

# **CMA** engineering Inc.

## Qualifications & Experience

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# 1. Introduction

CMA engineering Inc. has been incorporated since 1986 and has since then accomplished a number of projects in the manufacturing end of the forest products and mining industries, including (but not limited to) the conceptual design, engineering (Mechanical, Civil, Structural and Electrical), PLC/HMI programming, arc flash studies, equipment procurement, project management, construction management and start up assistance of board plants (OSB, Particleboard and MDF), sawmills, plywood mills, underground mines, concentrators, smelters and other specialty services.

CMA engineering Inc. also offers a wide range of management consulting services for medium size businesses and large corporations. CMA has done a number of feasibility studies, cost-benefit analyses, business planning, budget preparation and personnel training. All our professional services are offered in both French and English.

Values of single projects have ranged from less than \$65,000.00 to as high as \$95,000,000.00.

## 2. Company Profile

The pertinent data on CMA engineering Inc. is as follows:

<b>Corporate Name</b>	<b>CMA engineering Inc.</b>	
Address	60 Wilson Ave. - Suite 101 Timmins, Ontario P4N 2S7	
Telephone	(705) 360-5525	CMA engineering Inc.
Fax	(705) 360-5062	CMA engineering Inc.
E-Mail	<a href="mailto:cma@cmaeng.com">cma@cmaeng.com</a>	
Company established	in 1986	
Legal Status	Private Corporation	
Officer	President, Mr. Claude Malette	

<b>Banking Facility</b>	<b>National Bank of Canada</b>	
	151 Algonquin East Timmins, Ontario P4N 1A6	
Telephone	(705) 267-7991	
Fax	(705) 268-3541	

**Insurance Broker**

Telephone

Fax

**Nexus Canada Inc.**2141 LaSalle Blvd., Building A  
Sudbury, Ontario

P3A 2A3

(705) 525-4805

(800) 461-1153

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**Legal Counsel**

Telephone:

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**Carrel & Partners**

P.O. Box 638

1136 Alloy Drive

Thunder Bay, Ontario

P7C 4W6

(807) 346-3000

(807) 346-3600

### 3. Key Personnel

CMA engineering Inc. provides detail engineering on the mechanical, electrical and civil aspect of projects with the following key personnel which are supported by a staff of 20 or more professionals.

#### **Key Personnel are:**

**Claude Malette**, P. Eng. (see included C.V.)

- Provides conceptual design, project management, equipment procurement and detailed mechanical, electrical and civil/structural engineering.
- Provides management consulting services.

**Gilles Lemire**, B.A. (Econ.) (see included C.V.)

- Provides conceptual design, project management and equipment procurement services.
- Provides detailed mechanical/civil design and CAD operation.
- Provides management consulting services.

**Francesco Pugliese**, P. Eng. (see included C.V.)

- Provides conceptual design, project management, equipment procurement and detailed mechanical and civil/structural engineering and CAD operation.
- Provides management consulting services.

**Joey Ratté**, Eng. (see included C.V.)

- Provides conceptual design, project management, equipment procurement and detailed mechanical and civil/structural engineering.
- Provides management consulting services.

## 4. Experience Overview - Forestry

Following is a list of forestry projects accomplished by CMA since its inception.

- |                      |  |
|----------------------|--|
| Jan 16 to<br>Present | <p><b>Arbec (Grand-Mère, Québec)</b></p> <p>Provided detail engineering (mechanical, civil, structural and electrical) and PLC/HMI programming for the following projects for the Arbec OSB mill in Grand-Mère, Québec:</p> <ul style="list-style-type: none"> <li>- WESP for a dual dryer system.</li> <li>- Finishing Line complete with first and second pass saw, T &amp; T and branding machine, paint booth, automatic stenciler and strapper systems.</li> <li>- New press control room.</li> </ul> |
| Aug 15 to<br>present | <p><b>Norbord (LaSarre, Québec)</b></p> <p>Provided detail engineering for the following projects for the Norbord OSB mill in LaSarre, Québec:</p> <ul style="list-style-type: none"> <li>- Installation of a new ESP system for the existing dual bark burning system.</li> <li>- Installation of a primary and secondary screening systems and installation of a fines blending system.</li> </ul>   |
| July 15<br>to Dec 16 | <p><b>Norbord (Guntown, Mississippi)</b></p> <p>Provided detail engineering (mechanical, civil, structural and electrical) for the modification to the plant's mat reject system and the mat side trim saw system for the Norbord OSB mill in Guntown, Mississippi.</p>  |
| Dec 15<br>to Dec 16  | <p><b>West Fraser (Blueridge, Alberta)</b></p> <p>Provided conceptual drawings and detail budget preparation for the platen change-out and press refurbishment for the West Fraser</p>   |

MDF mill in Blueridge, Alberta.

