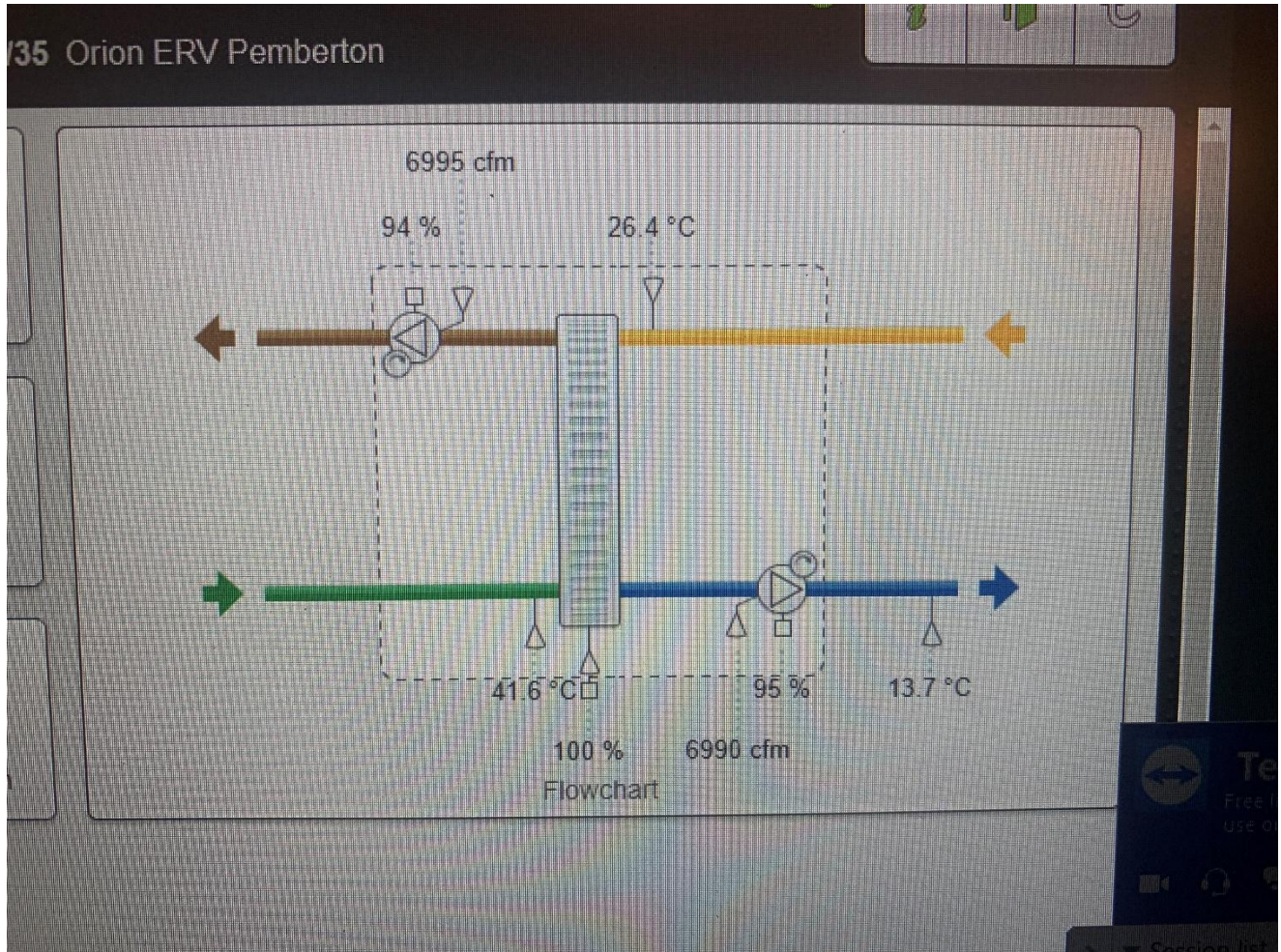


# Innovation Building Group Best Practices for Modern Methods of Construction



## 8. What We Learned from Real Building Performance Data

Many buildings are designed around modeled performance assumptions without sufficient long-term feedback from actual operational conditions following occupancy.

While energy modeling remains an important design tool, operational monitoring provides a fundamentally different level of insight into how buildings perform under real-world conditions.

Long-term monitoring work conducted in collaboration with BCIT across multiple years of building operation allowed us to evaluate:

- occupant behaviour,
- system reliability,
- enclosure performance,
- operational stability, and
- maintenance outcomes

Several consistent patterns emerged from this work.

First, disciplined enclosure performance repeatedly produced more reliable operational outcomes than technology-heavy approaches relying on increasingly complex mechanical systems. Buildings with strong airtightness, continuous insulation, simplified HVAC systems, and well-integrated ventilation strategies generally demonstrated more stable operational performance and lower maintenance exposure over time.

Second, operational simplicity proved significantly more important than many design models initially suggest. Buildings are operated by occupants, maintenance staff, and property managers — not by theoretical assumptions embedded within energy models. Systems with excessive complexity often create:

- commissioning challenges,
- maintenance issues,
- occupant confusion, and
- inconsistent operational performance.

By contrast, simpler systems generally demonstrated greater reliability, reduced maintenance requirements, lower operational variability, and improved long-term resilience.

Third, operational affordability is directly connected to building science quality.

At Orion, annual heating and cooling costs demonstrated that highly integrated envelopes and simplified systems can materially reduce long-term household operating costs under real occupancy conditions.

These outcomes reinforced that high-performance housing is not solely an environmental initiative. It directly affects long-term affordability and household financial stability.

Perhaps most importantly, operational monitoring created a continuous feedback loop into future projects.

Completed buildings became sources of delivery intelligence informing:

- detailing refinement,
- HVAC simplification,
- ventilation integration,
- constructability improvements, and
- operational optimization.

Over time, this iterative process allowed projects to become simpler, more reliable, more cost-effective, and easier to operate.

Long-term monitoring reinforced that high-performance housing is rarely the result of isolated technologies. Strong outcomes generally emerge from disciplined integration, operational feedback, and continuous refinement over multiple project cycles.