The New Diesel-Engine Book

Kees Kuiken
Target Global Energy Training
This first edition of a two-part book on diesel engines is intended for all who work with diesel engines for maritime propulsion and power generation:

- Maritime training institutes
- Maintenance and reconditioning companies
- Shipping companies deep-sea, inland, towage, dredging, heavy-load cargo
- Insurance companies
- Classification bureaus
- Shipping industry suppliers
- Engine manufacturers and dealers
- Suppliers of engine parts
- Surveyors
- Suppliers of fuel and lubricating oil
- Maritime Universities
- Power Plants

When compiling this book, a practical approach was chosen using ample authentic graphic material with detailed explanations allowing the reader to gather pertinent information without laboriously going through the main text.

Important subjects:
Common-rail systems
Emissions
Materials
Casting and forging of parts
Vibrations
Propellers
Fuel problems
Dual-fuel engines
Reconditioning
Regulations for testing diesel engines

Volume I comprises 512 pages, Volume II has 442.
Leading companies and institutes have contributed to the realisation of this book by providing information, photographs and interviews.

Ninety per cent of the more than 1800 pictures are in colour.

The Maritime Institute Willem Barentsz, Terschelling, The Netherlands, has collaborated exhaustively on the production of the Dutch edition and introduced it as a pilot for Maritime Officer training.

**Bulk orders:**


Price of one book (two volumes), 2009, € 135,- excl. packing and shipping costs. Discount for 25 books 5%, 50 books 10%, 100 books 15%.

Books are sealed and delivered in heavy-duty carton at cost price.
1 The use of industrial diesel engines  
2 Classification of diesel engines  
3 Working principles of diesel engines  
4 Efficiency and losses of diesel engines  
5 Construction of various types of diesel engines  
6 Use of materials for diesel engines  
7 Fuels, fuel-line systems and fuel cleaning  
8 Fuel-injection systems  
9 Cooling diesel engines  
10 Lubrication of engines  
11 Air supply  
12 Driving gears  
13 Starting systems of diesel engines  
14 Speed control  
15 Noise, origin and damping  
16 Vibration and Balancing  

8 Fuels, fuel-line systems and fuel cleaning  Composition of liquid fuels – Definition of heavy oil – Refining crude oil – Standardisation of liquid fuels – Fuel properties – Bunkering – Fuel-line systems according to the engine classification – Bunkering  
11 Lubrication of engines  The purpose of lubrication – Three types of lubrication – Engine parts that require lubrication and cooling – Examples of lubricating-oil systems in accordance with the classification – Lubricating-oil properties  
12 Air supply  Air supply to the engine – Principle of turbo-charging – Turbo-blower manufacturers – Capacity curves – Supercharger with a separate power turbine – Air supply in four-stroke engines – Air supply in two-stroke crosshead engines – Supercharging in two-stroke crosshead engines – Problems with supercharging  
13 Driving gears  Driving gear of four-stroke diesel engines – Engine-driving gears in two-stroke crosshead engines – Thrust blocks and thrust bearings  
14 Starting systems of diesel engines  Starting methods – Reversing the engine  
15 Speed control  Types of governors – Examples of engine configurations with different types of governors – Theoretical background of speed governors  
16 Noise, origin and damping  Origin of noise in diesel engines – Sound-transmission paths – Silencers for diesel engines  
18 Diesel-Power Plants  Classification of diesel-power plants – Types of diesel-power plants – Special applications of diesel-power plants – An example of a large diesel-power plant for the generation of electricity – Examples of power plants


20 Transmission gears, flexible couplings, vibration dampers, shafting and shaft-generator drives  Diesel-engine arrangements – Gear transmission – Various constructions and designs of gear transmissions – Types of teeth – Couplings – Torsional vibration dampers – Examples of complete systems with diesel engines, reduction gearing, shafting and vibration dampers below the engine frame

21 Diesel-engine manufacturers  Engine categories


23 Calculating fuel and lubricating-oil consumption  Diesel-engine efficiency – Specific fuel consumption – Fuel consumption for engines in diesel-power plants – Fuel consumption for propulsion diesel engines – Lubricating-oil consumption and specific lubricating-oil consumption

24 Auxiliary systems: Fuel and lubricating-oil separators  Fuels – The principle of centrifugal separators – Separation with a centrifugal separator – Types of separators – Examples of cleaning systems for lubricating oil, fuel, sludge and bilge water

25 Operational management and automation  Automation of diesel engines – Examples of automation systems – Complete systems for diesel engines, some examples

26 Reconditioning engines and their parts  Four-stroke engines – Two-stroke engines

27 Maintenance and repairs  Types of maintenance – Instruction manuals/Maintenance manuals

28 Casting of engine parts  Cast-iron parts of diesel engines – Foundries – Casting process – Casting location – Moulds – Filling the casting moulds – Mould assembly – Cleaning the castings – Casting stresses – Checking air inclusions and damage – Operations in the machining factory – Manufacturing crankshafts

29 New fuel developments  Use of combination fuels

30 Bedplates and engine alignments, gear-boxes, shafts, propeller shafts and generators  Ship propulsion – Construction of the bedplate, Engine category IV– Resilient mounting of propulsion engines – Alignment of engines – Flexible arrangement of diesel engines, piping, cables and other fittings connected to the engine


32 Regulations for propulsion engines, classification, repair and damage  The IMO: International Maritime Organization – Classification societies – Periodic inspections of the diesel engine and its parts – The tests of mass-produced engines – Regulations for propulsion engines – Engine alignment – Procedure for reconditioning parts – Damage to the engine or engine parts – Examples of certificates
Kees Kuiken began his career in 1963 by enrolling as a marine engineering student at the Hogere Zeevaartschool, Terschelling, The Netherlands.

After graduation he joined United Dutch Shipping Company (Verenigde Nederlandse Scheepvaartmaatschappij, the V.N.S.). In 1978, he went on to become a lecturer in marine engineering at the Hogere Zeevaartschool, Delfzijl, Groningen and also worked in the engine construction and operational techniques departments.

His great passion was the establishment of a large, modern practical lab for intermediate and higher maritime education as well as for trade and industry.

In 1995, he founded the European Training Centre for engine technology, the E.T.M., an educational foundation.

In 2000, he left regular teaching and established Target Global Energy Training.

This enterprise provides worldwide training sessions in the field of diesel and gas engines, gas and steam turbines, compressors and cogeneration.

Furthermore, Target provides solutions for diverse technical problems and publishes books and manuals.

All the training programs are customised and are provided on location.

This book can be ordered directly from Target Global Energy Training.

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