

MVA ENGINEERING GROUP



Engineering - Information Technology - Field Services

Electrical Power Systems Specialists

OUR MISSION

At MVA Engineering Group Ltd., the depth and experience of our staff aligned with our clients' needs forms the firm's greatest asset, ingenuity. New clients are warmly welcomed with the intent of developing a long-term relationship of mutual respect, which strengthens our team "Circle of Support". Since our beginnings in 1995, we have embarked on a quality initiative to provide the highest calibre of engineering services possible. We have carefully sought and now achieved an international reputation for providing high quality services and products to fulfill our customers' exacting requirements. At MVA Engineering, we are an engineering firm dedicated to the service of our clients.

As our roots remain in electrical power, control and industrial automation, we continue to grow. Now our services include power system design & analysis, commissioning & maintenance, building services, testing & inspection, communications security, and information technology for the industrial, utility, commercial, and public sectors.

MVA Engineering is more than just an engineering firm.

We have prospered since 1995 because of our abilities and our client's satisfaction.

In this era of information, managers are expected to do more with less, and traditional engineering services must accommodate new demands. MVA Engineering meets these new demands by bringing together the people and resources from engineering, design, and field services, and by joining these divisions with information technology. This brings the traditional engineering services into the information era forming e-Engineering utilizing e-Intelligence.

MVA Engineering has always utilized the most advanced technology available to complement its abilities. It is in this Spirit of Innovation that we proudly announce our association with the EDSA Micro Corporation. EDSA (Electrical Distribution Software Analysis) software has been a driving force in pushing the envelope of power system simulation and analysis. As a user and an authorized sales and training agent, we provide the EDSA software to our clients with technical support from our electrical engineering experts.

MVA Engineering offers a wide range of support services including hazardous area classification, pre-start health and safety review, and hospital patient care CSA Z23.2 electrical safety testing. We are also approved and registered to provide electrical design and electrical inspection for Ministry of Transportation projects. In each of these markets, projects are undertaken by qualified professionals who have a solid grasp of regulations, technical fundamentals, cost consciousness, and a spirit of excellence.



Looking forward, MVA Engineering is committed to the continued development and use of web-based technology to advance our work. The result of this commitment can be seen on our web site <http://www.mva.on.ca>. Here, clients can view their password-protected project as MVA Engineering develops them. Contractors can contact us for a password and review tender documents and project specifications. Others can browse sample projects, technical reports, and several other areas of interest.

We recognize that the quality of our work affects the quality of your life. Consequently, we will continue our efforts to help you realize your goals with significant savings and increased reliability, safety, and efficiency of your present and future systems.

Our mission is to optimize our diverse team of qualified, experienced, licensed professionals to effectively and efficiently drive your important assignment to a successful completion.

OUR UNIQUE ORGANIZATION

At MVA Engineering, our ongoing growth and success has enabled us to diversify the engineering services we provide. Our best experience includes heavy industrial work where enhanced engineering skills in medium to large power and process control systems are required. Our client sectors include utility, industrial, municipal water & wastewater treatment, land development, site servicing, institutional (educational, hospital), Ministry of Transportation (electrical), and commercial applications.

MVA Engineering provides advanced engineering and field services. We are a leader in applying innovative information technologies, to build on our traditional engineering capabilities. Uniquely, our Information Technology Division is integral to our Engineering & Design and Engineering Field Services divisions. As an engineering firm, the coupling and

mutual understanding of our three Divisions makes us unique and effective. We call it our "Circle of Support".

At the core, all elements of the services interweave, strengthening each of the services offered, expanding and reinforcing the teams. Each Division works mutually to nurture the MVA Engineering core services which in turn support the team as a whole. The team supports the client, who as a team member, using web-based technology, directly accesses the project as it develops.

Illustrated in is the MVA Engineering Team "Circle of Support", a flow and blend of engineering, field services and information technology. Each identity supports and strengthens each other to provide our Clients the best of traditional services re-built as e-Engineering using e-Intelligence to connect our Clients directly into the information network.

