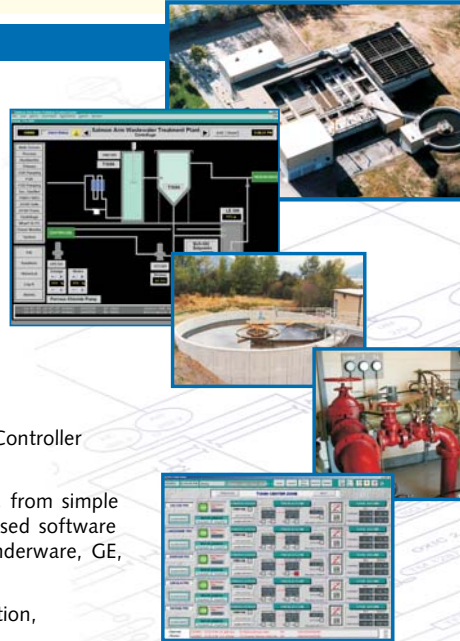


Opus DaytonKnight offers a full range of SCADA (Supervisory Control And Data Acquisition) and control system design and development services, from traditional engineering services to providing complete, turn-key SCADA solutions that include all hardware and software fully installed, configured and commissioned.

Opus DaytonKnight also offers post-commissioning technical and maintenance support, which includes a site assessment to prioritize your maintenance needs. Our engineers and technicians can install, maintain, calibrate and upgrade your SCADA system, controls and instrumentation equipment as part of a customized on-going technical and maintenance support program.

## Engineering Services

- SCADA and control systems master planning
- Designs and specifications prepared for tendering
- Security strategic planning, development of policies and procedures, vulnerability assessments
- Wireless communication design. Radio path survey analysis and testing
- High speed wireless infrastructure data network design
- Process information management
- Development and commissioning of turn-key systems
- Supply of all required hardware and software
- Remote Terminal Unit (RTU) and Programmable Logic Controller (PLC) programming and commissioning
- Human Machine Interface (HMI) configuration services, from simple operator interfaces to networked personal computer based software packages. (We are licensed system integrators for Wonderware, GE, Citect and Clear SCADA)
- Alarm system software configuration, including notification, acknowledgement and recording
- Communications testing, trouble shooting and verification using service monitor and packet analyser



## Support Services

- Development of a preventative maintenance programs and calibration schedule
- Maintenance and calibration of SCADA system, controls and instrumentation equipment
- Enhancement or upgrading of existing HMI, SCADA, control or instrumentation systems
- Troubleshooting of problematic equipment
- Off-site process control system monitoring
- Operator and staff training

Our training is comprehensive, and includes both lecture and hands-on exercises.

The training we provide can be customized to suit your needs, from general to specific.



## Field Commissioning Services

Prior to every SCADA system startup, Opus DaytonKnight thoroughly inspects the installation of all equipment. We then verify the robustness of wireless communications utilizing sophisticated equipment. Controls and instrumentation, so closely related to SCADA installations, receive an extensive loop checkout procedure that includes the final calibration of all related equipment.

During commissioning, Opus DaytonKnight verifies that the process database is complete, confirms the operation of links between the HMI graphics screen and the control system, tests alarming, ensures that desired reports can be generated and also ensures that the system will function within a broader network.

We encourage operators to become acquainted with the system during this phase and their input becomes an integral part of the development process.



## Wireless Communication Services

While not every SCADA system will utilize wireless communications, it is the critical element of most, and for very good reasons. To ensure that the system backbone is both reliable and fully optimized, Opus DaytonKnight will confirm that each radio is operating within manufacturer's specifications and that each antenna, RF cable and all connectors are damage and corrosion free.

Each antenna is aligned to the proper azimuth and vertical inclination, then wireless communication is verified to be within acceptable parameters, including a signal strength of better than 85 dBm. We advise and coordinate to ensure that any interfering tree growth is pruned as appropriate.

On completion, a full written inspection report is provided for each site.



## Awards

### **Award of Excellence 2011** Municipal Engineering Category

Consulting Engineers  
of British Columbia

District of Kent  
Duncan-Bateson Pump Station

### **Award of Merit 2011** Municipal Engineering Category

Consulting Engineers  
of British Columbia

Abbotsford Mission Water &  
Sewer Services  
Dickson Lake Upgrades

### **Award of Excellence 2009** Municipal Engineering Category

Association of Professional  
Engineers & Geoscientists of  
British Columbia

### **Award of Excellence 2009** Municipal Engineering Category

Consulting Engineers  
of Canada

District of West Vancouver  
Eagle Lake Membrane  
Water Treatment Facility

### **Award of Excellence 2009** Municipal Engineering Category

Consulting Engineers  
of British Columbia

**Gold Award 2009**  
Water & Wastewater Category  
American Council of Engineering  
Companies of Washington

### **Honor Award** **Local Civil Engineering** **Achievement 2009**

American Society of  
Civil Engineers

King County, Washington State  
Design/Build of the  
Brightwater Marine Outfall



### Township of Langley • SCADA Upgrade Phase I

The Township of Langley implemented Phase I of a regional wide Supervisory Control and Data Acquisition (SCADA) System to remotely monitor and control Township's water pumping, sanitary, reservoir, and PRV stations. Opus DaytonKnight was responsible for the preliminary and detailed engineering, project management, construction management, programming of HMI and RTU, commissioning and training for this project. A new radio repeater design was provided to allow more for more efficient and robust communications with the remote facilities. Opus DaytonKnight also provided the programming and

