

# DUO TEMPUS

Precision-Engineered HVAC Solutions  
for Rail & Metro Transportation

Rail Car Builders / OEMs

Metro & Transit Authorities

Government / Indian Railways

**HVAC  
Products**

Engineering  
Capabilities

End-to-End  
Delivery

# Duo Tempus

A specialist Rail HVAC company delivering climate-control solutions designed for the demanding requirements of high-speed trains, metro systems, and light rail networks across India and beyond.

01

## Focused Expertise

100% dedicated to rail & metro HVAC — not a side business, but our core.

02

## Proven Track Record

Successfully delivered HVAC systems on India's most advanced high-speed train programmes.

03

## Standards Compliant

Validated per NABL-accredited labs, ASHRAE 37, and Indian railway specifications.

04

## Client Partnership

From proposal to commissioning, we work alongside rail car builders and transit authorities.

## OUR PRODUCTS & SOLUTIONS

HVAC systems engineered for every segment of rail transportation

### HIGH-SPEED RAIL

#### Rooftop & Underframe HVAC Units

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- Designed for speeds up to 200+ km/h
- High-efficiency refrigeration cycle
- Compact, lightweight construction
- Vande Bharat Sleeper compatible

### METRO / URBAN RAIL

#### Metro Car Air-Conditioning

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- High passenger-density comfort
- Rapid cooling & humidity control
- Zone-based temperature management
- Noise-optimised for urban deployment

### LIGHT RAIL / TRAM

#### Light Rail HVAC Systems

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- Compact units for LRV profiles
- ASHRAE 37 validated performance
- Psychrometric lab tested
- Modular design for easy maintenance

## Deep technical expertise across every phase.

From load calculation to control logic, our engineering team has the skills to design, validate and deliver Rail HVAC systems that meet the most stringent performance and safety standards.

### Thermal Load Calculations

Accurate heat gain/loss modelling for every rail car type

### Heat Exchanger Design

Optimised coil geometry, fin design and refrigerant circuiting

### Compressor & Fan Selection

Capacity, redundancy and lifecycle-aligned component selection

### Airflow Management

CFD-informed duct design and diffuser placement

### Control Logic Development

Smart algorithms for comfort, efficiency and fault detection

### System Balancing & Testing

Full commissioning, balancing and in-situ performance verification

# One partner. Every stage.

Duo Tempus manages the complete HVAC delivery lifecycle — so your team focuses on building trains, not chasing suppliers.

01

## Requirement Analysis

Specification review, ambient conditions, comfort targets

02

## System Design

Thermal modelling, component sizing, layout engineering

03

## Prototype & Integration

Build, fit-check and system integration with rail car body

04

## Lab Validation

NABL-accredited & psychrometric chamber testing

05

## Production Readiness

Manufacturing liaison, QA sign-off and documentation

## VALIDATION & STANDARDS COMPLIANCE

Every Duo Tempus system is tested, validated and documented to the highest standards before delivery.

### NABL

Accredited Laboratory

- Performance testing at NABL-accredited facilities
- Railway & Metro HVAC unit validation
- Objective, third-party verified results
- Meets all IR/RDSO requirements

### ASHRAE

### 37

International Standard

- Testing per ASHRAE Standard 37
- Rating of unitary air-conditioning & heat pumps
- Psychrometric laboratory testing
- International benchmark compliance

### IN-

### HOUSE

System Balancing & QA

- Full system balancing at commissioning
- Airflow, temperature & pressure verification
- Comprehensive test reports & data packages
- Production readiness sign-off process

## Who partners with Duo Tempus

### Rail Car Builders & OEMs

We integrate directly with the vehicle design process — providing HVAC packages that fit first time, every time. Our documentation and interface control drawings make your build programme smoother.

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- HVAC package supply
  - Interface control drawings
  - Technical proposals & BOQ
  - Design feasibility support

### Metro & Transit Authorities

Transit authorities trust Duo Tempus for reliable, energy-efficient climate control in high-density passenger environments where downtime is not an option.

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- Metro car HVAC systems
  - Energy efficiency optimisation
  - Lifecycle & maintenance data
  - Commissioning support

### Government & Indian Railways

As demonstrated on the Vande Bharat Sleeper programme, we deliver complex HVAC solutions aligned with Indian Railways standards and RDSO specifications.

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- Vande Bharat programme
  - RDSO spec compliance
  - NABL test documentation
  - Formal engineering reports

## 360°

End-to-End  
Ownership

## NABL

Accredited Lab  
Validated

## ASHRAE 37

International  
Standard

## Zero Miss

Validation  
Milestones

### Specialist Focus

We work exclusively in rail HVAC — giving clients unmatched domain depth and zero distraction.

### Design-to-Delivery

One team handles requirements, engineering, testing and documentation — no handoff gaps.

### Collaborative Approach

Our engineers embed with your programme teams — manufacturing, quality, sourcing, testing.

### Documentation Excellence

Proposal, design, test and production documents prepared to rail industry standards.

LET'S BUILD TOGETHER

# Partner with Duo Tempus.

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Whether you are designing a new fleet, upgrading existing systems, or need a trusted HVAC partner for a major rail programme — Duo Tempus is ready.

Website

[www.duo-tempus.com](http://www.duo-tempus.com)

Email

[duotempus.india@gmail.com](mailto:duotempus.india@gmail.com)

Division

Rail Transportation HVAC

## Our Services

- Rail HVAC Products
- Engineering & Design
- Testing & Validation
- Technical Proposals
- Project Delivery