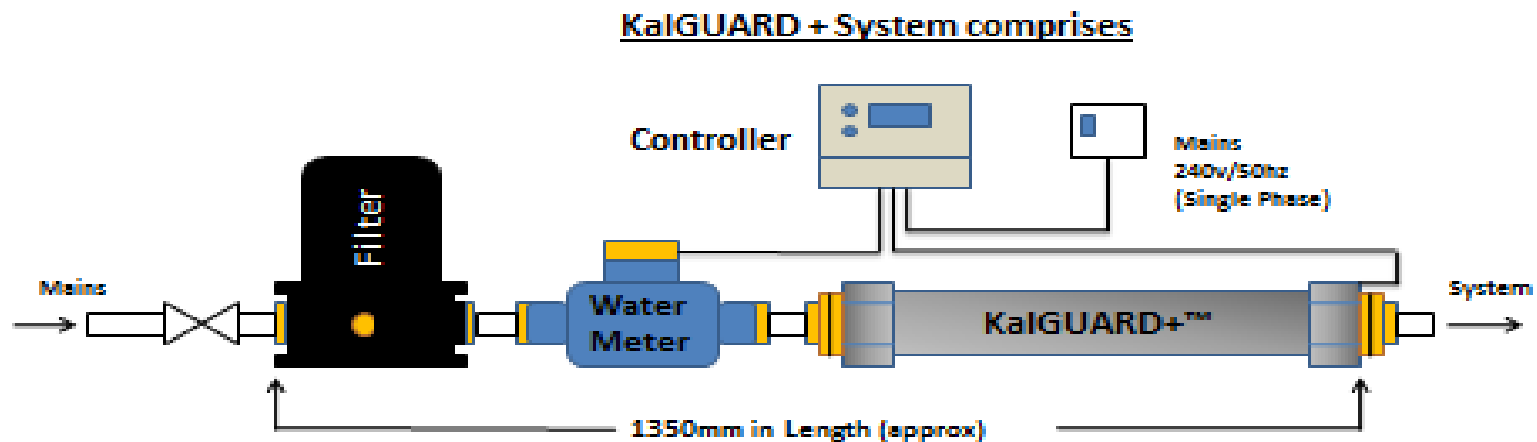


# KaIGUARD+

Electrolytic Water Treatment for lime scale prevention in Hot water systems



# KaIGUARD Technology process

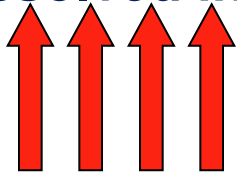


Badly treated,  
deposit  
forming Calcite

**Get it right.....**

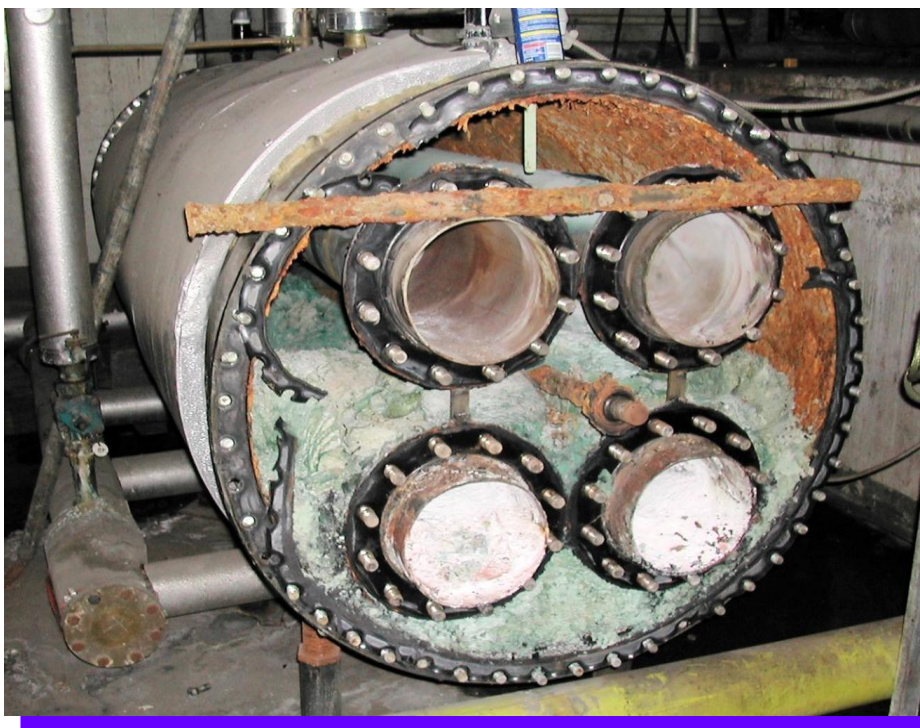
KaIGUARD **electrolytic** treatment,  
non deposit forming Aragonite...