- Oct 16 **Norbord (100 Mile House, British Columbia)**  
to present Provided conceptual design and budget preparation for the following projects for the Norbord OSB mill in 100 Mile House, British Columbia:
- Complete strand reclaim system.
  - Finishing line dual strapping line.
  - Finishing line automatic bundle stenciler.
  - Press unloader outfeed modification complete with the addition of a board weight scale system and relocation of a blow detector.
- Oct 16 **Norbord (Grande Prairie, Alberta)**  
to present Provided conceptual design and budget preparation for the following projects for the Grande Prairie OSB mill in Grande Prairie, Alberta:
- Separation of the surface blending system so as to provide independent blending and forming of both surface layers.
  - Strand re-claim system.
  - Various projects pertaining to the conversion of partially installed equipment of the GP-2 project to suffice the needs of the existing GP-1 line. The project was divided in four (4) phases with a total cost of approximately \$60,000,000.00.
- Jan 16 **Georgia-Pacific (Englehart, Ontario)**  
to Dec 16 Provided detail engineering (mechanical, civil, structural and electrical) for the following projects at the Georgia-Pacific OSB mill in Englehart, Ontario:
- Complete replacement of refractoried Ash Cyclones and duct work ahead of the Dryer X.



- Modification to the conveyors and High Pressure Blower system so as to facilitate the path of rejected fines to the “Peerless” bin.
- Re-engineered the existing track system so as to support the new and much heavier knuckle boom to feed the stranders.
- Provided conceptual drawings and construction budget for the installation of explosion suppression and mitigation systems for the complete mill.

- Oct 16            **Norbord (Bemidji, Minnesota)**  
to present        Provided conceptual design and budget preparation for the installation of a green strand storage for the Norbord OSB mill in Bemidji, Minnesota.
- Nov 16            **Norbord (Barwick, Ontario)**  
to present        Provided detail engineering (mechanical, civil and structural) for the change-out of the Nicholson A-8 debarkers for the Norbord OSB mill in Barwick, Ontario.
- Oct 14            **Arbec (Grand-Mère, Québec)**  
to Oct 15        Provided conceptual design and budget preparation for the installation of a WESP, baghouse system and a press exhaust stack for the Arbec OSB Mill in Grand-Mère, Québec.
- April 14          **Pembroke MDF (Pembroke, Ontario)**  
to March 15     Provided detail engineering for the replacement of the control system for the existing resin metering system for the Pembroke MDF Mill in Pembroke, Ontario.

- June 14 **Norbord (LaSarre, Québec)**  
to April 15 Provided new concepts and budget preparation for the installation of primary screening, secondary screening, fines blending, new dryer system complete with a WESP and a new ESP system for the existing heat generators for the Norbord OSB Mill in LaSarre, Québec.
- Sept 14 **Georgia-Pacific (Englehart, Ontario)**  
to Feb 15 Provided conceptual design and budget preparation for the following projects for the Georgia-Pacific OSB Mill in Englehart, Ontario.
- Replacement of existing ash cyclones with a ash box drop out system.
  - Provided explosion suppression system for an existing baghouse system.
- April 14 **Georgia-Pacific (Hosford, Florida)**  
to Sept 14 Provided conceptual design and budget preparation for the installation of a new core strand blending system, a railcar wax unloading system and a new powder resin distribution system for the Georgia-Pacific OSB Mill in Hosford, Florida.
- Sept 14 **Weyerhaeuser (Grayling, Michigan)**  
to Oct 14 Provided conceptual design and budget preparation for the replacement/modernisation of the press system for the Weyerhaeuser OSB Mill in Grayling, Michigan.
- Oct 13 **Norbord (Bemidji, Minnesota)**  
to Jan 14 Provided conceptual design and budget preparation for the addition of a log sinking pond and new pond log extraction systems for the

Norbord OSB Mill in Bemidji, Minnesota.

