

Project InteGreat – Heat Recovery

How to Increase Production Without Increasing Emissions from New Coal Boilers



Fonterra's Energy Strategy



20% reduction in energy intensity by 2020

(2003 baseline)
(amount of GJ used per tonne of product manufactured)



30% reduction in emission intensity by 2030

(2010 baseline)
(tonnes of carbon dioxide equivalent emitted per tonne of product manufactured)

Energy Strategy



FONTERRA'S SHARE OF GREENHOUSE GAS EMISSIONS



85%

ON FARM



10%

PROCESSING



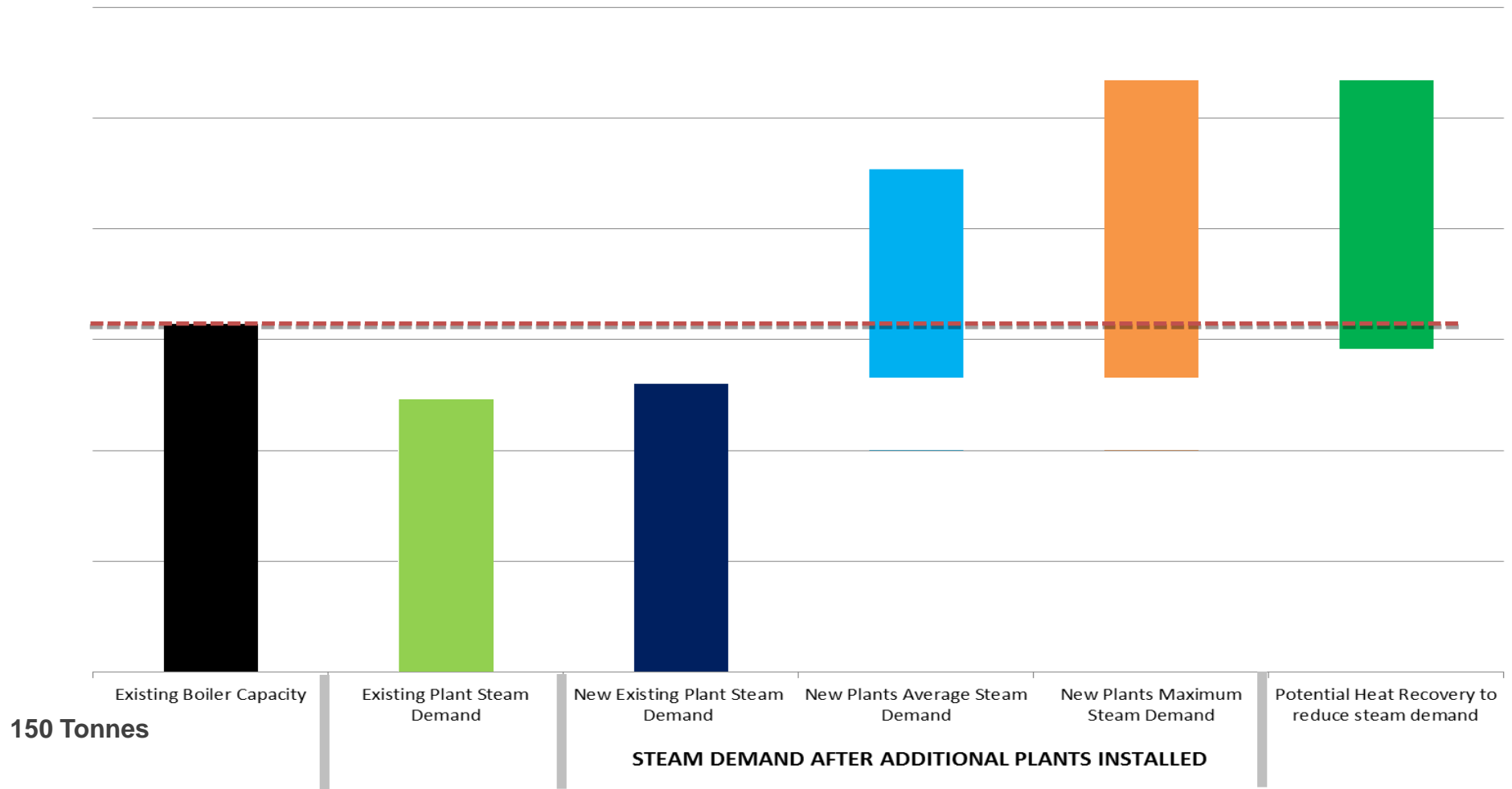
5%

DISTRIBUTION

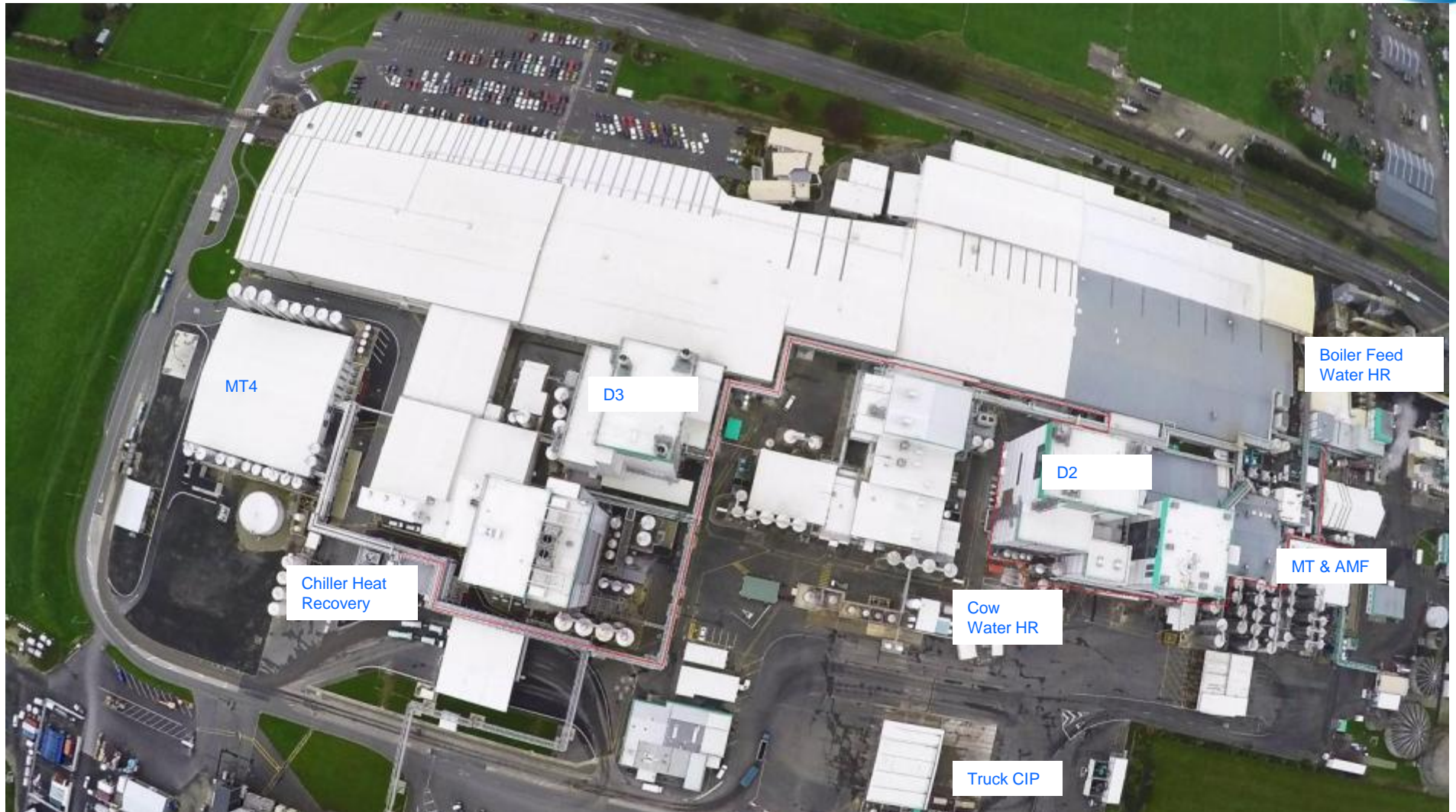
Project InteGreat

- Four new plants added to Edendale site
 - Milk Protein Concentrate (*MPC*)
 - Reverse Osmosis (*RO*)
 - Milk Treatment (*MT*)
 - Anhydrous Milk Fat (*AMF*)
- The four new plants increase the site's processing capacity to 16.4 million litres per day. (Increase of 1.2 million litres).