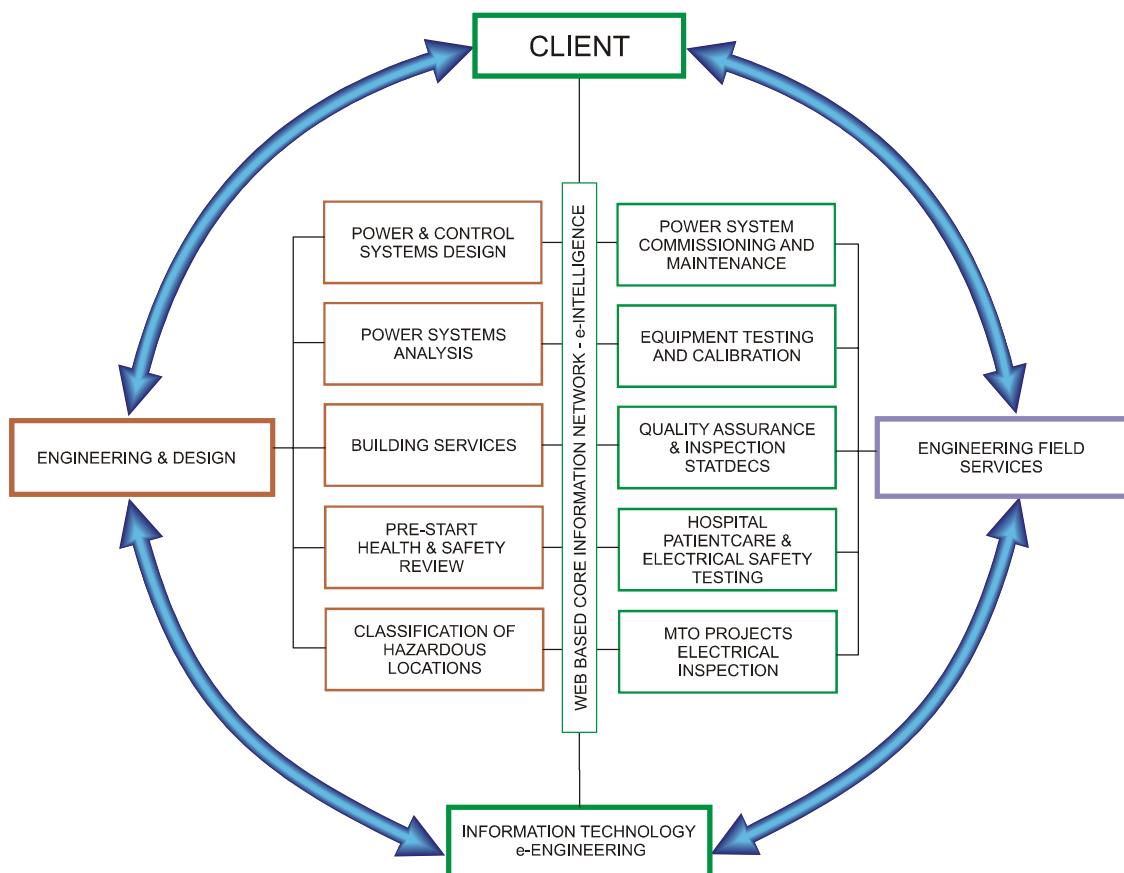


Figure 1: Core Services Offered -
Enclosed by Our Team "Circle of Support"
Connected by Our Core Information Network

OUR ENGINEERING & DESIGN DIVISIONS

MVA Engineering & Design provides the fundamental expertise for the projects that we undertake.

Power & Control System Design. MVA staff have the experience and expertise required to provide our clients with high quality services and superior designs that are technically advanced and economically viable. These core services include: feasibility studies, preliminary & detailed design, specifications, tendering & tender administration, project administration & management, installation, and commissioning inspections.