Calcium Bicarbonate  
dissolved in mains water



Heat source, gas, water





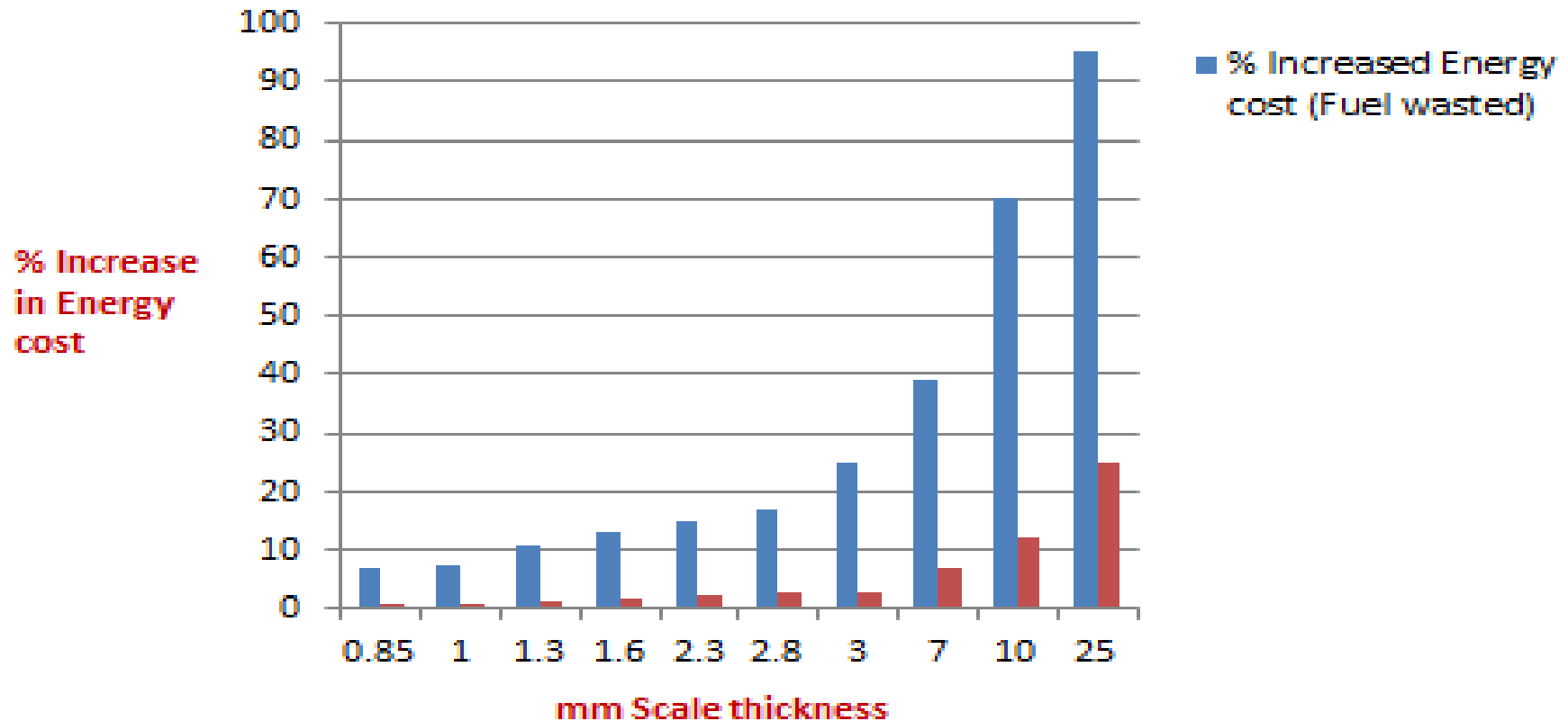
## Get it wrong...

