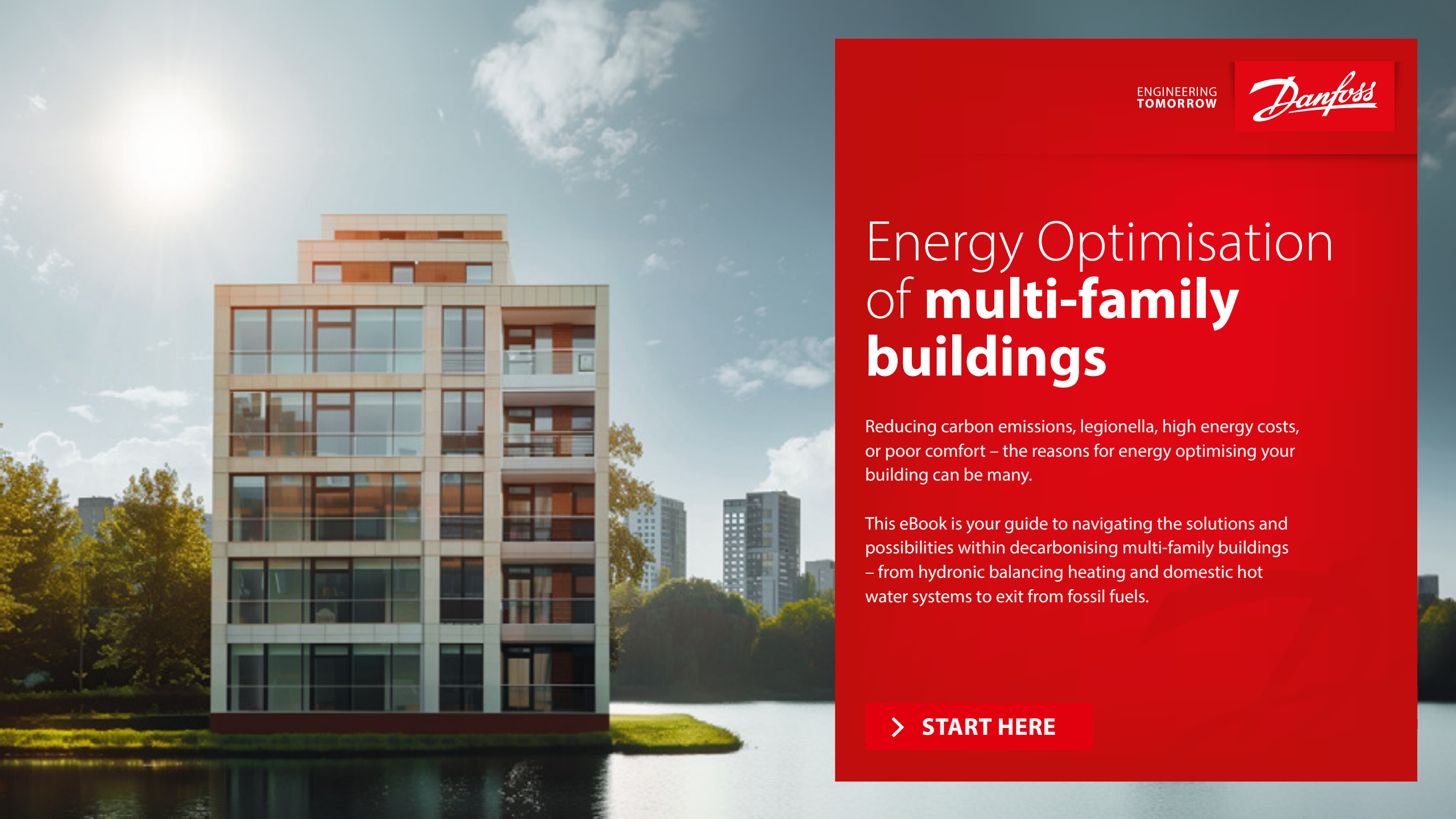


ENGINEERING TOMORROW

Danfoss

Energy Optimisation of **multi-family buildings**

Reducing carbon emissions, legionella, high energy costs, or poor comfort – the reasons for energy optimising your building can be many.

