


QUANTUM[™]
ENERGY SYSTEM



Controlling heat like never before

credaheating.co.uk/quantum



A quantum leap in electric heating

For over 40 years, Creda Heating has been dedicated to heating the nation. In the future, low-carbon electricity will make electric heating the first choice for a lower carbon footprint and low lifetime cost of ownership.

As pioneers in electric heating, Creda Heating continues to lead the field with innovative and contemporary product design – all backed by nationwide after-sales support and a dedicated sales team.

All Creda electric heating products:

- are designed to comply with Part L of the Building Regulations
- feature advanced heating controls to help achieve the best possible SAP ratings
- have a lower capital and maintenance cost than a gas boiler system
- offer total flexibility in design
- are quick and easy to install or upgrade
- are virtually maintenance-free

Whatever the requirement – from new build to refurbishment, a single room to a whole development, whether domestic or commercial – Creda Heating offers the most effective, economical and environmentally-friendly heating solution.

Now Creda Heating is proud to introduce Quantum, an electric heating system like no other. Quantum is up to 25% cheaper to run and uses up to 20% less energy than comparable static storage heaters.

Quantum: Controlling heat like never before.



As electricity turns green, the world is turning to Quantum



As electricity generation turns ever greener, the world is turning to electric heating. Nationally-supplied, low-carbon electricity provides security of energy supplies and low-carbon heating, while helping to reduce the devastating impact of climate change.

The product of three years' research and development, the Quantum energy system combines the very latest in electric heating with an economical demand response management tool. The result: the world's most advanced electric space and water heating system.

State-of-the-art
electric heating



An economical
demand response
management tool



Quantum: the world's
most advanced electric
space and water
heating management
system

Quantum in a nutshell

The Quantum energy system is designed to use low-carbon energy from renewable sources – such as hydro electric generation and wind – and converts this into heat. When demand is low, the smart system stores this green energy up in the form of heat to be used when it's needed. Importantly, the Quantum system can use electricity generated by any source.

Quantum: the smart electric heating system that stores green energy.

The Quantum energy system offers homeowners:

- a low-cost, low-carbon, electric heating system
- an electric heating system whose carbon use will decrease over time
- optimal efficiency, comfort and control

A closer look at the Quantum energy system

The Quantum energy system consists of three elements which can work as a system or be purchased individually:



The Quantum Room Heater: an ultra-efficient heater

- Achieves low running costs by utilising off-peak tariffs. On a room-by-room basis, 97% of the heating requirement is anticipated to be met by off-peak energy
- Automatically adjusts to, and matches, the user's needs/lifestyle through dynamic storage capacity
- Has an easy-to-use electronic user interface with LCD display, featuring a room temperature setting with seven-day programmer
- Provides extremely rapid heat-up through fan-assisted output
- Ensures heat is always readily available thanks to its boost element
- Has an attractive, state-of-the-art and compact design (no deeper than a double wet radiator)
- Covers previous 'fixing marks' of most comparably sized traditional storage heaters
- Has facility for an optional communications link for demand side management to help stabilise the grid

