

nØde

**Setting buildings up to enable
and thrive in a renewable
powered future**

SESSION 5 | To Infinity and Beyond... (2030)
Rob Brimblecombe



Building's Jobs to Be Done:

- Shelter
- Comfort
- Inspiration
- Power Station?
- Charging Station?
- Battery?
- Carbon Sink?



Monash Net Zero: 100% Renewable Powered by 2030



Onsite Generation

3MW of onsite solar
across rooftops and
carparks



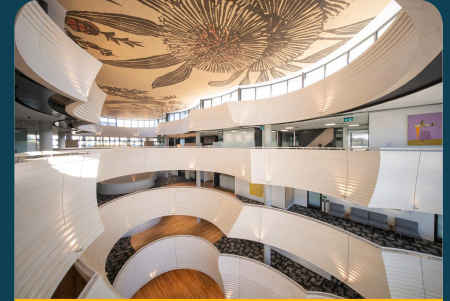
Offsite Generation

30MW remote wind
through a power
purchase agreement



Electrification

All Electric construction
since 2018
Electrification retrofit
program
EV Charging rollout



Efficiency & Flexibility

Automation Upgrades
AI optimisation
Fault Detection
Diagnostics
Embedded Microgrid

Activating Buildings as Renewable Energy Sponges



Storing Heat

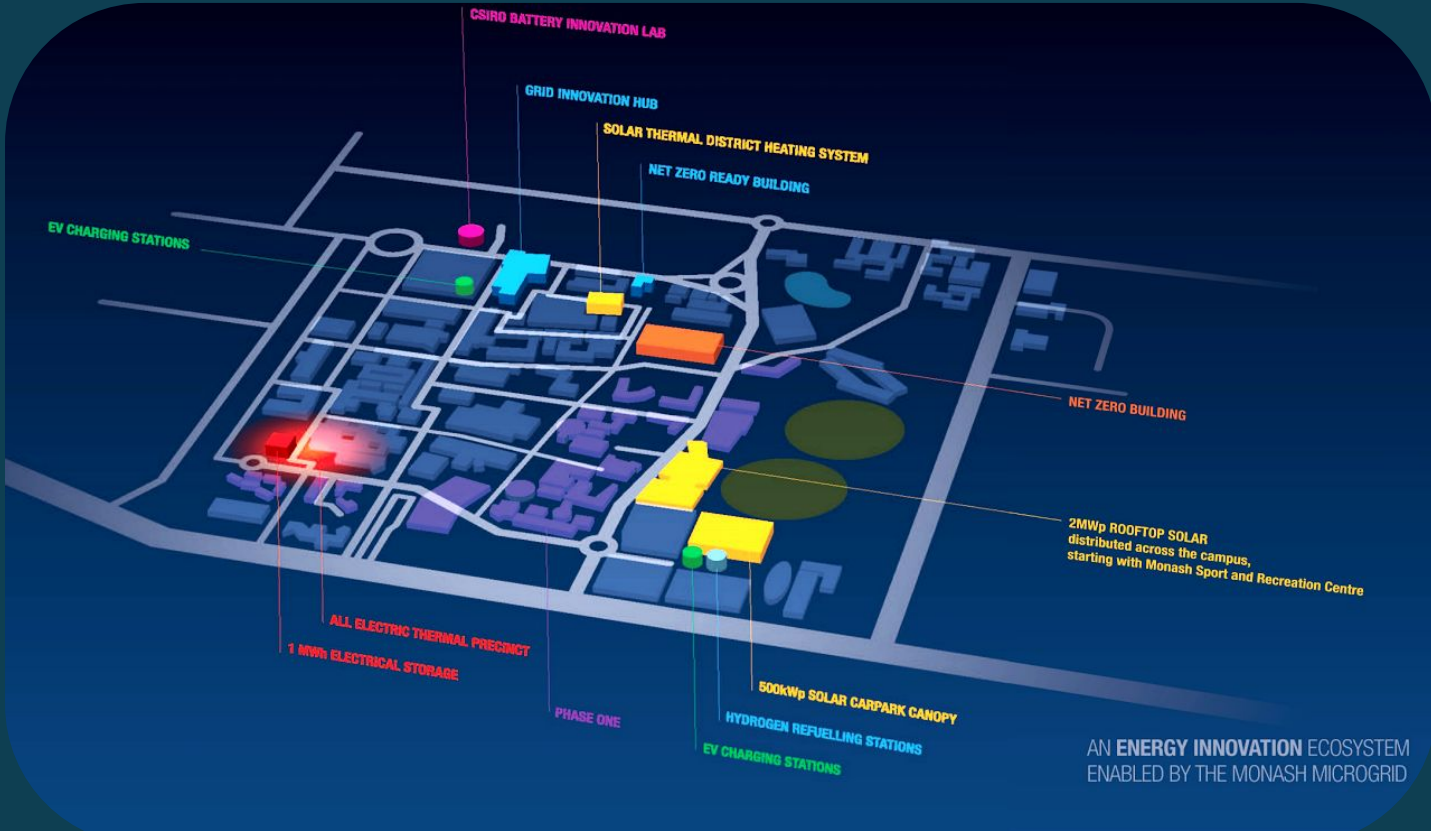


Storing Electricity

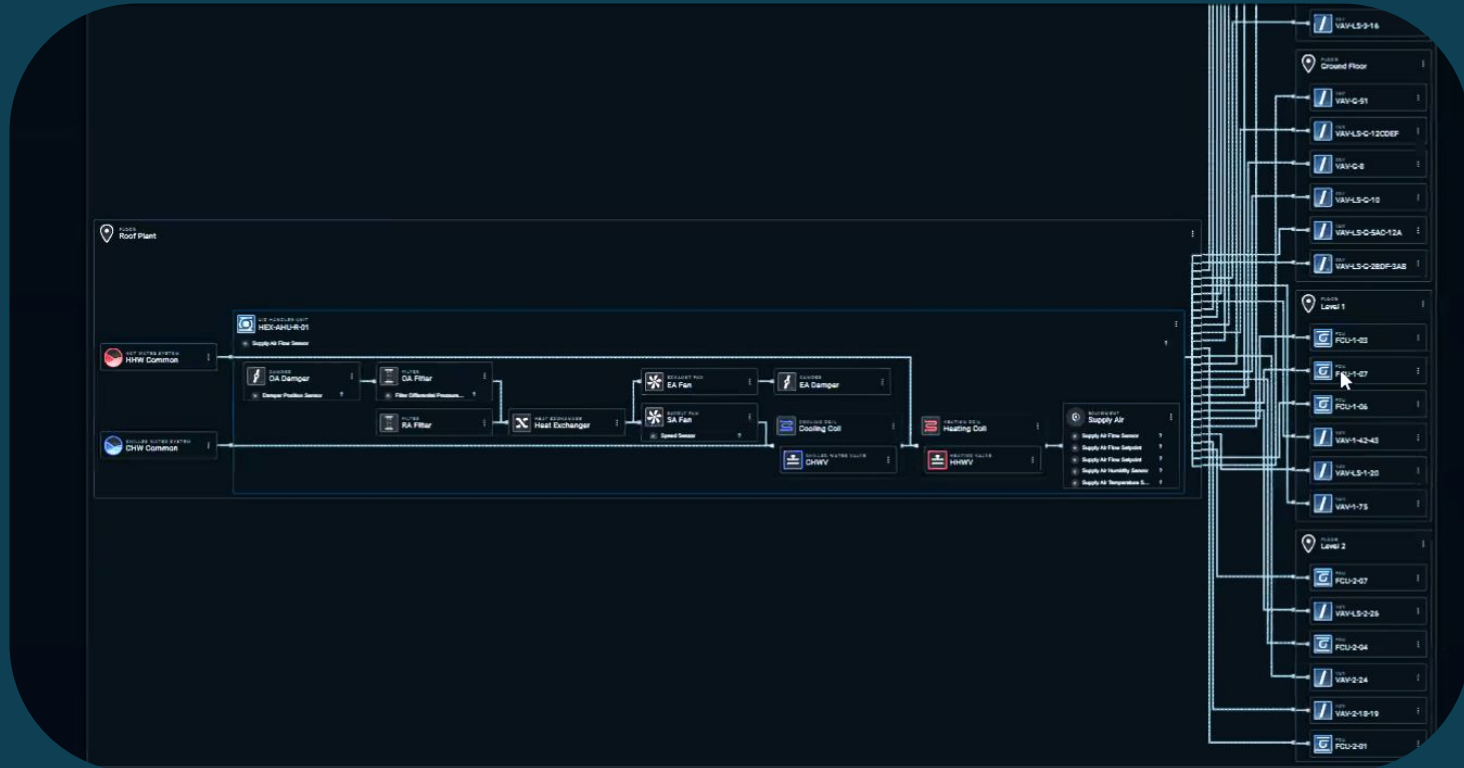


Storing Comfort & IEQ

Supervisory Control: Monash Microgrid



Digital Transformation: Naming and Tagging



Asking Buildings to Interact: Manual vs AI