- Sept 14 **Georgia-Pacific (Brookneal, Virginia)**  
to Sept 14 Provided preparation of specification and procurement support for the installation of two (2) new rotor debarkers for the Georgia-Pacific OSB Mill in Brookneal, Virginia.
- Sept 13 **Georgia Pacific (Englehart, Ontario)**  
to Nov 15 Provided conceptual design and budget preparation for the installation of one (1) or two (2) new debarking systems for the Georgia Pacific OSB Mill in Englehart, Ontario.
- April 13 **Tolko (Slave Lake, Alberta)**  
to Jan 14 Provided detail engineering (Civil, Structural and Mechanical) for the installation of a V-Grooving system for the Tolko Athabasca Mill in Slave Lake, Alberta.
- Sept 13 **Norbord (Guntown, Mississippi)**  
to May 14 Provided detail engineering (Civil, Structural, Mechanical and Electrical) for a fines secondary screening system and four (4) blender outfeed conveyors for the Norbord OSB Mill in Guntown, Mississippi.
- Dec 12 **Norbord (Inverness, Scotland)**  
to Feb 13 Provided conceptual design, budget preparation and project financial benefits for the installation of a primary screen system, secondary screen system and fines blending system for the Norbord OSB Mill in Inverness, Scotland.

- Dec 12            **Norbord (Genk, Belgium)**  
to Feb 13        Provided conceptual design, budget preparation and project financial benefits for the installation of a fines blending system for the Norbord OSB Mill in Genk, Belgium.
- May 13            **Norbord (Joanna, North Carolina)**  
to Nov 14        Provided detail engineering (Civil, Structural, Mechanical and Electrical) for a complete debarking and stranding system at the Norbord OSB Mill in Joanna, North Carolina.
- Dec 12            **Norbord (Joanna, North Carolina)**  
to March 13     Provided conceptual design and budget preparation for the installation of a portal pivoting crane, two (2) drum debarking systems, two (2) stranding systems and two (2) primary green screening systems for the Norbord OSB Mill in Joanna, North Carolina. Also provided some services for the installation of two (2) fines separation (sifters) systems.
- Nov 12            **Norbord (Joanna, North Carolina)**  
to Feb 14        Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the installation of two (2) fines separation systems (sifters) and the replacement of the conveyor system feeding the existing dry bin system at the Norbord OSB Mill in Joanna, North Carolina.
- Nov 12            **Norbord (LaSarre, Québec)**  
to Jan 14        Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the installation of a new finishing line (paint booth, strapper, automatic logo applicator and automated cardboard application station), a new sanding/v-grooving line and a new

board sorting line for the Norbord OSB Mill in LaSarre, Québec.

- Nov 12      **Norbord (Jefferson, Texas)**  
to April 13      Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the installation of two fines separation system (sifters) for the Norbord OSB Mill in Jefferson, Texas.
- July 12      **Tolko (Meadow Lake, Saskatchewan)**  
to Feb 14      Provided detail engineering (Civil, Structural, Mechanical and Electrical) and PLC/HMI programing for the installation of a primary strand screening system, a secondary fines screening system and a fines blending system for the Tolko OSB Mill in Meadow Lake, Saskatchewan.
- July 12      **Norbord (Cordele, Georgia)**  
to Jan 13      Provided detail engineering (Civil, Structural, Mechanical and Electrical) and PLC/HMI programing for the installation of a primary strand sifting system, a secondary fines screening system for the Norbord Cordele OSB Mill Line 2 and Line 1 in Cordele, Georgia.
- June 11      **Tolko (Meadow Lake, Saskatchewan)**  
to Sept 11      Provided conceptual design and budget preparation for the installation of a primary strand screening system, a secondary fines screening system and a fines blending system for the Tolko OSB Mill in Meadow Lake, Saskatchewan.
- June 11      **Norbord (LaSarre, Québec)**  
to Dec 11      Provided conceptual design and budget preparation for the LaSarre OSB mill production output increase of 40%. Output increase

required the addition of new ponds, new debarker system, new dryer system, new strander system, new primary screening system, new secondary screening system, new fines blending system, the addition of 4 press platens, a new board grading/v-grooving/sanding system, new strapping system and a new paint booth system.

March 11 **Norbord (Nacogdoches, Texas)**  
to Nov 12 Provided conceptual design, budget preparation, project financial benefits and detail engineering (Civil, Structural, Mechanical and Electrical) for the installation of a secondary fines screening system and a fines blending system at the Norbord OSB Mill in Nacogdoches, Texas.

March 11 **Norbord (Guntown, Mississippi)**  
to Aug 11 Provided conceptual design, budget preparation, project financial benefits and detail engineering (Civil, Structural, Mechanical and Electrical) for the installation of a secondary fines screening system, a fines blending system and a fines recovery system for the Norbord OSB Mill in Guntown, Mississippi.

April 11 **Norbord (Cordele, Georgia)**  
to Sept 11 Provided conceptual design, budget preparation and project financial benefits for the installation of a primary screening (for line 2 only), a secondary screening and a fines blending system for two separate production lines for the Norbord OSB Mill in Cordele, Georgia.