How to Handle Increased Steam Demand Without building a New Boiler



Heat Recovery - Overview



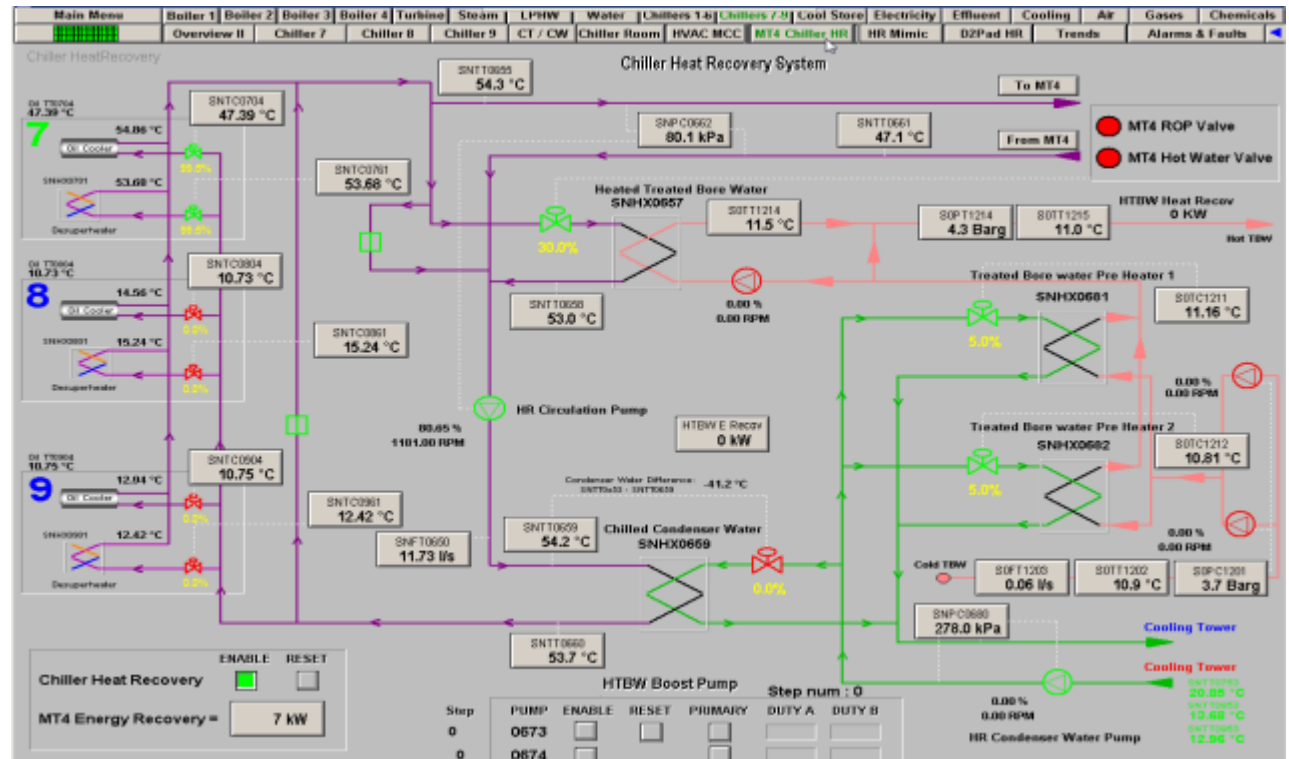
MT4 – Energy Reduction/Efficiency improvements



