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2.5.4 High/low/off control of burner output2.5.5 Modulating control of burner output; 2.5.6 Control of burner safety; 2.6 The burner gas line; 2.7 The boiler control system; 2.7.1 Boiler controls and system controls; 2.7.2 Control of the burner; 2.7.3 Boiler safety and limit controls; 2.7.4 Reporting functions:remote monitoring; 2.8 The boiler casing; 3 Types of Boiler and Their Needs; 3.1 Types of boiler; 3.2 Boiler construction materials; 3.2.1 Range of materials; 3.2.2 Cast-iron; 3.2.3 Steel; 3.2.4 Copper and aluminium; 3.3 Methods of construction; 3.3.1 Cast-iron sectional boilers
3.3.2 Fabricated steel boilers3.3.3 Copper boilers; 3.4 Fire-tube and water-tube boilers; 3.5 Modular boiler installations; 3.5.1 Types of modular boiler installation; 3.5.2 Modular boiler systems; 3.5.3 True modular boilers; 3.6 Heating,hot water service and combined applications; 3.7 Condensing operation; 3.7.1 Principles and benefits; 3.7.2 Requirements of condensing operation; 3.7.3 Condensing boilers; 3.7.4 Condensing economisers; 3.8 Boiler efficiency; 3.8.1 Choosing the correct definition; 3.8.2 Basis of the definition; 3.8.3 Gross and net calorific value; 3.8.4 Overall efficiency
3.8.5 Combustion efficiency3.8.6 Seasonal efficiency; 3.9 Carbon intensity; 3.10 The needs of the boiler installation; 3.11 Hydraulic stability; 3.12 Return water temperature; 3.13 Pressure in the boiler circuit; 3.14 Fuel supply; 3.14.1 Natural gas; 3.14.2 LPG; 3.14.3 Oil; 3.15 Ventilation of the boiler plant room; 3.16 Water treatment; 4 Alternative Means of Heat Generation; 4.1 Scope of the alternatives; 4.2 Combined heat and power units; 4.2.1 The concept; 4.2.2 Application to building services; 4.2.3 Principal elements of a small-scale packaged CHP unit
4.2.4 Typical energy balance for a small-scale packaged CHP unit

Sommario/riassunto

In many climates buildings are unable to provide comfort conditions for year-round occupancy without the benefit of a heating system, and most HVAC engineers will routinely be involved with issues concerning the design, installation and performance of such systems. Furthermore, in temperate climates, heating of buildings accounts for a large slice of annual carbon emissions. The design of heating systems for maximum efficiency and minimum carbon emission is therefore now a matter of prime concern to all HVAC engineers. The book provides an up-to-date review of the design, engineer