This eBook is your guide to navigating the solutions and possibilities within decarbonising multi-family buildings – from hydronic balancing heating and domestic hot water systems to exit from fossil fuels.

START HERE

Building blocks for Optimisation

Energy optimisation of buildings is not an 'if', but a 'how'. With local authorities across the UK declaring climate emergencies as well as potential gas exits, renovations and smart solutions are the key to meeting regulations, reducing carbon footprint, and ensuring a high level of comfort.

However, while the goal is clear, the road there might not be.

At Danfoss, we've been crafting the building blocks for a more efficient tomorrow for decades. We understand the challenges. The legislation. And the need for action – within any budget or time frame.

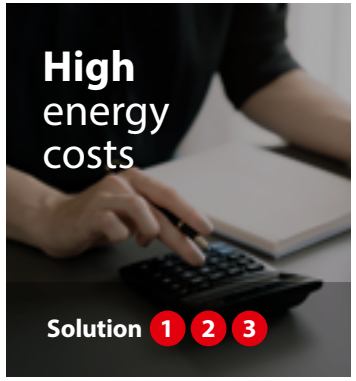
As your knowledgeable partner specialised in efficient heating and cooling solutions, we provide you with the building blocks to simplify the decarbonising of multi-family buildings—from roof to basement.

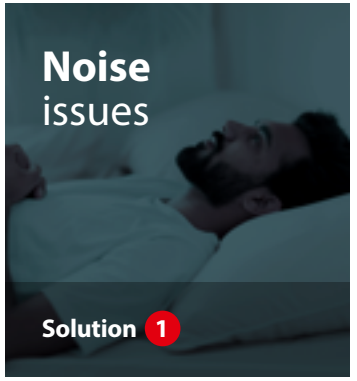
Find the Optimisation blocks for your building >

Together, we're building efficiency. **Block by block.**

Find the Optimisation blocks for your building

WHAT IS YOUR CHALLENGE?





FIND THE SOLUTION

1 **Hydronic balancing** of radiators and underfloor heating

Read more here >

2 **Heating system upgrade** to exit fossil fuels

Read more here >

3 **Balancing** of domestic water systems

Read more here >

Solution 1

Hydronic balancing of radiators and underfloor heating

Hydronic balancing is essential for optimising HVAC systems, ensuring they operate efficiently and reducing energy consumption.