April 11 **Norbord (Joanna, South Carolina)**  
to Oct 11 Provided conceptual design, budget preparation and project

financial benefits for the installation of a primary strand screening system, a secondary fines screening system and a fines blending system for the Norbord OSB Mill in Joanna, South Carolina.

- Jan 11            **Norbord (LaSarre, Québec)**  
to March 11    Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the construction of a new resin/wax storage and piping system for the Norbord OSB mill in LaSarre, Québec.
- Feb 11            **Norbord (Bemidji, Minnesota)**  
to Aug 11        Provided conceptual design and budget preparation for the addition of heated log pond systems and the replacement of the existing debarking systems for the Norbord OSB mill in Bemidji, Minnesota. Also provided detail engineering for the replacement of the existing two A-5 ring debarker units with larger A-8 units.
- Nov 10           **Georgia Pacific (Earlton, Ontario)**  
to Feb 11        Provided conceptual design and budget preparation for the required modification and repairs to the Georgia Pacific debarking system in Earlton, Ontario.
- Jan 10            **Norbord (Val D'Or/LaSarre, Québec)**  
to June 10       Provided conceptual design and budget preparation for a new dryer system, a new hot pond system and a screening system for Norbord's LaSarre and Val D'Or OSB mills in Québec.
- Nov 08           **LUA – Prairies Forest Product (Neepawa, Manitoba)**  
to Sept 10       Provided fire appraisal, budget preparation for the reconstruction of a wood manufacturing plant. Total cost of repairs was approximately \$12,000,000.00.

- Jan 09 **IMS Expert Services Inc. (Pensacola, Florida)**  
to April 09 Provided expert witness services on litigation for an OSB mill.  
Provided evaluation on a total of 131 claims put forward.
- Sept 08 **LUA – Millar Western (Fox Creek, Alberta)**  
to Feb 09 Provided fire appraisal budget preparation for the reconstruction of  
a sawmill damaged by a fire. Total cost of project was  
approximately \$45,000,000.00.
- Apr 06 **LUA - Haavaldsrud (Hornepayne, Ontario)**  
to Feb 07 Provided fire appraisal budget preparation, detail engineering,  
project management, construction management, PLC/HMI  
programming and commissioning for the reconstruction of a  
sawmill damaged by a fire. Total cost of project was  
approximately \$7,900,000.00.
- Feb 06 **JM Huber (Easton, Maine)**  
to Apr 08 Provided conceptual design and budget preparation, detail  
engineering, project management, PLC/HMI programming and  
commissioning for a new drying/heat generation/dry ESP system  
for an OSB mill and this in order to meet MACT (Maximum  
Achievable Control Technologies) compliance. Total value of  
project was approximately \$40,000,000.00 (U.S.).
- Feb 06 **JM Huber (Easton, Maine)**  
to Oct 06 Provided conceptual design and budget preparation for a new  
pond/debarking/stranding system for an OSB mill. Total value of  
project was approximately \$35,000,000.00 (U.S.).



- Jan.06 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Mar 06 Provided conceptual design and budget preparation for a complete mill environmental compliance plan, which included improving the drying system and heat generating systems by possibly modifying existing equipment and/or adding new equipment.
- Jan. 06 **Ainsworth (Barwick, Ontario)**  
to Sept 06 Provided conceptual design, budget preparation, detail engineering, PLC/HMI programming and commissioning for the addition of four wave feeder systems after their pond outfeed jackladders. Total value of project was approximately \$1,500,000.00.
- Mar 05 **Ainsworth (Cook, Minnesota)**  
to Sept 06 Provided conceptual design and budget preparation for a primary and secondary screening system and a fines blending system for an OSB mill. Total value of project was approximately \$7,500,000.00.
- Aug 05 **Ainsworth (Barwick, Ontario)**  
to Sept 06 Provided conceptual design, budget preparation, detail engineering, PLC/HMI programming and commissioning for a Strand Reclaim System for an OSB mill. Total value of project was approximately \$5,500,000.00.
- Mar 05 **Norbord (LaSarre, Québec)**  
to Dec 06 Provided conceptual design, budget preparation, detail engineering, project management, PLC/HMI programming and commissioning for a second log debarking system for an OSB mill. Total value of project was approximately \$3,800,000.00.