Our fundamental design strategies are based upon the Institute of Electrical and Electronic Engineers (IEEE) standards and their recommended practices, with additional technical support by Canadian Standards Association (CSA) and the application of the Ontario and Canadian Electrical Safety Codes in conjunction with other applicable regulatory requirements.



Above: St. Mary's Cement - St. Mary's Plant where MVA Engineering provided designs for the new control systems integrating into existing apparatus.

Figure 2 shows the elements of our core service Power & Control System Design. It illustrates the magnitude of the expertise available from MVA.

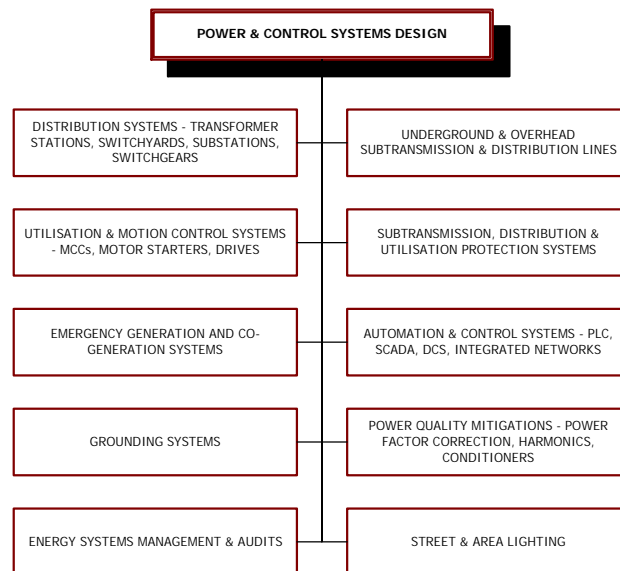


Figure 2: Power & Control System Design

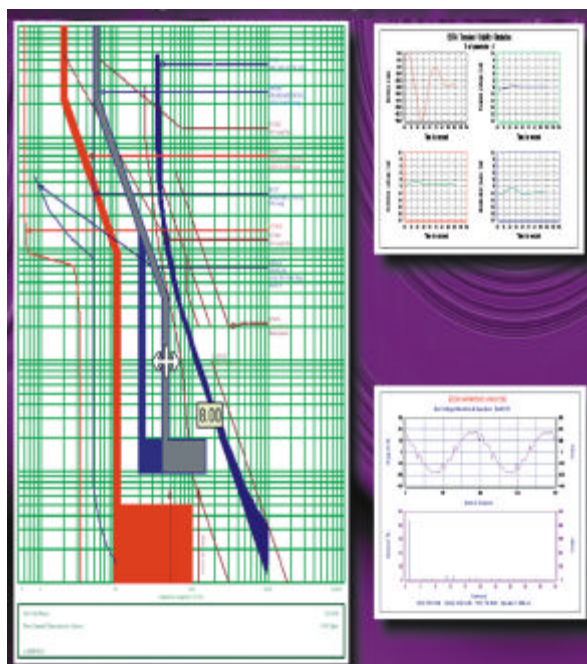
Below: Secondary service 5kV switchgear line-up at Lafarge Canada where MVA Engineering has been providing services on equipment up-grades and replacements to ensure that this 40 year old facility continues to be very productive and efficient.



Power Systems Analysis. MVA Engineering provides power system analysis, which adds to the diversity of our core services. At MVA Engineering, our design policy states that at the onset of a core service design, existing project equipment and system parameters are to be fully analyzed, calculated and determined. To do this, MVA Engineering is equipped with EDSA software, the most advanced power system analysis and electronic data management software available.

The practical knowledge and expertise of our staff coupled with the advanced features of EDSA software enable us to effectively provide independent power system analysis services to identify existing abnormalities and to reduce the risk of potential problems within electrical power systems.

The figure below illustrates the broad practical knowledge base within this integral core service.



