



Efficiency through DDC Optimization

The key is matching the
control to the need.

Effective energy management really boils down to identifying the need and matching it with the right controls. Here's how we do it:

- **Schedules:** One of the easiest ways to save energy is to operate equipment only when necessary to address occupant comfort requirements. The biggest challenge is maintaining appropriate schedules settings. We provide DDC front-end functionality helpful in diagnosing, fine-tuning and continuous commissioning to avoid unnecessary run time.
- **Setpoints:** Zone level setpoints are often changed without consideration of the implications on the overall system efficiency. With consideration given to occupant requirements and overall building function, setpoints can be dynamically adjusted by the DDC to levels that are functional, comfortable, and energy efficient. Establishing appropriate operating ranges within the DDC can be a big energy saver.
- **Sequences:** Optimizing mechanical systems requires sophisticated control programming strategies to anticipate and react to varying conditions. For example, utilizing trim and respond logic to periodically reset pressures, temperatures and ventilation rates in response to zone conditions can result in significant energy savings while improving occupant comfort and system diagnostics capability.
- **Operations & Maintenance:** We design DDC graphic screens that summarize system operating parameters that assist operations staff in identifying inappropriate schedules and control sequences, malfunctioning valves, dampers, and other equipment.

The Prism Advantage

Prism Engineering's experienced team of energy management experts can identify deficiencies and improvements in the operation of your facility's mechanical equipment, lighting, and related controls, and determine opportunities for corrective actions that reduce energy consumption and preserve indoor environmental quality. We have been optimizing building systems for over 30 years.

How we work:

- We work collaboratively with our clients to improve facility performance. Building Operators, Facilities Managers, and Energy Managers are all part of this process. We encourage Operations staff to save energy through added DDC functionality and training.
- We conduct in-depth analyses of building mechanical and automation systems. We have experience with most major building automation and FDD systems vendors.
- We tailor our reports and recommendations to client needs and expectations. Whether you are looking for low cost, short term payback projects, or are ready to make a larger capital investment, we know how to design and implement DDC solutions.

Project Experience

Our team of engineers, designers, and technical specialists has a wide variety of electrical and mechanical building equipment and control systems experience. We have carried out over 120 controls optimization projects over the last five years.



Prism Engineering has worked closely with the City of Vancouver to identify opportunities for upgrades to controls in six community centres. After in-depth analysis of each facility, Prism identified an estimated total of 1,390,000 kWh in electrical and natural gas savings through DDC optimization. Recommended projects included:

- Optimization of heating plant sequences of operations
- Pool dehumidification optimization
- Scheduling and setpoint resets



With the support of Prism Engineering as Energy Manager, North Vancouver School District has achieved an impressive 8% total energy reduction through control optimization. Prism supported NVSD in undertaking the following measures within their schools:

- Configure district-wide holiday calendar and weekly equipment schedule
- Optimize unoccupied temperature setpoints and optimal start routines
- Implement HVAC control sequence and revise boiler control sequence



Working with Fraser Health Authority and BC Hydro, Prism Engineering conducted an extensive retro-commissioning investigation at Surrey Memorial Hospital. Twenty six retrofit opportunities were selected for implementation which collectively are estimated to save 578,000 kWh of electricity and 5,500 GJ of natural gas each year. Retrofit opportunities included:

- Heat recovery optimization
- Parallel fan system staging and speed control optimization
- Repair of passing reheat valves
- Static pressure reset for variable volume fan systems

Photo credit: Canuckle, CC BY-SA 4.0 via Wikimedia Commons