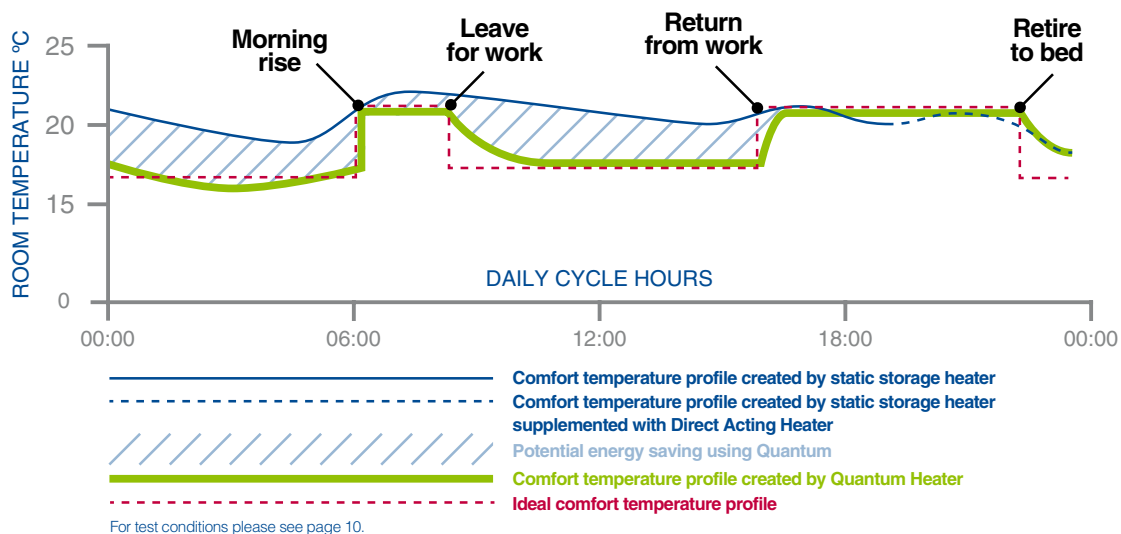
Room Temperature Profile

Quantum CQH125 vs Conventional Static 24kWh Storage Heater & Direct Acting Heater

Average weekday profile

Quantum Energy Use = 10 kWh + 0.2kWh (fan) = 10.2kWh – 9 hours heating @ 21°C

Conventional Storage Energy Use = 12.2 kWh + 1.3kWh Direct Acting Supplementary Heating = 13.6kWh – 9 hours heating @ 21°C



The Quantum Room Heater operates on any off-peak tariff for low running costs.

The Quantum Cylinder*: smart energy water storage

- Provides a long-life, low-maintenance, economical hot water supply
- Delivers fast-filling baths and powerful showers through mains pressure hot water
- Is manufactured from stainless steel and comes complete with a 25-year warranty on the cylinder
- Is available in seven sizes – from 100 to 300 litres, both vented and unvented
- Features advanced controls with electronic user interface with LCD display, providing feedback on hot water temperature and availability
- Has a hard-wearing, black insulation outer shell made from recycled materials, giving class-leading heat retention capability
- Has demand side management capability through bi-directional communications to energy supplier



The Quantum Cylinder provides smart energy water storage and a long-life, low-maintenance, economical hot water supply.

The Quantum Hub*: optional system manager

- Enables two-way communications between Quantum products and the energy supplier
- Is future-proofed to support upcoming changes in energy supply
- Can be mounted discreetly anywhere in the property thanks to its compact size, which is approximately half the size of this page
- Allows the Quantum Room Heater and Quantum Cylinder to be connected to a permanently live electrical circuit – and still benefit from off-peak rate costs
- Communicates with each Quantum appliance via a transceiver



*Available May 2013.

The Quantum Hub enables two-way communications between Quantum and the energy supplier.

Low-carbon and low-cost too

The Quantum Room Heater is up to 25% cheaper to run and uses up to 20% less energy than other comparable electric heaters. How? It's all thanks to new developments in insulation technology and controllability.

Here's how the Quantum Room Heater's running costs stay so low:

1. Off peak tariffs

Quantum utilises off-peak tariffs whenever possible to keep costs to a minimum. So end users get the benefits associated with electric heating at running costs unachievable with other 'direct-acting' electric heating systems.

2. New insulation technology

The Quantum Room Heater uses the very latest insulation material – one with a thermal conductivity even lower than that of still air. This prevents heat being lost or wasted.

3. Installation and maintenance

The Quantum Room Heater is easy to install and maintenance free.

7 day programmer



7 day programmer with 3 pre-set (adjustable) timer profiles and display adjustment. Holiday mode giving frost protection, child lock settings and many more features.



End users get the benefits associated with electric heating at running costs unachievable with other 'direct-acting' electric heating systems.

Controlling heat like never before

Part of the beauty of the Quantum Room Heater is its controllability. The heater monitors and adapts to its environment – that is, climate conditions and usage patterns – and delivers heat accordingly. Should the end user wish to adjust heat levels manually, they can do that too!