MVA Engineering provides its clients with comprehensive engineering reports to support its design recommendations. The above graph shows an example of a Time Current Characteristic curve without a single-line diagram. Additionally, the wave forms show the transient stability of a large generator, while the lower graphs are a harmonic analysis showing Total Harmonic Distortion (THD) of 12.4% and a peak voltage of 1,288 volts on a 480-volt system.

To the right is a graphic representation of an electrical system modeled using the EDSA simulation software. This approach ensures that the required engineering parameters are met, including safety.

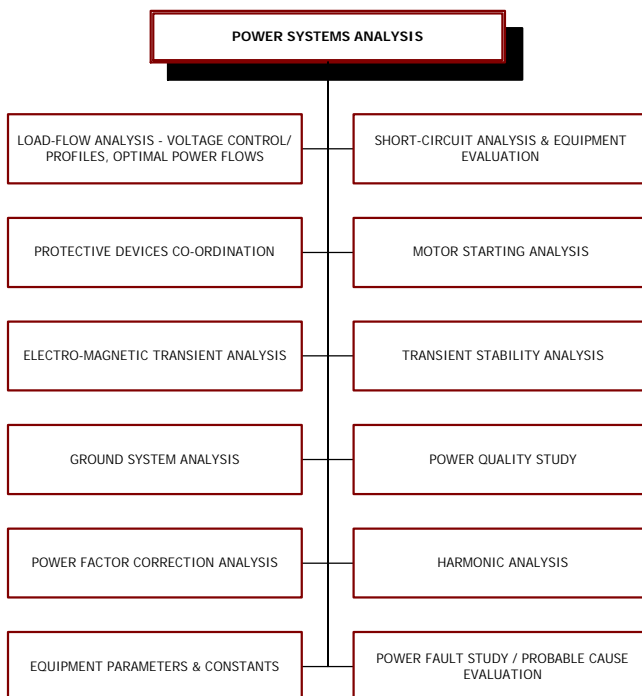
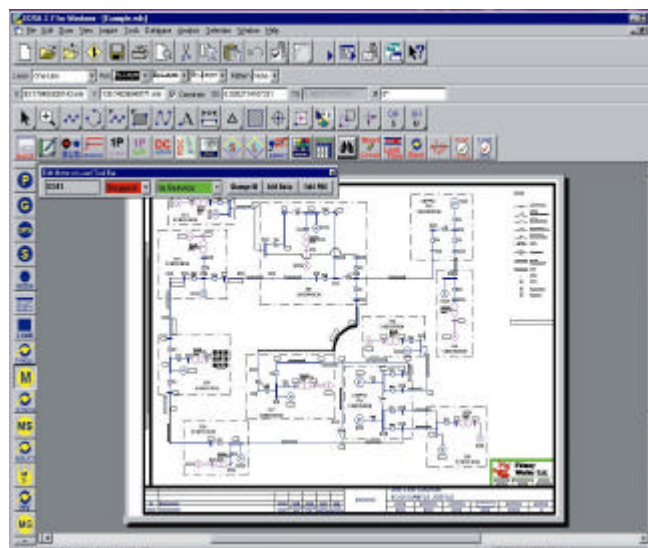


Figure 3: Power Systems Analysis.



Building Services. Also in the core of MVA Engineering is our Building Services Division, which provides electrical and mechanical designs, specifications, tendering & project management, contract administration, installation inspections, certification, and feasibility studies for public, institutional, and commercial applications.

Pre-Start Health and Safety Review. To ensure code compliance, MVA Engineering provides a predevelopment review to encourage the mitigation and control of hazards in the workplace, by design, before development begins. MVA Engineering acts on behalf of the client to confirm that the proposed work is in general conformity with the applicable

codes including the Occupational Health and Safety Act.

Classification of Hazardous Locations. An important and necessary step in any new or upgraded interior electrical system construction project is the review of the system design and installation plans for classification of potential hazardous locations. This review includes the rating of potential fire and explosion hazards and also involves the classification of any hazardous locations as defined by the Ontario Electrical Safety Code. MVA Engineering provides this service to our clients based on the extensive expertise available within our firm on this issue.