- Mar 05 **Norbord (Val-d'Or, Québec)**  
to Nov 05 Provided conceptual design and budget preparation for a second log debarking system for an OSB mill. Total value of project was approximately \$3,900,000.00.
- Nov 04 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Nov 05 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for a strander system (2 units) for an OSB mill. Total value of project was approximately \$21,000,000.00.
- Continuous **Incidents/Fire Investigations and Damage Appraisals**  
Projects  
- **Underwriters Adjustment Bureau Ltd.**  
- **Crawford-THG**  
- **Cunningham Lindsay**  
- **Maltmans Loss Adjusters**  
- **MGI Loss Adjusters**
- Provide evaluation of damages following incidents/fires on manufacturing plants and mobile equipment. Determine cause of incidents/fires and appraise damages as well as provide expenditure supervision on repairs. On average, will perform such services 6 to 8 times per year with claims ranging in value from approximately \$100,000.00 to \$45,000,000.00.
- June 05 **Tembec (Chapleau, Ontario)**  
to Nov 05 Provided detail engineering and detail fabrication drawings for a new stack installation for a dry kiln system and provided detail engineering for the relocation of a chip conveyor system. Also provided engineering services on various projects at the Tembec Chapleau sawmill.

- Apr 05 **Columbia Forest Product (Hearst, Ontario)**  
to Aug 05 Provided engineering services on various projects for a plywood mill and a particle board mill in Hearst. Among others, services provided were for the certification of 45 lifting devices, various ventilation systems and an oil catch basin system.
- Mar 05 **JM Huber (Crystal Hill, Virginia)**  
to Apr 05 Provided engineering and detail fabrication drawings for the addition of larger pivoting distribution screws above the forming stations of an OSB mill. Total value of project was approximately \$150,000.00.
- Feb 05 **JM Huber (Commerce, Georgia)**  
to Mar 05 Provided engineering and detail fabrication drawings for the addition of larger pivoting distribution screws above the forming stations of an OSB mill. Total value of project was approximately \$150,000.00.
- Jan 04 **Weyerhaeuser (Wawa, Ontario)**  
to Jan 06 Provided detail electrical design and PLC programming for various projects for an OSB mill.
- Aug 04 **Grant Forest Product Inc (Timmins, Ontario)**  
to Oct 04 Provided conceptual design and budget preparation of a complete dryer/screening/heat generation system for an OSB mill. Total value of project was approximately \$44,000,000.00.
- May 04 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Feb 05 Provided conceptual design, detail engineering project

management, PLC/HMI programming and commissioning of a log pond/loader system for an OSB mill. Total value of project was approximately \$6,000,000.00.

Aug 03

**Voyageur Panels (Barwick, Ontario)**

to Mar 04

Provided conceptual design, procurement, detail engineering, PLC/HMI programming of a fines recovery project for an OSB mill. Total value of project was approximately \$2,300,000.00.

Oct 03

**Tembec (Timmins, Ontario)**

to Nov 03

Provided conceptual design and budget preparation for the addition of a slasher system for a sawmill. Total value of project was approximately \$3,400,000.00.

May 03

**Weyerhaeuser (Wawa, Ontario)**

to Nov 03

Provided conceptual design, detail engineering, PLC/HMI programming and commissioning for the installation of a paint booth/strapper system for an OSB mill. Total value of project was approximately \$1,150,000.00.

May 03

**Grant Forest Product Inc. (Timmins, Ontario)**

to May 04

Provided conceptual design, procurement, detail engineering, project management, PLC/HMI programming and commissioning for the installation of 3 mat scales for two OSB production lines.

Jan 03

**Abitibi Consolidated (Iroquois Falls, Ontario)**

to Feb 03

Provided conceptual design and budgetary estimate for the modification to the existing ventilation station of the paper machine number 3 room which was to be converted into a maintenance shop.

- Apr 03 **Grant Forest Product Inc. (Englehart, Ontario)**  
to May 04 Provided conceptual design, procurement, detail engineering, PLC/HMI programming and commissioning for the installation of a drum debarking system for an OSB mill. Total value of project was approximately \$6,500,000.00.
- Mar 03 **Luzenac North America (Penhorwood, Ontario)**  
to June 03 Provided conceptual design and detail engineering for the installation of an “Air Fluidized Grinding” system for a Talc mine. Total value of project was approximately \$6,000,000.00.
- Nov 02 **Grant Forest Product Inc. (Timmins, Ontario)**  
to May 03 Provided Isometric drawings of all systems of an OSB mill. Isometric drawings were produced to assist mill in equipment lock out procedure.
- Nov 02 **Proboard Inc. (Atikokan, Ontario)**  
to Aug 03 Provided feasibility study, conceptual design, detail engineering, and procurement for the installation of a green end screening system, dryer dust burner system and plant Baghouse system for a particleboard mill. Total value of all projects was approximately \$7,300,000.00.
- Sept 02 **Grant Forest Product Inc. (Timmins, Ontario)**  
to Sept 03 Provided conceptual design and equipment procurement for the installation of a wet electrostatic precipitator system for three OSB dryers. Total value of project was approximately \$7,700,000.00.

