There are a variety of methods for generating domestic hot water.

This presentation covers Direct Gas-fired Water Heaters.

Direct Gas-fired Water Heater manufacturers all appear to use similar sizing methodology.

Benefits of Direct Gas-fired include:
- Quicker recovery
- Smaller storage
- Less space requirement
- Higher operating efficiency
Efficiency losses on a primary circuit

- Losses are greater on remote calorifiers
- Boiler efficiencies decrease when providing hot water only

Direct Gas-fired Water Heaters

- Low storage/Fast recovery
- EcoShield™ Condensing Water Heater SHW145-435CE
- Storage capacity of 435 litres
- Output of 2436 l/hr at 50°C rise

Direct Gas-fired Water Heaters

- Water Heaters with integral storage

Slide 4
- Transmission losses on primary circuit of Boiler/Indirect Vessel hot water systems can be 15% and higher.

Slide 5
- An example of the most recent Direct Gas-fired Water Heater product.
  Low storage capacity, fast heat up and employing condensing technology with 5:1 burner turndown.

Slide 6
- A wide range of Direct Gas-fired Water Heaters with integral storage are available, including conventional and room-sealed models, and standard efficiency or condensing efficiency operation.
Direct Gas-fired Water Heaters

- Low water content with remote storage

Water Quality Issues

- Hard water above 200ppm

Storage Water Heater

- Low water content water heater
- Indirect Cylinder

Condensing v Standard Efficiency

- Condensing Efficiency: 92 to 97%
- Standard Efficiency: 75 to 84%

Low water content Direct Gas-fired Water Heaters provide installation flexibility in multiple Water Heater/Storage Vessel combinations.

- Hot water outputs of up to 10,000 litres/hour are achievable.

- Hard water can have a detrimental effect on all Types of water heating systems. Efficiency and product life can be reduced if not properly addressed.

- There are many water treatment specialists - Lochinvar Ltd work particularly closely with Hydrotec.

- The last 3-4 years has seen an increase in the number of Direct Gas-fired Water Heaters utilising condensing technology.

- Standard efficiency models are still a good option if compared with indirect hot water systems
Current Building Regulations allow either:

- Proposed revisions – October 2013
- New build - Condensing only >40 kW input
- Standard efficiency still permissible for replacements

Direct Gas-fired Water Heater Sizing & Application

“An exact Science?”

Current building regulations stipulate a minimum 73% efficiency for Direct Gas-fired Water Heaters.

- A minimum 80% efficiency is required for Boilers providing direct hot water via an Indirect Vessel.

- Many ‘human preference’ factors affect sizing e.g. Shower temperature, duration etc ...

- BSRIA report ‘Oversized Heating Plant’ highlights potential energy savings by correct sizing of direct hot water plant.
DFHW Sizing – Basic Principles

- Peak demand
- Hot water volume
- Time period

Note – over sizing is less critical on DFHW’s because of the low storage design

SELECT – Direct Gas-fired Water Heater sizing programme

- Includes 20 building types
- Some default values
- Selection criteria
- Selection options
- Sizing printout
- Web links

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- Sizing of Direct Gas-fired Water Heaters is usually based around peak demand.
- Over sizing is far less critical in terms of energy usage on Direct Gas-fired Water Heaters because of the low storage, fast recovery design.

Slide 14

- An updated version of our SELECT sizing program will be available on our website in January 2013.