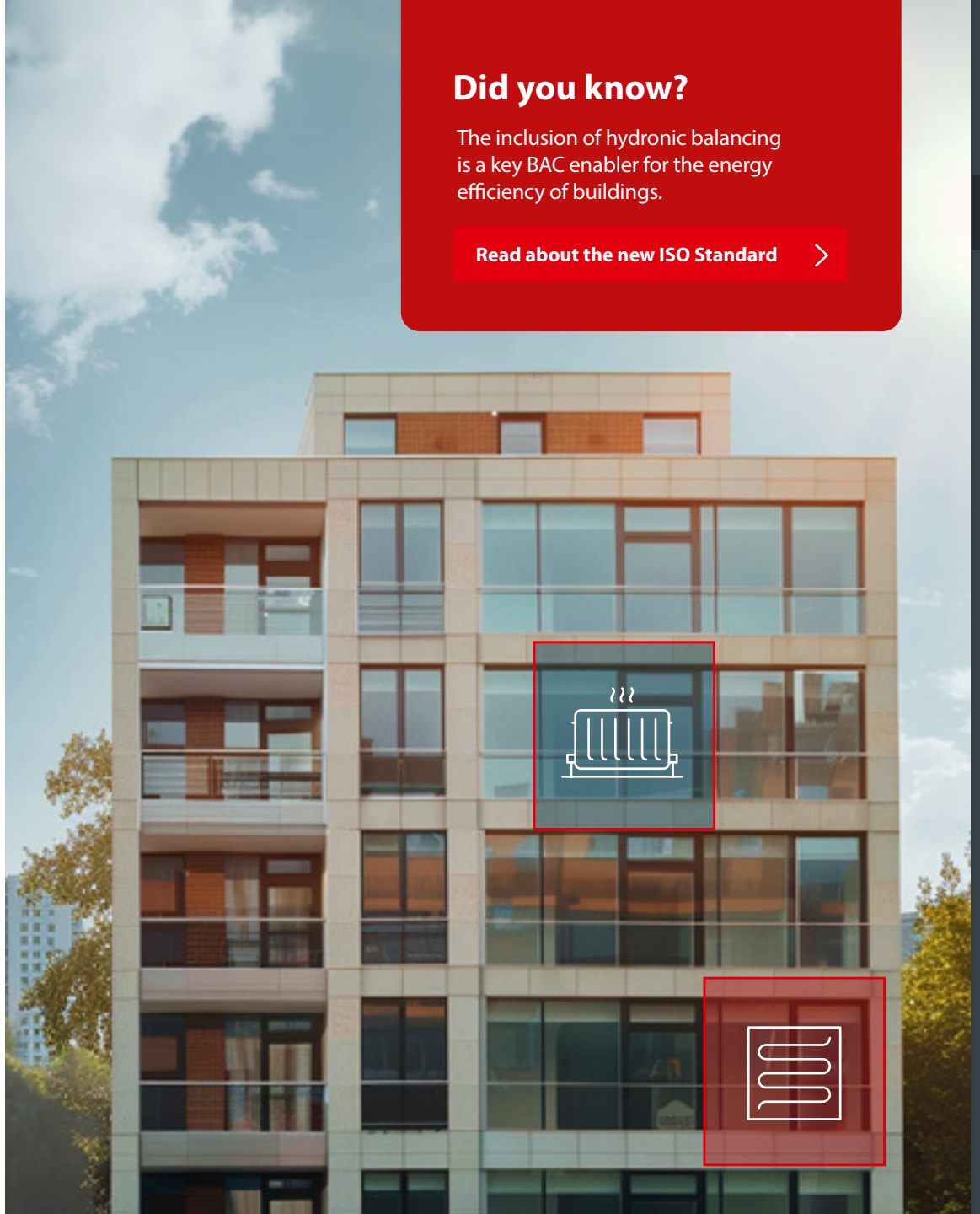
The balancing process adjusts flow rates to real-time demand. This prevents overheating, reduces supply temperature, and minimises energy use for pumping — all of which contributes to significant energy savings. With rising energy prices, and a global push towards reducing CO_2 emissions, hydronic balancing offers a practical solution to enhance system performance and meet climate goals.

It also addresses common issues, such as noise from high pump settings, improves indoor comfort and ensures the system operates at optimal conditions.

You can optimise hydronic balancing in two ways:

Balancing of radiators >

Balancing of hydronic floor heating >



Did you know?

The inclusion of hydronic balancing is a key BAC enabler for the energy efficiency of buildings.

Read about the new ISO Standard >

Driving Efficiency in Multi-Family Buildings with new legislation

The Optimisation of heating, ventilation, and air conditioning (HVAC) systems in buildings requires more than simply improving the efficiency of the equipment (e.g., heat pumps, boilers, chillers). It is also vital to consider how heating and cooling are distributed from the central generator toward end-use. "Active control of energy usage", provided through building automation and control solutions, is an essential pillar for efficient buildings.

Plus, the updated version of the standard reflects the importance of modulation, dynamic hydronic solutions, and hydronic balancing for the energy efficiency of buildings.

While often overlooked, this is a key element to ensure that energy efficiency measures on the envelope and energy generation deliver in practice what they promise in theory.

Read more here >

Balancing of radiators

Optimisation projects vary in scope. That's why we've divided the options into different blocks – so you can upgrade the building depending on your needs, budget, and time frame.

Reduce complexity with the **all-in-one digital toolbox**

GET IT ON Google Play

Download on the App Store

Did you know?

Upgrading radiator valves and thermostats can result in energy savings ranging from 8% to 46%, depending on the solution you invest in.

Learn more

LIGHT UPGRADE

Preset existing radiator valves that are not already preset – made easy with the Installer App.

Install new radiator thermostats.

Potential energy savings

MEDIUM UPGRADE

Preset existing radiator valves that are not already preset – made easy with the Installer App.

Install new radiator thermostats.

Upgrade with ASV dynamic balancing valves on the risers.

