PRODUCTION UNITS – The Gems of Indian Railways

- April 16, 1853: the first train runs in India signifying the beginning of modern industry
- In the immediate aftermath, factories were set up to provide maintenance support and to assemble steam locomotives
- Ajmer Workshop manufactured the first steam locomotive of India in 1895
- By the end of 19th century, Railway workshops had grown into the finest manufacturing units of their time

IR has 6 established Production Units manufacturing more than 600 Diesel & Electric locos and more than 3000 coaches per year

Why in-house manufacture of Rolling Stock?

- **Production Units (PUs) not only assimilate and adopt new technology, they enable IR to own the technology as well.**

- **Cost of locomotives and coaches manufactured by our PUs is much lower than the market rate.**

- **It costs much less to maintain assets manufactured in our own factories as many critical subassemblies are also manufactured here.**

- **PUs enable import substitution and promote ancillary industries.**
CHITTARANJAN LOCOMOTIVE WORKS:
IR’s 1st Production Unit

- **1950**: Dr Rajendra Prasad, India’s first President flagged off the first locomotive from CLW on November 1, 1950.
- **1993**: Diesel Hydraulic locos were produced till 1993.
- **1961**: Electric loco manufacture commenced in 1961.
- **1998**: Transfer of Technology contract signed with M/s Adtranz to turn out the first indigenously manufactured 3 phase 6000 HP locomotive in 1998.

CLW now manufactures 5 types of passenger and freight loco variants ranging from 5000 HP to 6000 HP: WAG7, WAP4, WAP5, WAG9, WAP7.

**LOCO PRODUCTION TREND**

![Graph showing loco production trend from 2008-09 to 2015-16](image)
Shri Lal Bahadur Shastri, the then Prime Minister, flagged off the first locomotive from DLW on February 3, 1964.

DLW started manufacture of diesel locomotives for main line as well as shunting services in both BG & MG variants, in technical collaboration with American Locomotive Company (ALCO).

First Locomotive of 2600 HP manufactured in 1964. This WDM2 locomotive of DLW had been the main workhorse of Indian Railways till the 1990s.

2600 HP locomotive was upgraded in-house, with minimal inputs, to 3100 HP variant in 1995.

...and then in-house to 3300 HP in 2003 with Microprocessor based control systems with indigenous effort.
**4500 HP Locomotive**

Upgraded in-house from GTO to state-of-the-art IGBT based AC-AC Traction System.

This is now the main product of DLW.

First 4000 HP locomotive turned out in 1999 with Transfer of Technology from General Motors.

Has Computer controlled brakes, Microprocessor based control system etc.

More reliable and efficient than older locomotives.

WDP4 is Fit to run at 160kmph

BHEEM - a 5500 HP prototype freight loco WDGs - the most powerful indigenously developed diesel loco with state-of-the-art technology.

Inside View of DLW Shop Floor Area
DLW LOCOMOTIVES ARE HAULING TRAINS ON FOREIGN SHORES TOO...

ANGOLA  BANGLADESH  BANGLADESH

MALI/SENEGAL  MALAYSIA  MOZAMBIQUE

MYANMAR  SRI LANKA  SRI LANKA

SUDAN  SUDAN  VIETNAM
Augmentation of capacity to manufacture High Horse Power Diesel Locomotives by 25% – work commenced in Jan’15

Planned completion - Nov’16

Project Cost - Rs. 266 Crore
INTEGRAL COACH FACTORY, Chennai—
Pioneering Coach Manufacture in India

Set up at Perambur in 1955 in collaboration with Schlierien, Switzerland.

Builds several types of coaches with low alloy corrosion resistant steel as per an integral anti-telescopic design.

REGULAR PASSENGER COACHES

Also manufactures Trains for Kolkata Metro, DEMUs for Kashmir Valley & EMUs and DEMUs.

KOLKATA METRO COACH

AC/DC EMU

AERODYNAMIC DEMU TRAINSET
1600 HP DEMU

- AC-AC transmission system.
- State-of-the-art IGBT based 3 phase electrics
- Micro processor based control system.
- Maintenance friendly.
- High energy efficiency.