- June 02 **Nexfor Norbord (Cochrane, Ontario)**  
to Nov 02 Provided conceptual design and detail engineering for the construction of a pond Jack Ladder system for a plywood mill. Total value of project was approximately \$250,000.00
- Aug 02 **Grant Forest Product Inc. (Timmins, Ontario)**  
to Sept 03 Provided conceptual design, detail engineering for the installation of a fines dryer system for an OSB mill. Total value of project was approximately \$5,900,000.00.
- Sept 02 **Kruger-Longlac Wood Industries (Longlac, Ontario)**  
to Oct 02 Provided conceptual design and detail engineering for the construction of pond log forwarding systems for an OSB Mill. Total value of project was approximately \$1,000,000.00.
- Sept 02 **Nexfor Norbord (Val d'Or, Québec)**  
to Jan 03 Provided conceptual design and budget preparation for the transformation of OSB board into a value added product (water resistant OSB). Total value of project was approximately \$13,000,000.00.
- July 02 **Nexfor Norbord (Val d'Or, Québec)**  
to Nov 02 Provided conceptual design and detail engineering for a total of seven (7) projects for the modernisation of an OSB plant. Projects are in the sawing, blending and press area. Total value of projects was approximately \$6,000,000.00.

- July 02 **Nexfor Norbord (Cochrane, Ontario)**  
to Aug 02 Provided conceptual design and budget preparation for the addition of baghouse system and various noise reduction projects. Total value of project was approximately \$1,740,000.00.
- May 02 **Footner Forest Products (High Level, Alberta)**  
to July 03 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the installation of a fines blending project for an OSB mill. Total value of project was approximately \$3,400,000.00.
- Apr 02 **Domtar (Elk Lake, Ontario)**  
to July 02 Provided detail engineering for the installation of a dry kiln system. Total value of project was approximately \$2,500,000.00.
- Feb 02 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Jan 03 Provided conceptual design and detail engineering for the installation of a drum debarking system for an OSB mill. Total value of project was approximately \$3,400,000.00.
- Nov 01 **Domtar (Elk Lake, Ontario)**  
to Sept 02 Provided conceptual design and detail engineering for the repairs and modifications to an existing bark burning thermal oil system. Total value of project was approximately \$2,800,000.00.
- Oct 01 **Kruger-Longlac Wood Industries (Toronto, Ontario)**  
to Nov 02 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the installation of a second transformation plant in Toronto, Ontario. In this plant, 4' x 8' OSB sheets are cut up and laminated with a

plastic membrane for use in sub flooring (DriCore). Total value of project was approximately \$6,000,000.00

- Jan 02 **Kruger-Longlac Wood Industries (Longlac, Ontario)**  
to Aug. 02 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the installation of a sanding system for a hard wood veneer plant. Total value of project was approximately \$2,000,000.00
- Jan 02 **Tembec (Timmins, Ontario)**  
to Feb 02 Provided budget preparation for the upgrade of a large log sawing line and an optimised edger system. Total value of project was in excess of \$13,000,000.00.
- Jan 02 **Nexfor Norbord (Val d'Or, Québec)**  
to July 02 Provided conceptual design, detail engineering and project management for the introduction of an Isocyanite binder in an OSB mill. Total value of project was approximately \$200,000.00
- Aug 01 **Kruger-Longlac Wood Industries (Longlac, Ontario)**  
to June 02 Provided conceptual design and budget preparation for the upgrade of an existing Waferboard and Plywood Plant. Total upgrades exceeded \$11,000,000.00.
- Aug 01 **Kruger-Longlac Wood Industries (Longlac, Ontario)**  
to Dec 01 Provided feasibility study for the construction of a new OSB Plant adjacent to an existing plant. Total value of project was approximately \$160,000,000.00.



- Sept 01 **Tembec (Cochrane Division, Ontario)**  
to Oct 01 Provided conceptual design and budget preparation for a sawmill screening system. Total value of project was approximately \$2,000,000.00.
- Aug 01 **Anthony Domtar (Sault Ste. Marie, Ontario)**  
to Nov 01 Provided conceptual design and detail engineering for the complete catwalk/access system for a new I-Joint plant. Total value of project was approximately \$400,000.00.
- June 01 **Columbia Forest Products (Hearst, Ontario)**  
to present Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the repairs of a particle board plant following an explosion and also provide the same for the addition of a second green screening system. Total value of project was approximately \$3,900,000.00
- Aug 01 **Temple Inland (Pembroke, Ontario)**  
to Feb 02 Provided detail engineering on numerous modifications to the finishing line of an MDF Plant. Total value of project was approximately \$120,000.00.
- Feb 00 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Aug 00 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the conversion from relay to PLC of an OSB line and relocation of the control room for the same line. Total value of project was approximately \$1,400,000.00.