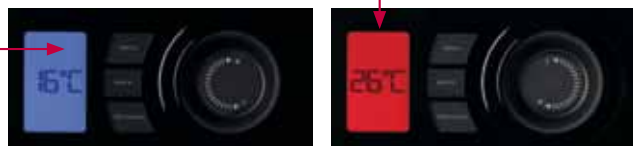
The Quantum Room Heater will:

- Monitor weather and usage patterns, learning from and adapting to these to deliver precisely the right amount of heat, when required
- Respond to any changes in climate and/or room temperature conditions, altering configurations automatically
- Monitor the target room temperature and intuitively adjust output to maintain this – to within a fraction of a °C
- Work seamlessly with the grid, using off-peak tariffs when possible to minimise user costs and maximise efficiency

The end user can:

- Use the built-in electronic interface with LCD display and rotary 'click' selector to manually adjust the temperature
- Choose from a preset programme menu, complete with options such as 'Home all day' or 'Holiday Mode', then relax as the Quantum Room Heater takes control

Controls



Target temperature display is colour coded to assist visually impaired. Heater will maintain selected temperature to within $\pm 0.3^{\circ}\text{C}$.

Rotary click selection adjusts target temperature and enables menu scrolling and selection.

The Quantum Room Heater will monitor the target room temperature and intuitively adjust output to maintain this – to within a fraction of a °C.

The Quantum energy system. How will you benefit?

Quantum has a number of benefits, whether you are a specifier, end user, energy supplier or installer, so get ready to reap the rewards of the Quantum energy system.

For the specifier:

- ✓ An aesthetically-pleasing, state-of-the-art design
- ✓ A compact system, no deeper than a double wet radiator
- ✓ Full coverage of the 'fixing marks' of most comparably-sized traditional storage heaters
- ✓ A wide range of heater sizes, allowing flexibility in project specification
- ✓ Simple specification within SAP
- ✓ Technology that's low-cost, low-carbon and future proofed
- ✓ A virtually maintenance-free system

For the end user:

- ✓ An aesthetically-pleasing, state-of-the-art design
- ✓ Use of a nationally-supplied and future-proofed fuel source
- ✓ A system that's economical to run – helping to alleviate fuel poverty
- ✓ A greater level of comfort, delivering heat only when required
- ✓ Greater accuracy in room temperature control to $\pm 0.3^{\circ}\text{C}$
- ✓ A system that's highly responsive to external temperature changes
- ✓ Low-maintenance and high reliability
- ✓ A fully automatic system (after initial set-up)



Technology that's low-cost, low-carbon and future proofed.

A system that's economical to run and highly responsive to external temperature changes.



For the energy supplier:

- ✓ Multiple communication options
- ✓ Off-peak tariff market protection
- ✓ Economical demand response management tool
- ✓ Low-cost, low-carbon and flexible energy storage – it's entirely up to the utilities how much energy they store and when they store it
- ✓ Better use of wind generation – so helping to decarbonise the grid
- ✓ Greater supply-demand balance
- ✓ Higher system reliability and security
- ✓ Reduced need for investment in networks
- ✓ Lower standby generation cost

For the installer:

- ✓ Easy installation, minimising time on site
- ✓ Electronic controller preset with the time and date, as well as user programmes
- ✓ Reversible cable entry points and coverage of all previous 'fixing marks' of most comparably sized storage heaters
- ✓ Minimised user confusion thanks to easy-to-use controls



Low-cost, low-carbon and flexible energy storage – it's entirely up to the utilities how much energy they store and when they store it.

Easy-to-use controls mean there's less chance of user confusion.

The Quantum Room Heater

Model No.	CQH070	CQH100	CQH125	CQH150
Height	730mm	730mm	730mm	730mm
Depth	185mm	185mm	185mm	185mm
Width	703mm	865mm	1069mm	1069mm
Installed Weight	83kg	107kg	135kg	155kg
Output Rating (stored energy)	700W	1000W	1250W	1500W
Input Rating	1560W	2200W	2760W	3300W
Max. Storage Capacity	10.9kWh	15.4kWh	19.3kWh	23.1kWh
Boost Element Rating	630W	880W	1130W	1300W

ENERGY CELL PACKS – Packaged separately, required in the following quantities:

Model No.	CQH070	CQH100	CQH125	CQH150
Energy Cell Packs Required	6	8	10	12

Controls

Electronic user interface with LCD display offering room temperature setting, 7 day programmer, installer settings, 3 pre-set timer profiles, holiday setting and more.