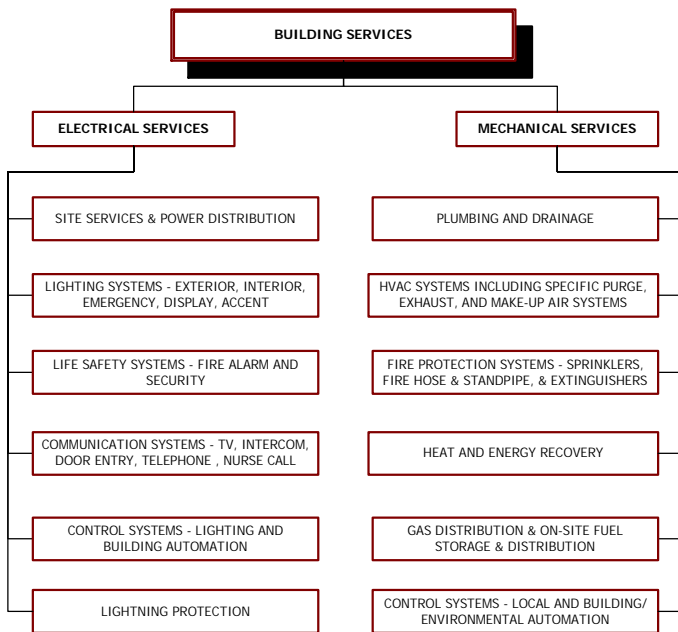


Figure 4: Building Services



Above: MVA Engineering staff has provided building services to numerous commercial building including this new McDonald's Restaurant in south London.



Left: The University of Western Ontario. MVA Engineering has considerable experience in providing building services for hospital and other institutional facilities such as schools and universities.

OUR ENGINEERING FIELD SERVICES DIVISION

At MVA Engineering, our Engineering & Design Division is supported by our Engineering Field Services Division, which ensures the effective implementation of all the practical aspects of the assignment incorporated into the project.

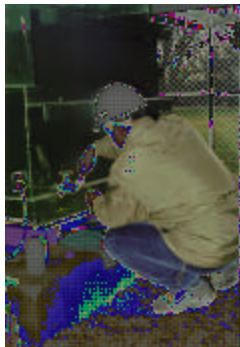
Power System Commissioning, Inspection and Maintenance.

MVA Engineering is uniquely staffed with skilled engineers, designers, technicians, cost experts, and testing specialists. It is the depth and strength of our staff that enables us to provide full service teams to our clients. MVA Engineering is capable of providing all the electrical engineering services required to perform the specific tasks related to the necessary field services. This ranges from routine dusting and cleaning of the equipment to the detailed design, commissioning, inspection, maintenance, and final engineering certification of complete systems.



Services include:

- Problem Identification
- Electrical Engineering Inspection of:
 - Outdoor Structures and Compounds
 - Metalclad Switchgear
 - Distribution and Service Equipment
- Routine & Preventative Substation Maintenance
- Power System Commissioning
- Ground System Verification
- Recommendations and Repairs



Electrical Equipment Testing and Calibration.

MVA Engineering is equipped with the necessary digital and analog testing apparatus. Our staff is capable of providing full testing and equipment calibration, which is required to perform standard electrical system analysis, design, commissioning, inspection,

and maintenance procedures. Information gathered is tabulated with known historical data and is always compared with industry standards. In our successful history, we have completed numerous engineering reports on the following:

- Power Transformer Testing & Transformer Oil and Gas Analysis
- Power Cable Testing
- Circuit Breaker Testing and Calibration
- Relay Testing and Calibration
- Infrared Scanning

Quality Assurance & Statutory Declaration of Compliance

are services provided to assist our clients in ensuring the quality completion and operation of their construction projects. Our role as project engineer is to be the client representative on all aspects of the project as required by the client. Our role in independent project verification is to verify that the construction is in compliance to the contract documents and code. In either role, we at MVA Engineering demand and maintain the highest levels of professional, technical and financial representation of our work for all our clients and their projects.