- April 00 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Nov 00 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of a truck unloading station. Total value of project was approximately \$500,000.00.
- April 00 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Dec 00 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the modifications and recommissioning of an OSB line. Total value of project was approximately \$5,000,000.00.
- March 00 **Grant Forest Products Inc. (Timmins, Ontario)**  
to June 00 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of a new mud conveying system for an OSB Mill Pond System. Total value of project was approximately \$300,000.00.
- Jan 00 **Domtar Inc. (Chapleau Division, Ontario)**  
to June 01 Provided conceptual design, engineering, project management, PLC/HMI programming on numerous projects such as a Chip Conveying/Blowing System, High Speed Debarking Project, Electrical Infrastructure Project, HewSaw Sawing Line Project, Planer/Trimmer PLC Conversion, Random Length Sawmill Optimized Trimmer Project and Dry Kiln Project. Total value of all projects was approximately \$13,300,000.00.

- Jan 00 **Domtar Inc. (White River Division, Ontario)**  
to Apr 01 Provided conceptual design, engineering, project management, PLC/HMI programming on numerous projects such as an Electrical Infrastructure Project, In Line Grader Project, HewSaw Sawing Line Project and High Speed Debarking Project. Total value of all projects was approximately \$8,910,000.00.
- Jan 00 **Domtar Inc. (Nairn Centre Division, Ontario)**  
to Dec 01 Provided conceptual design, engineering, project management, PLC/HMI programming on numerous projects such as an In Line Grader/Optimizer Project, Random Length Sawmill Optimized Trimmer Project and a complete new Debarking System. Total value of all projects was approximately \$7,000,000.00.
- Jan 00 **Domtar Inc. (Elk Lake Division, Ontario)**  
to Dec 00 Provided conceptual design, engineering, project management, PLC/HMI programming on numerous projects such as Dry Kiln System/Konus Upgrade and Edger Project. Total value of all projects was approximately \$4,200,000.00.
- Jan 00 **Domtar Inc. (Timmins Division, Ontario)**  
to Nov 00 Provided conceptual design, engineering, project management, PLC/HMI programming on numerous projects such as Optimized Edger System, In Line Grader Project, Planer Project and Planer Building. Total value of all projects was approximately \$9,242,000.00.
- Jan 00 **Domtar Inc. (Sault Ste. Marie Division, Ontario)**  
to Sept 01 Provided conceptual design and budget preparation on numerous projects.

- Jan 00  
to Dec. 00 **Domtar Inc. (Quévillon, Malartic, Val d'Or and Matagami Divisions, Québec)**  
Provided conceptual design for the installation of a new HewSaw Sawing Line for each of the four (4) locations. Total value of all projects was approximately \$16,000,000.00.
- Dec 99  
to July 00 **Grant Forest Products Inc. (Timmins, Ontario)**  
Provided conceptual design, engineering, PLC/HMI programming and commissioning for the installation of a ducting and stack system for the press and dryer system of an OSB Mill. Total value of project was approximately \$1,500,000.00.
- Dec 99  
to March 01 **Grant Forest Products Inc. (Timmins, Ontario)**  
Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of a new bark conveying and hogging system. Total value of project was approximately \$2,700,000.00
- Dec 99  
to March 01 **Grant Forest Products Inc. (Timmins, Ontario)**  
Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of a complete fines Turbo Blending System. Total value of project was approximately \$6,200,000.00.
- June 99  
to Feb 01 **Columbia Forest Products (Hearst, Ontario)**  
Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the addition of a pre-drying and refining system and for the replacement/increase in dry screening/refining system and for the replacement of the complete press/forming line system for a particleboard plant. Total value of project was approximately \$16,000,000.00

- Apr. 99      **Elk Lake Planing Mill (Elk Lake, Ontario)**  
to Dec 99      Provided numerous improvements to sawmill and to conveying system. Total value of project was approximately \$350,000.00.
- Apr. 99      **Tolko Industries (High Prairie, Alberta)**  
to Dec 99      Provided conceptual design and engineering for a log processor (debarker) for an OSB plant. Total value of project was approximately \$1,500,000.00.
- Apr. 99      **Grant Forest Products Corp. (Timmins, Ontario)**  
to Nov 99      Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the retrofit of the pond log forwarding and feeding system for an OSB plant. Total value of project was approximately \$2,600,000.00.
- Apr 99      **North Superior Forest Product (Wawa, Ontario)**  
to Oct 99      Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the relocation of the stranders control room, the conversion of an HMI station to using Wonderware software and the installation of a data gathering Management Information System (MIS). Total value of project was approximately \$410,000.00.
- Apr 99      **Grant Forest Products Corp. (Timmins, Ontario)**  
to Nov 99      Provided conceptual design, engineering, project management and commissioning for the installation of a log scanner system (5 scanners) and forming station level sensors (8 sensors) for an OSB mill. Total value of project was approximately \$136,000.00.