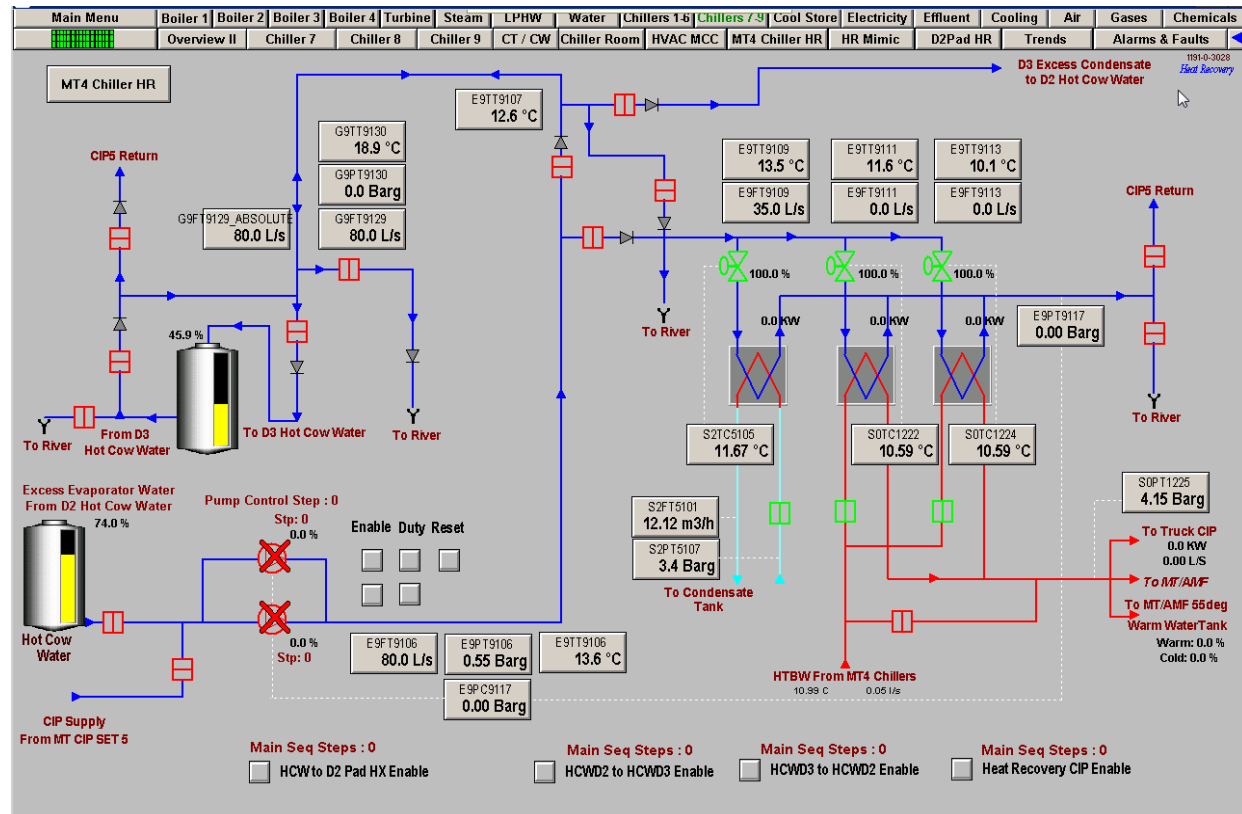
- MT4 - Milk Treatment - 89-93% (vs. standard 75%) Efficient regen sections for pasteurisers
- MT4 - AMF BetaSerum Heat Recovery - Incoming cream preheat with both Alfa & BetaSerum
- Milk Treatment 04 (New InteGreat Plants)- AMF Hot Water Preheating & ROP Preheating



Chiller Heat Recovery



Evaporator Water Heat Recovery



Learning's

- Concept stage
 - Forward looking energy programme
 - Pre drafted energy reduction concepts
 - Early engagement
 - Proven benefits from past energy reduction projects
 - Site stakeholders fully supporting the heat recovery approach
 - Consultant/contractors fully onboard
 - Dedicated resources
- Implementation
 - Tight timelines
 - Equipment delivery
 - Installation windows
 - Control by different departments

LED, Solar Tubes, Insulation, examples



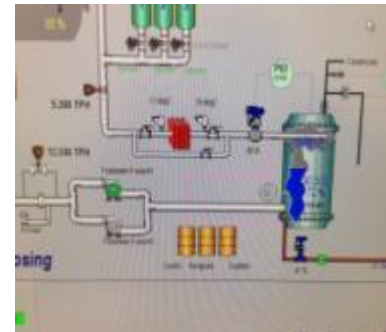
LED Lighting inside D3 & DC Office



Steam Line Insulation Jackets



Solar Tube @ DC Office & Spare parts Warehouse



Heat Recovery Projects @ Stirling

Recognitions



Large Energy User Category



Dairy for life

Questions?

THANK YOU.