Charge Controller

Fully automatic charge controller incorporates self learning algorithms to optimise daily energy storage, using multiple sensors to automatically adjust the charge taken based on recent energy use patterns and future programmed requirements.

Thermostat

Electronic – capable of maintaining a room temperature to $\pm 0.3^{\circ}\text{C}$ during heater operation.

Safety Devices

Electromechanical limit thermostat (self resetting).

Electromechanical cut-out (manual reset).

Electromechanical over temperature limit thermostat for fan.

Fan

Low rev/low noise heat circulation fan with variable speed and soft start.

Thermal Insulation

Front, rear top and ends – microporous silica.
Base – calcium silicate slab.

Battery Backup

3.3V coin cell battery to backup real time clock.
Battery life > 5 years.

Approvals

BEAB/EN60335/EMC/CE.

Storage Core

High density bonded magnetite energy cells.

Colour/Finish

White.

Supply

230-240V/50Hz. Off-peak + 24 hour supply required.

Warranty

2 years.

Climate Room Test Chamber – conditions for Room Temperature Profile graph on page 4.

A climate room was built to accurately replicate a room from typical UK housing stock. It has two external walls and two internal walls, and the temperatures outside all walls, ceiling and floor are accurately controlled.

The U values of walls, windows and door are as follows:

Room dimensions	4m x 3m x 2.4m
U values:	
Double layer solid brick outer walls	2.0
Insulated internal walls and ceiling	0.34
Insulated floor	0.25
UPVC double glazed window	3.3
UPVC double glazed door	3.0
Air change rate	1 A/C per hour

The Test

A daily temperature profile was set up outside the two external walls to simulate an average heating day in a property based in Sheffield, England.

Minimum outside temperature $+4^{\circ}\text{C}$

Maximum outside temperature $+11^{\circ}\text{C}$

The heating periods were set at 07:00 to 09:00 and 16:00 to 23:00.

The target room thermal comfort temperature was 21°C during these times.

The following heaters were tested under these conditions:

- 3.4kW (input) static storage heater with manual charge control – supplemented with a direct acting heater
- 2.8kW (input) Quantum heater (CQH125)

For results please see graph on page 4.

The Quantum Cylinder

Cylinder Model	CQCd 100-580	CQCd 125-580	CQCd 150-580	CQCd 175-580	CQCd 210-580	CQCd 250-580	CQCd 300-580
Volume	100l	125l	150l	175l	210l	250l	300l
Height	795mm	945mm	1115mm	1265mm	1490mm	1765mm	2065mm
Diameter	580mm	580mm	580mm	580mm	580mm	580mm	580mm
T&P Valve	570mm	720mm	890mm	1040mm	1265mm	1540mm	1840mm
Immersion 1	208mm	208mm	208mm	208mm	208mm	208mm	208mm
Immersion 2	–	570mm	650mm	750mm	820mm	1265mm	1495mm

Type

Vented and unvented systems
Direct cylinders

Colour/Finish

Black

Controls

Highly intuitive ergonomically designed electronic control system

Modern, easy-to-read display

User adjustable cylinder water temperature to +/- 1°C

“Boost” immersion heater for rapid response short-term use

Hot water volume availability display

User can set normal water temperature and boost water temperature

Boost element automatically disengages upon reaching target temperature

Holiday set back function

Technical features

Class-leading insulation levels

Bi-directional communication to power utility of specific control and configuration parameters

High level energy management system will interact with external (Wide Area) Networks and local (Home Area) Networks

Communicates stored water volume and temperature

Automatic sterilisation function

Algorithm specifically calculates:

- Hot water volume
- How much more energy can be stored in the tank until the maximum set temperature is reached
- Water and energy consumption over a defined period

Heat loss over 24 hours (ΔT 45k): Storage capacity @ 65°C water (ΔT 55k)