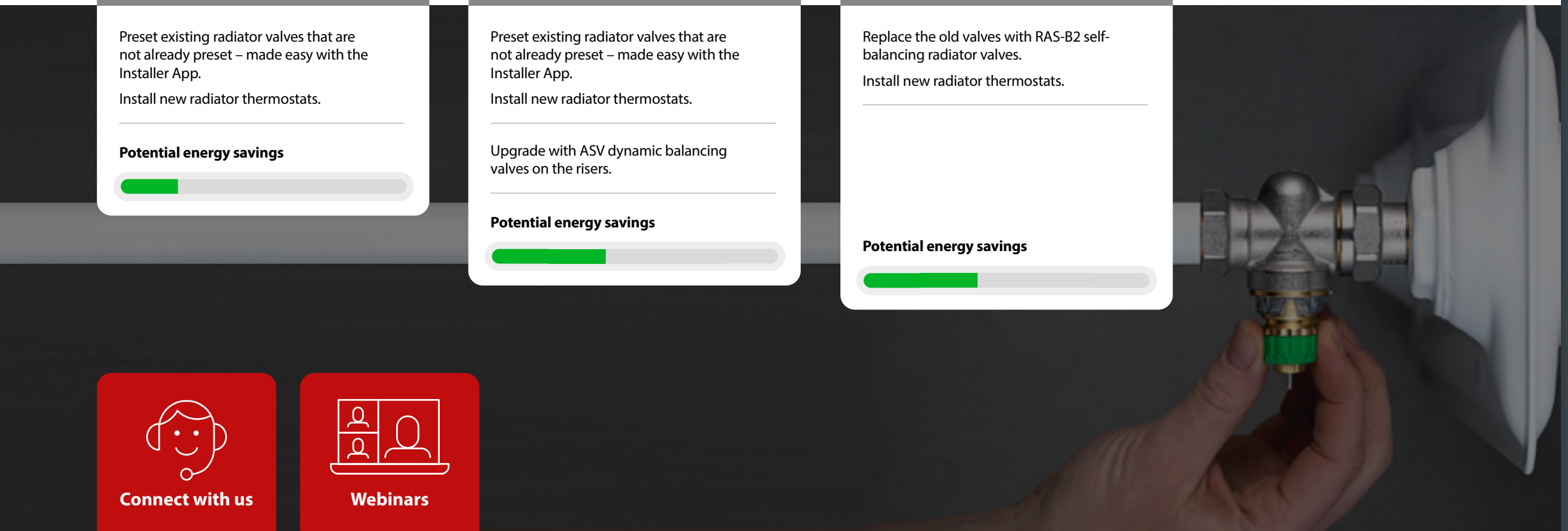
Potential energy savings

MEDIUM+ UPGRADE

Replace the old valves with RAS-B2 self-balancing radiator valves.

Install new radiator thermostats.

Potential energy savings



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Webinars

Balancing of hydronic floor heating

Optimisation projects vary in scope. That's why we've divided the options into different blocks – so you can upgrade the building depending on your needs, budget, and time frame.

Reduce complexity with the **all-in-one digital toolbox**

GET IT ON Google Play

Download on the App Store

Did you know?

Choosing the Danfoss Icon2™ hydronic floor heating solution gives you the advantage of an auto-balanced system, smart home compatibility, and a solution that fits 90% of all applications.

Learn more >

LIGHT UPGRADE

Manually preset the flow in the existing hydronic underfloor heating system – made easy with the Installer App.

Potential energy savings

MEDIUM UPGRADE

Keep the existing manifold but replace the actuators and room thermostats with a main controller and wireless room thermostats, such as Danfoss Icon2™.

Upgrade with dynamic hydronic balancing in front of the manifold or on the risers.