The Role of AI/Prediction In Building Control

SETTINGS

Power peak constraint

Power limit

0,70

- +

Energy weight

1,00

- +

Power weight

1,00

- +

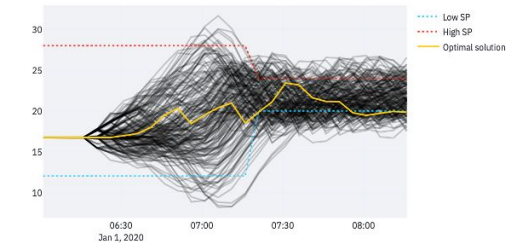
Comfort weight

1,00

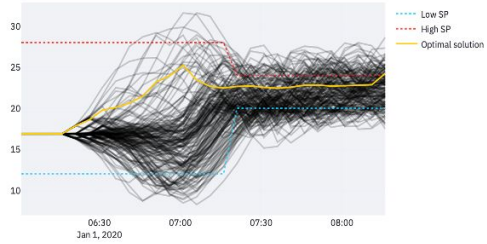
- +

ZONE TEMPERATURES

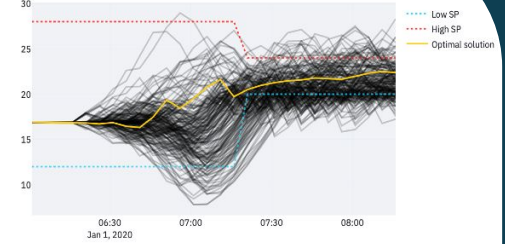
Zone 1



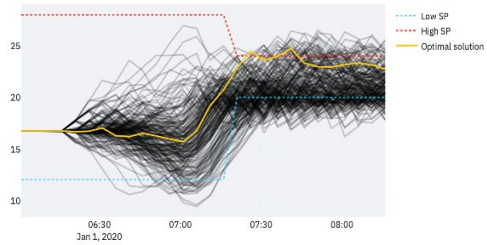
Zone 2



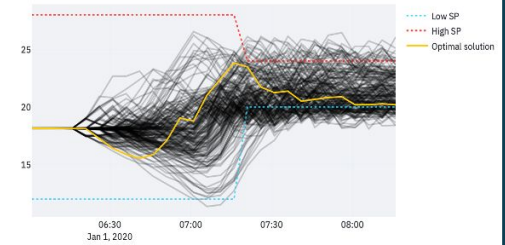
Zone 4



Zone 3



Zone 5



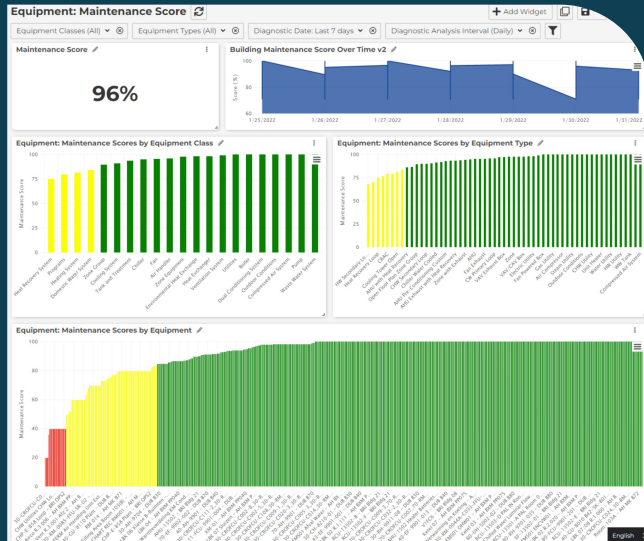
AI's Solution: Don't Run When You Don't Need Too

