Tank loading siding. This is a safety measure taken by division for avoiding fire accidents while working at BRPL siding, by C&W staff.

4.2 Dibrugarh Workshop has fabricated a special gauge to enable measurement of the thickness of the Collar Ring seat portion of Axle Box Rear Covers. This shall facilitate exact measurement of thickness of the seat portion and enable condemnation of Rear Covers which are below the specified limit. This shall improve the reliability of the Wheel sets supplied during POH.
4.3 Diesel Loco Shed, New Guwahati has fabricated a 'Fuel Strainer Wrench' for opening and tightening fuel strainer provided in the fuel oil tank. Previously the same work was being done by hammering the fuel strainer assembly, which was tedious and time consuming.

4.4 Diesel Loco Shed, Siliguri has fabricated in-house a 'Slip Ring and Hub Puller' for removal of Slip rings and Slip ring Hub in situ from main Traction Alternator (TA17) of HHP locomotives. This puller can be mounted on the Traction Alternator, with a flexible round Slip Ring guard and a manual screw type puller to pull slip rings. This puller has been tested on many locos and is working very effectively.

4.5 Mechanical Component Section of SGUJ Diesel Shed has developed fixtures for removal of old worn out bushes and fitment of new bushes of Valve Lever on HHP locomotives.