Potential energy savings

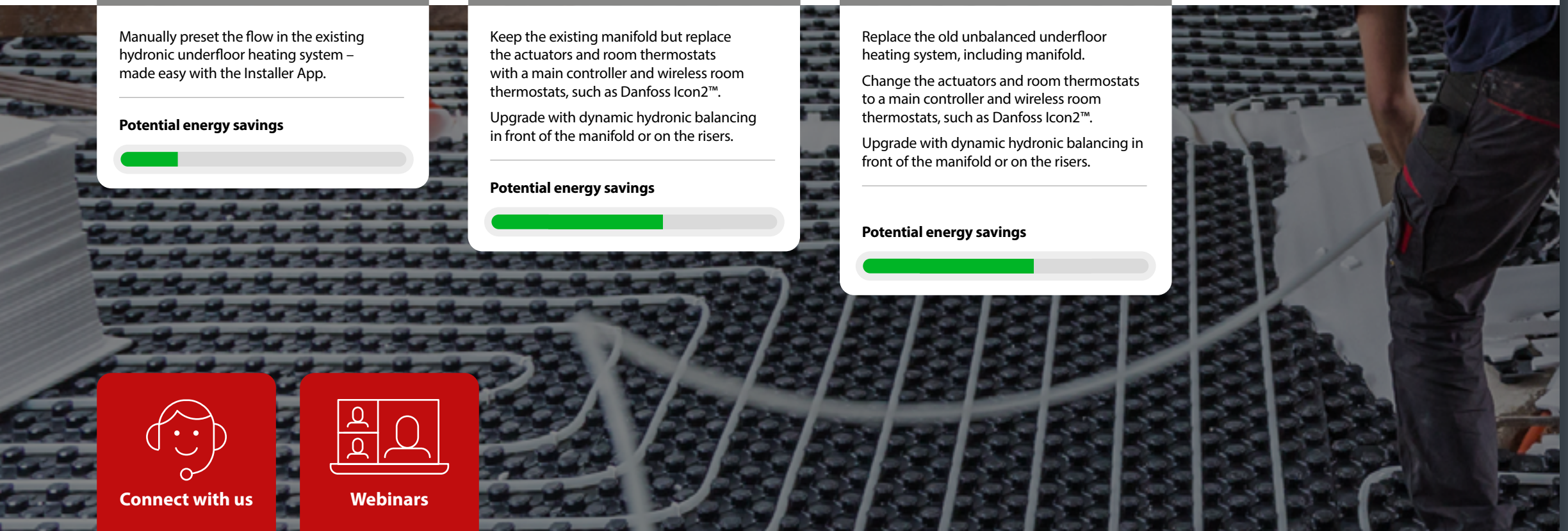
EXTENSIVE UPGRADE

Replace the old unbalanced underfloor heating system, including manifold.

Change the actuators and room thermostats to a main controller and wireless room thermostats, such as Danfoss Icon2™.

Upgrade with dynamic hydronic balancing in front of the manifold or on the risers.

Potential energy savings



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Webinars

Solution 2

Heating system upgrade to exit fossil fuels

Facing rising energy costs and a need to reduce CO_2 emissions, it's crucial to upgrade heating systems to eliminate fossil fuel dependence. These improvements not only lead to significant cost savings but also make energy use more efficient.

Integrating reliable on-demand domestic hot water (DHW) heating is a key part of this process, ensuring safer water and reducing legionella risks. Plus, in response to the increasing skills shortage, easy-to-install and pre-assembled solutions are essential in terms of reaching the project finish line.

Find your optimisation blocks depending on your desired conversion:

- **Conversion to district energy network from a centralised system based on fossil fuels**
- **Conversion to heat pump from a centralised heating system based on fossil fuels**
- **Conversion to central heating from individual gas boilers**

Conversion to district energy network
from a centralised system based on fossil fuels

Optimisation projects vary in scope. That's why we've divided the options into different blocks – so you can upgrade the building depending on your needs, budget, and time frame.

Did you know?

Our extensive portfolio of substations and heat transfer solutions covers all needs, from 15 kW apartment units to over 4 MW district stations. The range includes options for indirect heating with one or more circuits and various domestic hot water heating systems, including flow, storage tank, and anti-legionella solutions.

Learn more about stations >

LIGHT UPGRADE

Replace the old central gas or oil boiler with a district heating substation.

Make sure the heating system is balanced.

Go to hydronic balancing >

Potential energy savings

MEDIUM UPGRADE

Replace the gas or oil boiler and the old water tank with a district heating substation and a legionella protected water tank.

Implement domestic hot water distribution.

Go to domestic hot water >

Balance the heating system.

