Parked trains
Shut-down diesel engines and switch-off electrical systems

Depot and Workshop Buildings
Avoid waste and improve efficiency of heating, lighting and machinery

Diesel Fuel
Keep accurate records and use the data to improve maintenance as well as driving technique

Train Lighting and HVAC
This can comprise over 20% of total train energy use – so improve control systems to save energy in traffic, and when parked out of service

Stations and Offices
Apply latest building services techniques for equipment efficiency - and simply switch-off areas not in use

Reporting and Feedback
Give regular energy reports to senior managers

Training
Improve energy awareness for all staff – and give eco-driving coaching to train drivers

On-board Metering
Fit remote read-out systems for billing, management information and feedback to drivers

Traffic Management
Avoid stopping heavy freight, or slowing down high-speed passenger services

Electrical Power Supply
Measure and manage system transmission losses

Managing Railway Energy

DIRECTOR RAIL ACADEMY
Energy Management

Energy is set to dominate the transport agenda around the world in the coming decades for two inescapable reasons:

- Energy costs will continue to rise as demand outstrips the development of new supplies.
- The carbon footprint of energy used is of increasing concern as the causes and consequences of global warming become clearer.

Railway Managers must meet the challenge of delivering an efficient, modern train service while learning to use energy more efficiently. We need to keep rail’s green edge as an environmentally friendly transport system.

This leaflet introduces the new UIC booklets Process, Power, People which is a first guide to the subject of energy management for railways. The booklet covers diesel fuel, electricity for traction and the energy consumed in stations and depots. But it is not just about technical solutions. It is also vital to have management processes, operational programmes and enthusiastic staff who can put the technology into practice.

We hope the poster on the other side of this leaflet will give you ideas! We hope the poster on the other side of this leaflet will give you ideas! We hope the poster on the other side of this leaflet will give you ideas!

The Challenge of Energy Management

Energy efficiency should not be left to chance. It should be part of a management process, just like any other aspect of your railway business.

To manage energy successfully, you will need to work through this checklist. Do you have these items in your energy programme?

- An Energy Policy
- A Vision and Mission
- An Energy Plan
- Actions to deliver the Vision
- A Baseline and a Target
- Measuring the consumption, and relating it to production
- Operational Control
- Managing activities to get consistent results
- Feedback

Reporting, reviewing and improving the process.

The Process of Power – how to Manage Energy

Energy efficiency means understanding the basics!

- Top speed
- Energy for acceleration increases with the speed squared
- Stopping patterns
- More stops burn more energy. restarting and stopping at signals is just as significant as stops at stations
- Train weight
- Energy for acceleration is in direct proportion to weight
- Line Speeds and Gradients
- Opportunities for energy recuperation and good driving technique
- Aerodynamic drag
- The main factor for high speed operation
- Heating and ventilation of the trains is also crucial – it may account for 10-20% of the total on-train usage. Remember it varies with weather and time of year.

For buildings and infrastructure, understand the ‘state of the art’ in other industries – railway buildings obey the same principles as shops and hotels.

The Power itself – where does the Energy go?

Making savings means understanding the basics!

- Operational skills are a major ingredient in successful energy plans. Motivate staff by explaining the reasons behind the plan.
- Even the technical solutions need staff commitment.
- Technical fixes are only half of the story!

The Poweritself

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