configuration of the SCADA Web Portal using GE's Proficy Real-Time Information Portal (RTIP) and the Motorola ACE Remote Terminal Units (RTU) that provides the Township staff the ability to control stations remotely. The radio architecture was also upgraded from a 900 MHz, 2,400 bps licensed radio to a new 900 MHz, and 9,600 bps licensed radio.

In order to facilitate data management of the SCADA system and also provide ease of access for Township staff from various departments, Opus DaytonKnight implemented the OSI PI Data Historian from OSIsoft. This will now permit Township personnel from various departments to query the system for SCADA data. The Data Historian also provides connectivity to Township's Enterprise system so that corporate software applications like GIS, CMMS and Water modeling could leverage the collected SCADA.



### District of Saanich • SCADA Systems Detailed Design

Opus DaytonKnight is the prime consultant and system integrator for the District's area wide SCADA program of 77 water, sewer, drainage and PRV facilities. Opus DaytonKnight was responsible for undertaking District's SCADA master plan - providing direction on appropriate technology to serve the engineering, operations and business needs, requirements, security management and policy, RTU and HMI Shootout, radio communications infrastructure design, implementation plan, costs and recommendations; as well as the designing basis - detailed design, project management, costing, staging, construction management and administration, programming of HMI and RTU, commissioning and training.

The design for a new radio repeater station at the Mount Douglas site was provided to allow more efficient and robust communications; the programming and configuration of the Siemens Factorylink HMI program and the Motorola ACE Remote Terminal Units (RTU) was installed to enable the District staff to control facilities remotely; the radio architecture was upgraded from a 900 MHz, 2,400 bps licensed radio to a new 900 MHz, and 9,600 bps licensed radio, and all SCADA facilities required control panels, electrical and instrumentation systems have been modified and upgraded.

Opus DaytonKnight have also provided engineering services and support during the District's SCADA system installation, construction and migrating District's existing HMI system from Realflex based on a QNX platform to a Windows platform.

**Opus DaytonKnight** engineers and technicians offer expertise in SCADA control and instrumentation systems, control systems wire tracing and upgrade, wireless communication and network systems development.

- Our services are unique. Our SCADA-related expertise is coupled with extensive experience and an awareness of water and wastewater systems control and operation.
- We provide cost-effective SCADA system solutions and services that are customized to meet our clients' individual needs, present and future.

#### OFFICES:

#210-889 Harbourside Drive,  
North Vancouver, B.C., Canada, V7P 3S1  
Phone: 604-990-4800; Fax: 604-990-4805  
Email: info@opusdaytonknight.com

#305-2722 Allwood Street,  
Abbotsford, B.C., Canada, V2T 3R7  
Phone: 604-852-9256; Fax: 604-852-9240  
Email: abbotsford@opusdaytonknight.com

#308-809 Manning Road,  
Calgary, A.B., Canada, T2E 7M9  
Phone: 403-207-6000; Fax: 403-207-6045  
Email: calgary@opusinternational.ca

#80 Bishop Drive,  
Fredericton, NB, Canada, E3C 1B2  
Tel: 506-451-0055 Fax: 506-451-4838  
Email: fredericton@opusinternational.ca

#255-1715 Dickson Avenue,  
Kelowna, B.C., Canada, V1Y 9G6  
Phone: 250-868-4925; Fax: 250-868-4923  
Email: kelowna@opusinternational.ca

#101-2700 Queensway Street,  
Prince George, B.C., Canada, V2L 1N2  
Phone: 250-562-0038; Fax: 250-562-0058  
Email: princegeorge@opusdaytonknight.com

#1-3772 Fourth Avenue, Box 939  
Smithers, B.C., Canada, V0J 2N0  
Phone: 250-847-1913; Fax: 250-847-1914  
Email: smithers@opusdaytonknight.com

#850-1185 West Georgia Street,  
Vancouver, B.C., Canada, V6E 4E6  
Phone: 604-684-4488; Fax: 604-684-5908  
Email: vancouver@opusinternational.ca

#401-707 Fort Street,  
Victoria, B.C., Canada, V8W 3G3  
Phone: 250-952-5640; Fax: 250-920-5620  
Email: victoria.office@opusinternational.ca

For further information: Please contact: Victor Wong,  
P.Eng. at our North Vancouver Office. Or, visit our  
website at: [www.opusdaytonknight.com](http://www.opusdaytonknight.com)

\*As of 15 Nov 2010 Dayton & Knight Ltd. became Opus DaytonKnight Consultants Ltd.

# SCADA Control Systems



**OPUS DAYTONKNIGHT**