Go to hydronic balancing >

Potential energy savings

MEDIUM+ UPGRADE

Replace the gas or oil boiler and the old water tank with a district heating substation and a legionella protected water tank.

Implement domestic hot water distribution.

Go to domestic hot water >

Balance the heating system.

Go to hydronic balancing >

Implement smart building control for optimal energy savings.

Go to Leanheat® >

Potential energy savings

EXTENSIVE UPGRADE

Replace the gas or oil boiler and the old water tank with a district heating substation.

Upgrade the heating distribution and the domestic hot water production with a substation in each apartment, such as the Danfoss EvoFlat.

Go to domestic hot water >

The integrated differential pressure control valve on each Danfoss flat stations ensures the system is automatically balanced in heating mode and during hot water demand.

Implement smart building control for optimal energy savings.

Go to Leanheat® >

Potential energy savings

Fact block

By implementing hydronic balancing and control you can ensure optimal distribution of heating, save energy, and improve end-user comfort.

Connect with us

Conversion to heat pump from a centralised heating system based on fossil fuels

Optimisation projects vary in scope. That's why we've divided the options into different blocks – so you can upgrade the building depending on your needs, budget, and time frame.

Did you know?

Hydronic balancing gains importance with heat pumps, which have lower flow temperatures and increased flow rates. Proper balancing minimises supply temperatures, improving the heat pump's efficiency—each degree Celsius reduction in supply temperature translates to a 2% energy saving.

Learn more about hydronic balancing >

LIGHT UPGRADE

Recalculate and recommission the hydronic distribution to adjust for flow changes from the new heat source.

Go to hydronic balancing >

Potential energy savings

MEDIUM UPGRADE

Replace the old domestic hot water tank with a legionella protected water tank.

Implement domestic hot water balancing.

Go to domestic hot water >

Recalculate and recommission to adjust for flow changes from the new heat source.

Go to hydronic balancing >

Potential energy savings

MEDIUM+ UPGRADE

Replace the old domestic hot water tank with a legionella protected water tank.

Implement domestic hot water balancing.

Go to domestic hot water >

Recalculate and recommission to adjust for flow changes from the new heat source.

Go to hydronic balancing >

Implement smart building control for optimal energy savings.

Go to Leanheat® >

Potential energy savings

EXTENSIVE UPGRADE

Upgrade the heating distribution and the domestic hot water production by installing a Danfoss flat station in each apartment.

Go to domestic hot water >

The integrated differential pressure control valve on Danfoss flat stations ensure the system is automatically balanced in heating mode and during hot water being drawn.

Implement smart building control for optimal energy savings.

Go to Leanheat® >

Potential energy savings

Connect with us

Conversion to central heating from individual gas boilers

Optimisation projects vary in scope. That's why we've divided the options into different blocks – so you can upgrade the building depending on your needs, budget, and time frame.

Did you know?

Flat stations are decentralised heating systems installed in apartments to deliver immediate hot water and controlled heating via a plate heat exchanger and pressure independent control valve. This provides residents with comfortable heating and on-demand domestic hot water with the highest energy efficiency.

Learn more

MEDIUM UPGRADE

Convert to a centralised heat source – either district energy network, heat pump, or hybrid system.

Replace the existing gas boilers in the apartments with a flat station for both heating and domestic hot water supply.

Potential energy savings

Fact block

Danfoss flat stations allow for a direct 1:1 replacement of the existing boiler and offer hassle-free installation with their compatibility with existing secondary side connections.

Connect with us

End-to-end Optimisation for district energy and buildings

Danfoss Leanheat® offers an innovative suite of software solutions that empower the entire district energy value chain to optimise operational efficiency and achieve decarbonisation goals while enhancing ease and comfort in everyday life.

Leanheat® Building's AI-based IoT solution monitors, controls, and optimises indoor temperature and humidity in buildings, providing:

- Up to 10-20% savings on building energy costs while maintaining stable indoor conditions and shifting energy consumption to the most economical period.
- Potential savings of up to 30% in technical building maintenance costs, ensuring accurate preventive fault detection.
- A scalable and hardware-independent solution that seamlessly adapts to all building needs.

Read more here >

Solution 3

Balancing of domestic hot water systems and preventing legionella

The shift to decentralised domestic hot water systems is essential for health and cost savings. On-demand heating reduces legionella risks by eliminating stagnant water where bacteria can grow.