**A failed water heater due to lime scale formation (Hotel in South East England)**

**Preventable capital replacement cost and wasted energy costs**

**After this bad experience they utilised KalGUARD lime scale prevention water treatment on the new water heaters.**

# % Increased Energy cost v Scale thickness



Source: Cranfield University, Glater, and several data points from web pages

# Theoretical calculations on Energy waste

*A typical system fitted with a Direct Fired Water Heater of approx volume 0.263 m<sup>3</sup>*

*If heated to 62 Deg C, running for approx 10 hours per day in total (assuming a clean system) the energy consumed will be = 189.10kwh*

*A year's energy assuming 365 days = 69,021.5kwh per year of energy*

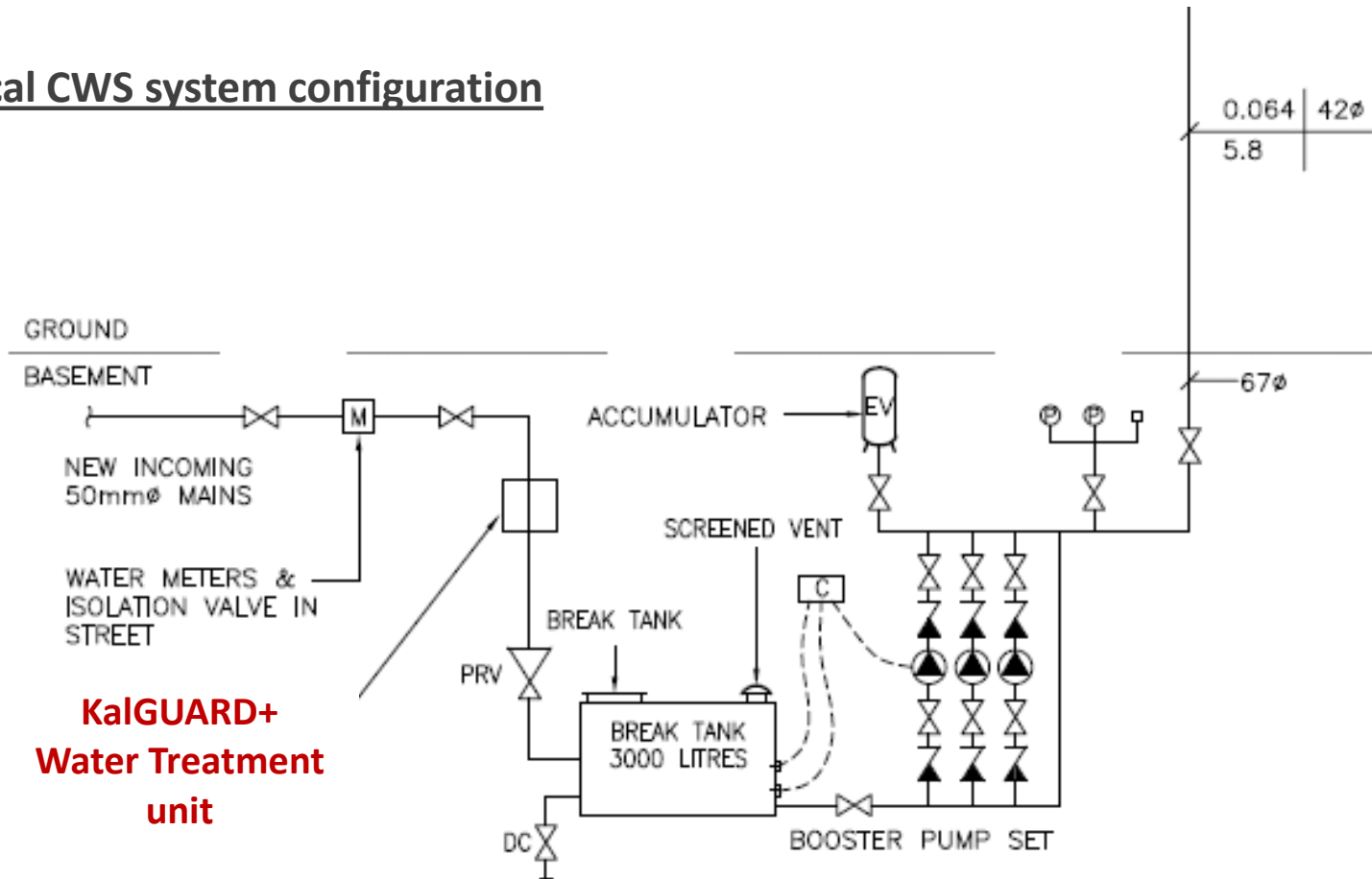
*6mm of Scale only would increase the energy required by 24,157.52kwh*

*Cost of wasted CO<sub>2</sub> per Water Heater per year £155.64p (£12 per tonne)*

*Cost of wasted energy per Water Heater per year £1,932.60p*

# KalGUARD Value Engineering Installation – Schematic

## Typical CWS system configuration



**1 x KalGUARD+ unit can treat all supply feeds drawing from the incoming main, pipe sizes are usually smaller here than the distribution networks.**