Other Engineering Field Services include, Hospital Patient Care & Electrical Safety Testing, CSA Z23.2, and we have also been approved and registered to provide electrical inspection for the Ontario Ministry of Transportation. In each of



these market areas, projects are undertaken

by professional and technical staff that are equipped with a solid grasp of design and construction fundamentals, cost consciousness and a spirit of excellence.



OUR INFORMATION TECHNOLOGY DIVISION

MVA Engineering has been committed to the development of web-based technology and e-Engineering for the advancement of our work, and we have thereby developed a skilled Information



Technology Division in the process. The Information Technology Division fully supports our other divisions by providing the backbone communications network around which all our service elements interweave. This backbone network is also the portal through which our clients view and contribute to their projects as they develop; this way the client is an active team member.

MVA Engineering is an Information Technology leader in our industry. We coordinate forums for the exchange of ideas and opportunities amongst knowledge-based businesses, thereby facilitating their capability to work effectively.

We are active in the development of virtual libraries to be the focal point for knowledge-based and industrial businesses where they can network and share information, ideas, and opportunities. We believe it is important to create awareness about the important contributions made by knowledge-based

industries to economic growth, jobs, and improved quality of life. Our goal here is to represent



information technology to businesses in matters of common interest to create the perfect conduit for

dialogue with our clients.

We further assist our clients in maintaining an appropriate focus on our support for their information technology requirements within their respective organizations and to create an effective forum for learning about the challenges and huge potential for the Information sector. Our virtual library is to assist in attracting information technology based businesses to our clients and to retain existing businesses by adding intrinsic value to their operations. MVA Engineering co-operates fully with its clients to attain the mutually beneficial aims and objectives of interest to the project and the information technology service sector.

MVA Engineering uses information technology to structure inquiries, solve problems, gather, organize, and validate information. It is now essential to communicate quickly and effectively on a local and



global scale and to manage information by making creative, productive, and efficient technology choices. At MVA Engineering, we embrace information technology. We understand the ethics, details, and impact of its use,

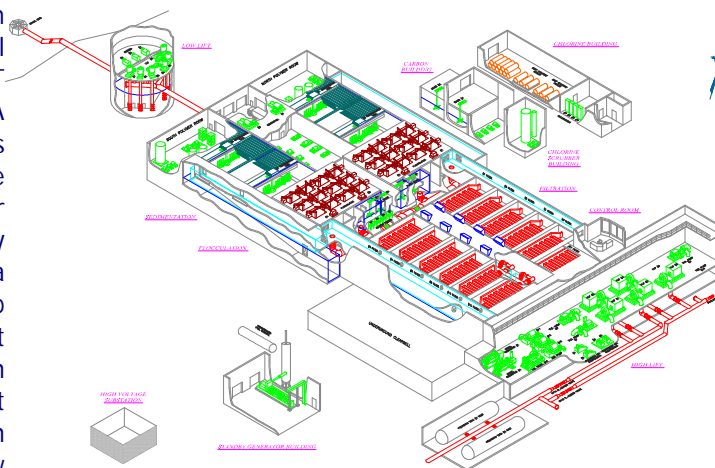
thereby synthesizing new insights and making reasoned decisions as Information Technology evolves relative to our clients' specific project needs.

e-ENGINEERING AND e-INTELLIGENCE

In the Information Era, new approaches to the way business is conducted are evolving and some of the terms used to describe these new approaches are “e-Engineering”, where knowledge and information are engineered, and “e-Intelligence”, where the engineered information is useably organized and presented. MVA Engineering has embraced these approaches and has thereby developed, for the Ontario Clean Water Agency, a virtual library for their documentation of the regional water system supplying the City of London. The objective for this project was to provide one single information infrastructure to integrate documents across the enterprise, collaborate with the City, and extend their existing management systems using Web services.