Additionally, with rising energy costs, decentralised systems offer significant savings by minimising heat loss and energy waste, ensuring users benefit from both safe and economical hot water supply.

Balancing of domestic hot water systems >

Balancing of domestic hot water systems

Optimisation projects vary in scope. That's why we've divided the options into different blocks – so you can upgrade the building depending on your needs, budget, and time frame.

Did you know?

With a Danfoss system you never have to worry about legionella. The centralised solution features multi-tank compatible heaters, circulation valves for temperature control, and systems that guarantee hygiene, comfort, and efficiency – even at peak times.

Learn more

LIGHT UPGRADE

Perform thermal balancing of the domestic hot water circulation.

Potential energy savings

MEDIUM UPGRADE

Replace the old domestic hot water tank with a legionella protected water tank.

Perform thermal balancing of the domestic hot water circulation.

Potential energy savings

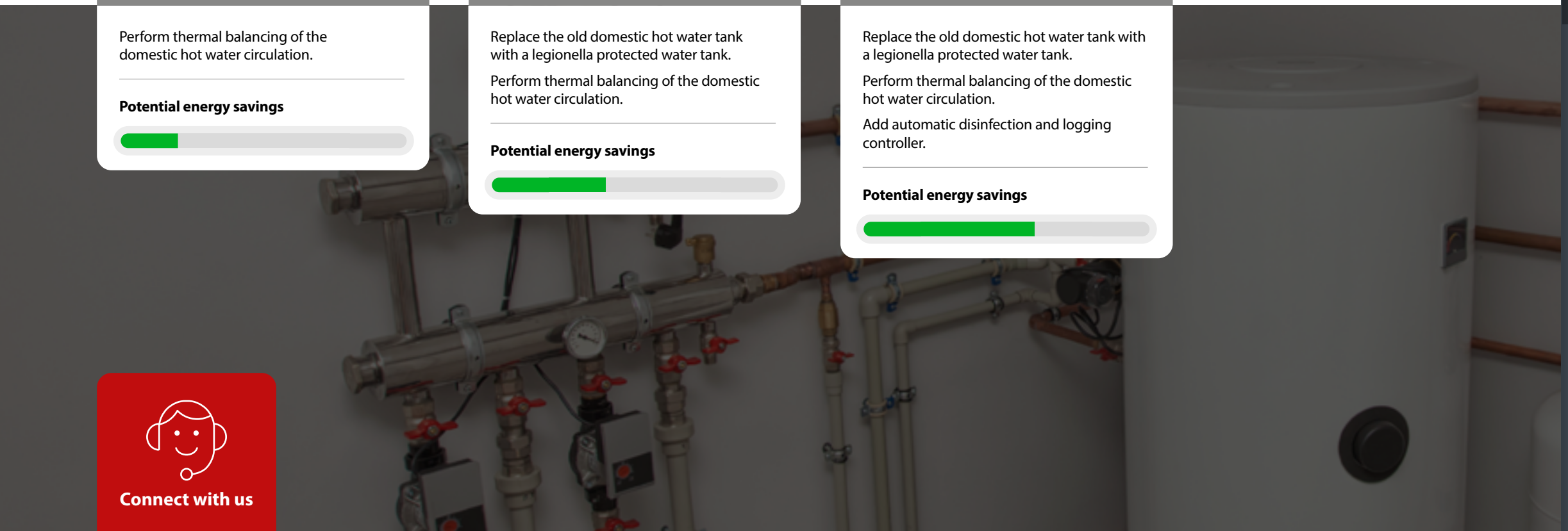
EXTENSIVE UPGRADE

Replace the old domestic hot water tank with a legionella protected water tank.

Perform thermal balancing of the domestic hot water circulation.

Add automatic disinfection and logging controller.

Potential energy savings



Connect with us

Let’s find the building blocks for **your Optimisation**

Whether you have inquiries about hydronic balancing, upgrade of the heating system, or need expert advice, we’re here to assist you. Together, we find the right solution to fit your needs, timeframe, and investment level.

Connect with us – and let’s build efficiency. Block by block.

Contact us here >

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