System	Average runtime without BBAI [min]	Average runtime with BBAI [min]	Absolute difference [min]	Reduction [%]
AHU runtime	6840	5670	1170	17%
FCUs runtime	189521	161380	28142	15%
Chilled water pumps runtime	5225	3230	1995	38%

System	Average flow without BBAI [min * % opening]	Average flow with BBAI [min * % opening]	Absolute difference [min * % opening]	Reduction [%]
FCUs cooling coil	90196.1	58670.6	31525.6	35%
FCUs heating coil	17893.1	13219.6	4673.6	26%

System	Average speed without BBAI [%]	Average speed with BBAI [%]	Absolute difference [%]	Reduction [%]
FCUs fan speed	26.9	22.4	4.5	16.7%

AI to Help Humans Prioritise and Diagnose



Diagnostics

The Diagnostics module provides a prioritized, searchable list of identified faults and energy saving opportunities across your portfolio.

Search Criteria

View By: Select Building Group: View All | Select Building: B82 New Horizons | Select Equipment Class: Zone Equipment | Select Equipment Type: View All | Select Equipment: LFCU_1_1 | Select Analysis: View All

Display Interval: Half Day | Daily | Weekly | Monthly

Date Range: *Start Date: 9/3/2022 | End Date: 10/3/2022

Filters: Notes Summary: | Results Only: | Tracking Code: |

Generate Data

[Download Current Diagnostics Page](#)

[Download Full Diagnostics Results](#)

31 data records found for 9/3/2022 to 10/3/2022 in daily intervals.

Building	Equipment	Analysis	Start Date	Notes Summary	Tasks	Cost	E	G	I	Actions
B82 New Horizons	LFCU_1_1 (Zone Equipment)	Zone Unit	10/3/2022	Cool valve short cycling. Filter alarm (IAC). Filter pressure too high (IAC). Leaking heating coil valve. Room air RH below minimum. Stuck cooling valve.	1	\$34	10	10	10	10
B82 New Horizons	LFCU_1_1 (Zone Equipment)	Zone Unit	9/25/2022	Cool valve short cycling. Filter alarm (IAC). Filter pressure too high (IAC). Leaking heating coil valve. Room air RH below minimum. Stuck cooling valve.	1	\$34	10	10	10	10
B82 New Horizons	LFCU_1_1 (Zone Equipment)	Zone Unit	9/24/2022	Cool valve short cycling. Filter alarm (IAC). Filter pressure too high (IAC). Leaking heating coil valve. Room air RH below minimum. Stuck cooling valve.	1	\$34	10	10	10	10
B82 New Horizons	LFCU_1_1 (Zone Equipment)	Zone Unit	9/26/2022	Cool valve short cycling. Filter alarm (IAC). Filter pressure too high (IAC). Leaking heating coil valve. Room air RH below minimum. Stuck cooling valve.	1	\$34	10	10	10	10
B82 New Horizons	LFCU_1_1 (Zone Equipment)	Zone Unit	9/29/2022	Cool valve short cycling. Filter alarm (IAC). Filter pressure too high (IAC). Leaking heating coil valve. Room air RH below minimum. Stuck cooling valve.	1	\$34	10	10	10	10
B82 New Horizons	LFCU_1_1 (Zone Equipment)	Zone Unit	9/10/2022	Cool valve short cycling. Filter alarm (IAC). Filter pressure too high (IAC). Leaking heating coil valve. Stuck cooling valve.	1	\$34	10	10	10	10
B82 New Horizons	LFCU_1_1 (Zone Equipment)	Zone Unit	9/20/2022	Cool valve short cycling. Filter alarm (IAC). Filter pressure too high (IAC). Leaking heating coil valve. Room air RH below minimum. Stuck cooling valve.	1	\$33	10	10	10	10

Retrofitting For a Renewable Future

