



CHRS Smart Thermal Regulation Technical Sheet

Futureproof your developments with CHRS: the on-demand, net-zero heating and hot water solution for modern housing estates. Using your site's natural clay thermal mass, CHRS delivers 365-day, 24/7 hot water and heating across your entire development without gas, flues, or noisy heat pumps at each home. Provides low-carbon, low-OPEX, closed-loop heating and hot water using clay's natural geothermal properties.

System Overview

Primary Source: CHRS closed-loop PEX/HDPE system under clay-rich land (depths 5–26 m, lengths 200–800 m per stack).

Energy Output: 60–70°C water supply for heating and hot water.

Operation Cycle:

System heats water to 70°C.

System shuts down, maintaining temperature using thermal mass.

When the system cools to 60°C under demand, pumps and heat pumps restart to reheat.

Cycles repeat to maintain 60–70°C band with minimal electricity use.

Key Technical Points

Pipe Layout: Flexible circular layouts for site constraints while maintaining N-S/ E-W alignment for optimal thermal recharge.

Pipe Sizing:

Main loop: 63–110 mm PEX/HDPE to manage high flow and thermal buffering.

Branches: 22 mm PEX to each HIU per property.

Heat Pumps: High-efficiency COP ~3.5, only active when reheating is required.

Circulation Pumps: Automated staging for gradual loop activation to prevent thermal shock to clay and system.

Control & Monitoring:

Smart sensors track system temperatures.

Automated loop isolation for clay thermal recovery if needed.

Peak demand management ensures consistent supply.

Benefits for Developers

Replace costly ASHP or gas boilers; installs with a scalable, centralised system that delivers higher EPC ratings and net zero readiness for planning approvals

Compact HIUs in each home replace combi boilers, offering flexible placement without external units or flues, saving space while delivering instant hot water and heating.

Net Zero alignment with local authority targets.

No constant electric draw, reducing service costs.

Trenchless, low-disruption installation while maintaining usable land.

Modular for phased housing developments;

330 homes by 800m stack, or 660 homes by 2x 800m stacks

Minimal operational costs for buyers, with heating and hot water bills reduced to a low standing charge, making your developments stand out in a competitive market.

Long-term reliability: PEX-based underground loops and modular heat pump stacks designed for 20–50 years of operation with minimal servicing.

With CHRS, you can deliver zero-gas, low-carbon homes at scale, meeting Future Homes Standard targets while offering buyers a clean, quiet, low-bill lifestyle.

Resident Benefits

Reliable, instant hot water and heating.

Reduced annual heating bills.

Silent, maintenance-light operation.

So Again, Why CHRS is Ideal for your developments?

Higher EPC Ratings & Net Zero Ready

- Achieve Future Homes Standard compliance without redesigning houses.
- Cleaner, lower-carbon than ASHPs or gas.

Compact & Flexible Home Install

- HIUs replace combi boilers.
- No flues or external units, giving layout flexibility.
- Silent operation.

Lower Buyer Bills

- Centralised system lowers heating & hot water costs for buyers.
- Increases buyer appeal in a cost-sensitive market.

Developer Savings

- Avoids costly ASHP installs (~£8–15k per home).
- No need for oversized radiators or underfloor heating retrofits.

Grid-Friendly & Renewable

- Lower electricity draw than ASHP rollouts.
- Compatible with site solar for net zero.

Long-Term Reliability

- PEX loops and modular heat pumps last 20–50 years with minimal servicing.

For Further Information Please Contact;

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