- Improved user-friendly driver desk with joystick controls and twin digital displays.
- Fuel level indication in driver desk
- DEMU remote monitoring system - through GPS/GPRS/CDMA for real time fault diagnostics

1600 HP DEMU – DRIVER’S CAB

Introduced Air-conditioned DEMU coaches for comfort of short distance travelers.

INTERIOR OF AIR-CONDITIONED DEMU COACH
LHB Coach Manufacture commenced in 2014-15

ICF, Chennai turned out its first complete state-of-the-art LHB coach in September 2014.

Complete switch over to Production of Stainless Steel LHB main line coaches planned in the next 5 years

Facility set up to manufacture 300 LHB coaches per annum
LHB Project Cost - Rs. 247 Crore

CNC Spot Welding Machine
ICF - FULFILLING PASSENGER ASPIRATIONS ON FOREIGN RAILWAYS

Living up to its motto -
‘FOR BETTER TRAVEL’

THE GEMS OF INDIAN RAILWAYS

PHILIPPINES  TAIWAN  VIETNAM  ZAMBIA

ANGOLA  BANGLADESH  MOZAMBIQUE  NIGERIA

COACH PRODUCTION TREND

INDIAN RAILWAYS - MECHANICAL AND STORES DEPARTMENT
ICF GOES ‘GREEN’

Entire Production of ICF is from Green Energy.
It generates more energy from its windmill than it consumes.

19.31 million Units average electricity produced in last six financial years against 17.59 average consumption of Factory.

ICF won International “Golden Green Award” 2014 for sustainable green energy initiatives.

Pioneer in developing alternate sources of energy. All energy requirements of the factory are met from its captive Windmills.
RAIL COACH FACTORY, Kapurthala – Developing latest designs of coaches

- Set up in 1988
- The most modern factory of Indian Railways of its time

Advanced manufacturing and design facilities.

Equipped with robotic welding machines and a cluster of 70 CNC machines.

Transfer of Technology with GE-ALSTOM – LHB Germany for manufacture of new LHB type coaches with stainless steel body, superior passenger amenities and higher speed and safety features.
Double decker coach - From concept to roll-out in one year

Indigenously built LHB Coaches fit to run at 160kmph. Upgradable to 200kmph.

RCF Product Gallery

- AC HOT BUFFET CAR
- DURONTO
- LHB 1ST AC
- LHB AC 2 TIER
- LHB AC 3 TIER
- LHB NON AC CHAIR CAR
- LHB NON AC SLEEPER
- LUGGAGE AND GENERATOR CAR
- NANO COATED SHATABDI COACH
- NON AC GS
THE FIRST CHOICE FOR PASSENGER SATISFACTION

Exports coaches to the following:

- MYANMAR
- SENEGAL & MALI
- SENEGAL & MALI
- SENEGAL & MALI
- BENIN
- SENEGAL

COACH PRODUCTION TRENDS

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DIESEL LOCO MODERNISATION WORKS, Patiala

Set up in 1983 with World Bank aid as Diesel Component Works.

Manufactures 200 high precision components and sub-assemblies for WDM-2 locomotives.

Midlife Rebuilding of Diesel Locomotives after a service life of 18 years started in 1989.

Renamed as Diesel Loco Modernisation Works in 2003 to signify the modernisation of Diesel Locomotives being done.

After Rebuilding loco is 'as good as new' with all latest modifications and incorporation of most recent technology.

Modern facility with CNC machines and robotics.
DMW has also started manufacture of ALCO type locomotives in 2011-12

3300 HP WDM3D Locomotive

Engine Block machining facility

Production Trend

Loco Rebuilding

New Loco


0  108  112  109  25  54  81  89  30

0  108  112  109  25  54  81  89  30
RAIL WHEEL FACTORY, Bengaluru

Set up at Yelahanka in 1984

A wheel cast every 2 minutes.

An axle forged every 4 minutes.

Only unit producing Wheels, Axles and W/Sets under same roof.

Adopted the upward pressure pouring cast wheel technology
The Gems of Indian Railways

- Manufactures about 2 lakh wheels per year for locos, coaches and wagons.

- Precision axle manufacture facility equipped with long forging machines with multiple hammers and high productivity axle machining centres, turning out about one lakh axles per year.
RWF - Production

**WHEEL PRODUCTION TREND**

**AXLE PRODUCTION TREND**