MVA Engineering provides e-Engineering and our Information Technology Division uses e-Intelligence to keep us ahead of emerging business trends and provide our clients with this unique enterprise information portal for e-Engineering. On our web site, <http://www.mva.on.ca>, clients can view this virtual exhibition of their password-protected project as MVA Engineering develops it. Project bidders, and potential suppliers, using their own passwords, can also view the project drawings and specifications on-line. Visitors without a password can view many areas of interest including our sample projects, and technical reports.

Shown in the illustrations are examples of interactive drawings which form part of the virtual library that the IT Division of MVA Engineering has produced for the Ontario Clean Water Agency and the City of London. Using a standard web browser, the staff at the Ontario Clean Water Agency and at the City of London can easily view multiple layers of information by panning over drawings and “drilling down” to the required level of information. Shown



on this page are snapshots of actual library pages. The user of this page has “drilled down” from the opening page, in which the first level tabs are still visible along the top of the page. The virtual library identifies the browser and visual resolution of the



monitor used to access it, and the drawing opens up at a size and scale best suited to the user's computer. By clicking on the appropriate tab the second level library page becomes visible. At this level, the user has the option of clicking on the second level tabs, zooming in on the drawing, entering key search words, turning drawing layers on or off, or clicking on the URL links embedded within the drawing. The drawing below is another snapshot of a page from the virtual library used by the Ontario Clean Water Agency. Again, the user can pan over this drawing and click on the various areas to bring up specific details or, depending on permitted access, may retrieve and update documents in the virtual library data base.

Our e-Engineering and the virtual libraries developed by MVA Engineering with the e-Intelligence used, is not about the new technology, it's about finding the right solutions to fit our client's business needs. Simply, IT is used extensively to ensure a faster, more affordable, and more successful project.

OUR PROJECT MANAGEMENT TEAM

MVA Engineering's Project Management is provided in a manner that confirms our constant commitment to the completion of projects according to the satisfaction of our clients. We understand that



the establishment of the optimal scope of work and the appropriate project costs are the two main considerations

for the successful completion of any engineering assignment. With this in mind, MVA Engineering uses a tailor-made Project Management System.

This effective and complete system is implemented on all of our assignments and provides the project manager with the following:

- The costs expended at any given time
- Records of who is working on specific project tasks
- Reports on completed work

This system involves:

- Tabulation of unit-hours and expenses charged to the job on a daily, weekly, or monthly basis
- Computerized preparation of monthly invoices broken down by major tasks
- Documentation of the limits related to the project budgets

With this system in place, the project manager and the client know at all times:

- What money has been expended
- What progress has been achieved
- The status of each major task
- The project schedule



This system of accountability ensures that funds are not frivolously expended, that budgets are met, and that there are no surprises.



MVA Engineering Group

has recently proven all of its project management, design, contract administration and inspection skills on numerous industrial installations including starter & MCC installations, process control, SCADA, and electrical master planning for the City of London in the area of wastewater treatment.

Left:

Lafarge Canada Ltd.

Woodstock Plant is just one example where MVA Engineering has provided design and engineering for large 5kV starters and high voltage primary cabling replacement.

OUR PROJECT TEAM ORGANIZATION

Team communications is a key factor for the success of any project, and every organization has extensive needs for collaboration, not only within its own confines but crossing organizational boundaries to other departments and business partners. In today's hectic business environment, it is not uncommon for organizations to create teams whose membership crosses organizational, company, and geographical boundaries, as well as time zones.

MVA Engineering can easily collaborate with multi-organizational boundaries thanks to the standard software tools now available on the Internet. Many of these tools are broadening to include not only document management, but also records management, electronic forms, workflow, e-mail, project scheduling, and personal communications. Typically, a search engine is included in our corporate system so that important information can be found, regardless of whether it occurs in a document, e-mail message, discussion thread, HTML page, or audio/video file. Documents or forms requiring authorization or processing can be routed through an organization as appropriate. E-mail is

used extensively to confirm that work is progressing as expected.

