Legionella Protection and BioSafe

Legionella are bacteria found in soil and water supplies. If inhaled (such as when showering) in sufficient quantities can cause dangerous pneumonia and other infectious complications. Traditionally dangerous Legionella bacteria infections have been primarily associated with poorly sterilised air-conditioning cooling towers, potting mix and plumbing in large institutions

Low concentrations of Legionella bacteria come in with the cold water supply and under certain conditions can multiply to dangerous levels in a hot water cylinder.

Domestic storage hot water cylinders have traditionally been rarely associated with Legionella infection.
Hot water cylinders have been low pressure and made out of copper with an electric element permanently maintaining 60°C.

- Copper tends to kill Legionella (copper ions)
- 60 °C hot water kills Legionella

However this situation is changing, over the last few decades mains pressure systems have become more popular and people are tending to switch off the element more and / or turn down the thermostat (below 50°C)
Most mains pressure cylinders are either enamel lined or more rarely stainless steel as copper is not strong enough for mains pressure.
This makes the requirement for heat sterilisation far more critical.

- Above 70 °C - Legionella dies almost instantly
- At 60 °C - 90% die in 2 minutes
- At 50 °C - 90% die in 80–124 minutes, depending on strain
- 48 to 50 °C - can survive but do not multiply
- 32 to 42 °C - ideal growth range

There is a legal requirement that any hot water cylinder must control Legionella. The New Zealand Building Code clause G12 covers the acceptable solutions.

It is not legal to interrupt power to a Hot Water Cylinder for periods of time or reduce the thermostat to below 60°C without measuring the cylinder temperatures to ensure an acceptable solution for Legionella control can be implemented.

The Smart Hot Water controllers use BioSafe© control to eliminate the risk of Legionella infection*. This involves measuring the entire cylinder to see if the water temperature has satisfied the acceptable solution (G12 AS2 type c). If not then the controller will automatically take over heating and heat the entire cylinder and maintain at least 60°C for one hour. This will only be required at most once a week and a <u>maximum</u> cost of $1.20 a week (holiday mode). The Smart Controller will always run the BioSafe© function even when in holiday mode.

*Senztek design and manufacture the Smart Hot Water controller in New Zealand and were world pioneers at introducing BioSafe© control of Legionella back in 2005. Over 40,000 controllers use Senztek's BioSafe© protection