100l: 0.75kWh 5.5kWh

125l: 0.95kWh 7.1kWh

150l: 1.1kWh 8.8kWh

175l: 1.22kWh 10.3kWh

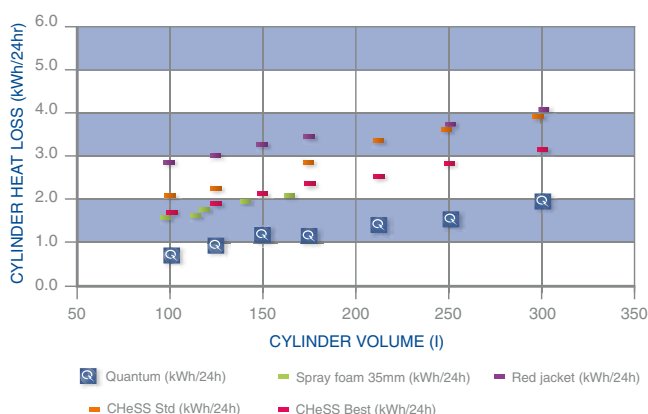
210l: 1.4kWh 12.7kWh

250l: 1.55kWh 15.3kWh

300l: 1.96kWh 18.4kWh

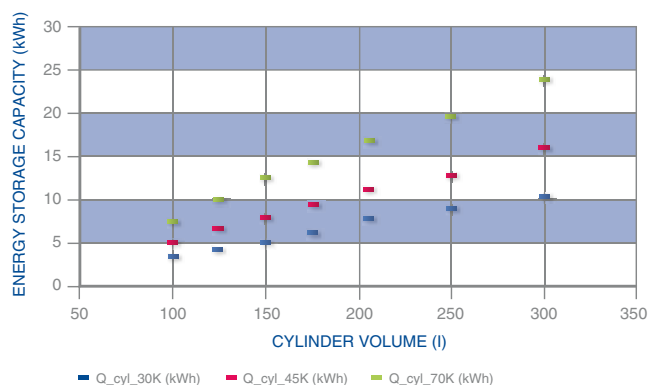
Cylinder Heat Loss Comparison

This graph illustrates the standing heat loss of a range of Quantum Cylinders against a range of references.



Energy Storage Capacity Water Cylinders

This graph illustrates the energy storage capacity of the Quantum Cylinder across a range of temperatures.



Notes

- Creda Quantum values measured for direct electric cylinder in accordance with EN12897 at a temperature difference between water (65°C) and ambient (20°C) of 45K.
- CHeSS standard and best values in accordance with central heating system specification CE 51 2008, and Energy Saving Trust publication.
- Red Jacket calculation based on 80mm fibre glass insulation.

- Spray foam cylinder heat loss data taken from competitor product range. The stated insulation thickness is 35mm.
- It should also be considered that cylinder replacements are covered under Part L1B of building regulations (conservation of fuel and energy). Part L1B refers to the Domestic Building Compliance Guide which calls for cylinders to have a heat loss of no more than the high level products as specified in CE 51 2008.

Sales

Email: salesorders@credaheating.co.uk

Trade Enquiries:

Tel: 0844 879 3587

Email: customer.services@credaheating.co.uk

Consumer Enquiries:

Tel: 0844 879 3588

Email: customer.services@credaheating.co.uk

credaheating.co.uk/quantum

Waste Electrical and Electronic Equipment Directive

We confirm that all our responsibilities under the Waste Electrical and Electronic Equipment Directive will be fulfilled in accordance with the law. As required within its provisions we are members of an accredited WEEE recycling scheme for all product categories within the scope of the directive.

WEEE product registration number: GE0057TS



The BEAB Approved Mark is the electrical safety mark of the UK's leading independent approvals specialists. It confirms to all in the supply chain that all products displaying the mark have been evaluated to the highest European and International safety standards.



All Creda Heating products are CE marked to certify that the product fulfils the requirements of all relevant European product directives.



PATENTS PENDING

Creda NOBO

Millbrook House, Grange Drive, Hedge End,
Southampton SO30 2DF

credaheating.co.uk

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All Creda NOBO products, unless otherwise stated, are covered by a full parts and labour guarantee for 1 year from the date of purchase, so should the product become faulty within the guarantee period, it will be replaced with a new product or repaired by our service engineers, totally free of charge. We reserve the right to alter product specification or appearance without prior notice. All finishes in the brochure are as accurate as printing processes allow.