To this end, MVA Engineering has organized a very strong team that possesses exemplary qualifications and experience to complete all aspects of electrical engineering projects. In selecting our team members for specific assignments, emphasis is given to the following:

- **Experience** in relevant projects and a history of completing work on time and within a budget
- **Understanding** of the power and electrical service requirements of the particular project
- **Technical and project management abilities** with respect to all aspects of the work
- **Availability of project team members** to complete the project requirements and to work with support staff to complement the other professional efforts on the assignment

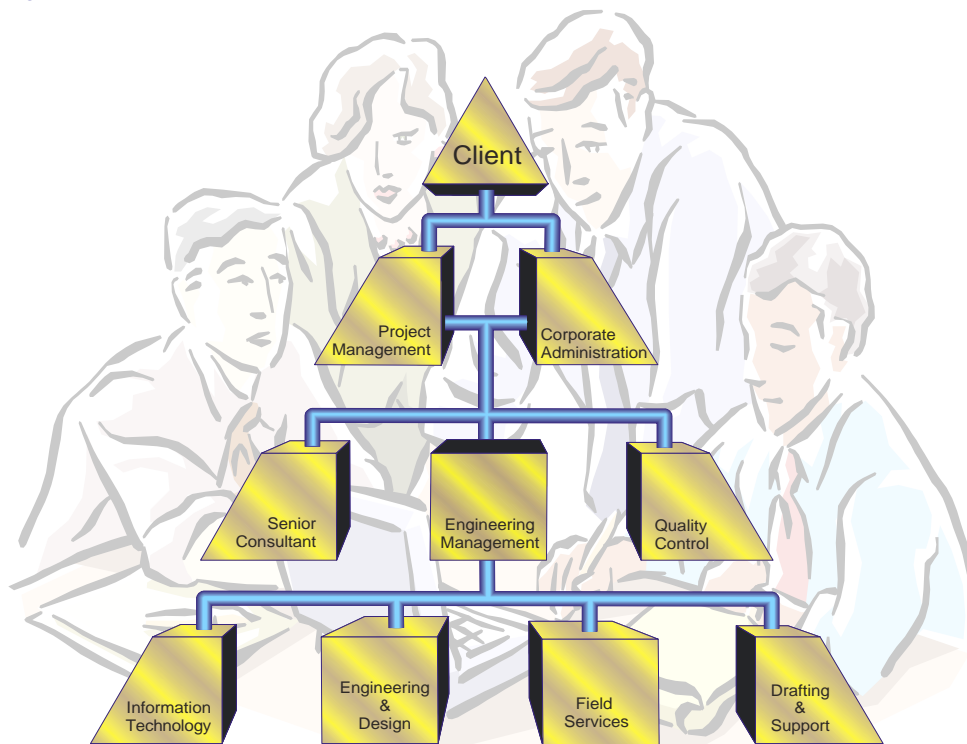


Figure 5: Project Team Organization Chart

OUR QUALITY POLICY



At MVA Engineering, we are committed to enhancing our clients' success with products, services and responsiveness that set higher industry standards for quality and value. We relentlessly strive for the best in every aspect of our business by fostering a culture of trust, teamwork, responsibility, expectation and open

communication with our staff, clients, and suppliers.

It is the responsibility of all MVA staff to ensure that the engineering services provided are delivered in a respectful manner that complies with our firm's documented quality control requirements. This plays a continuous role in the development of the philosophy and work ethics of MVA Engineering. Our commitment to quality ensures that the highest levels of professionalism are applied to all projects that we undertake.

MVA Engineering Group Ltd. is very proud of its work and association with these fine organizations.



London and District
Construction Association



Ontario Electric
League



OUR MISSION STATEMENT



MVA Engineering Group Ltd. is to be an engineering firm that understands and responds to the diverse needs of its Clients and Employees. We will either find a way, or we will create away.



Fred Harding
President & CEO

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