- Feb 99 **Columbia Forest Products (Hearst, Ontario)**  
to Aug 99 Provided conceptual design, engineering, project management and commissioning for the installation of a chip conveyor and a silo unloader system for a plywood plant. Total value of project was approximately \$350,000.00.
- Mar 99 **Progressive Machinery Inc./Tafisa Project (Lac-Mégantic, Québec)**  
to Jan 00 Provided electrical engineering, PLC and HMI programming for complete finishing system of a new particle board plant. Project involved approximately 2000 hours of work.
- Feb 99 **Domtar (Lebel-sur-Quévillon, Québec)**  
to Mar 99 Provided conceptual design and construction budget for new softwood sawmill with yearly production of 200 MMFBM/year. Total value of project was approximately \$50,000,000.00.
- Feb 99 **Tolko Industries (High Prairie, Alberta)**  
to April 99 Provided conceptual design and engineering for the installation of 12 non heated make up air units for an OSB mill. Total value of project was approximately \$450,000.00.
- Mar 99 **Grant Forest Products Corp. (Toronto, Ontario)**  
to Oct 99 Provided conceptual design and programming for the Management Information System (MIS) that allowed the Toronto head office to communicate with the mill to obtain continuous updates on various information. Total value of project was approximately \$50,000.00.

- Dec 98  
to Feb 99
- Grant Forest Products Corp. (Timmins, Ontario)**
- Provided conceptual design, engineering, project management and commissioning for the installation of a high pressure pneumatic system. Total value of project was approximately \$202,000.00.
- Dec 98  
to Sept 99
- Columbia Forest Products, Levesque Div. (Hearst, Ontario)**
- Provided conceptual design, engineering, project management and commissioning for the installation of a complete sawing system for a particleboard plant. Total value of project was approximately \$750,000.00.
- Dec 98  
to Oct 99
- Tolko Industries (High Prairie, Alberta)**
- Provided conceptual design, engineering, project management and commissioning for a fines blending system for an OSB plant. Total value of project was approximately \$1,600,000.00.
- Oct 98  
to Oct 07
- Grant Forest Products Corp. (Timmins, Ontario)**
- Provided general PLC and HMI station programming for general plant improvement.
- Oct 98  
to Mar 99
- Columbia Forest Products, Levesque Div. (Hearst, Ontario)**
- Provided conceptual design, engineering, project management and commissioning for the installation of a complete sander baghouse system for a particleboard plant. Total value of project was approximately \$600,000.00.

- Aug 98 **Tolko Industries (High Prairie, Alberta)**  
to Feb 99 Provided conceptual design, engineering, project management and commissioning for a press exhaust fan system. Total value of project was approximately \$650,000.00.
- June 98 **Proboard Ltd. (Atikokan, Ontario)**  
to Nov 98 Provided, for insurance purpose, complete plant appraisal. Providing budgetary proposals for a new blending system, press exhaust fan system, a cut to size saw system and a complete heat energy system for a particleboard plant.
- June 98 **Lecours Lumber (Calstock, Ontario)**  
to Nov 98 Provided a feasibility study and conceptual design for the relocation and construction of a new sawmill. Total value of project was approximately \$55,000,000.00.
- Feb. 98 **Grant Forest Products Corp. (Englehart, Ontario)**  
to Oct. 98 Provided conceptual design, engineering, programming, project management and commissioning for the installation of a plant wide control network system and the installation of a new control room in replacement of the (3) three existing ones. Total value of project was approximately \$700,000.00.
- Sept 97 **Columbia Forest Products, Levesque Div. (Hearst, Ontario)**  
to Aug 98 Provided conceptual design, engineering, project management and commissioning for the installation of a blending system, resin metering system, a wet screening system and also converted the relay control system to PLC for a particleboard plant. Total value of project was approximately \$3,300,000.00.



- March 98 **Emtek Industries (Timmins, Ontario)**  
 To May 98 Provided engineering, equipment procurement and also reviewed business plan for a rubber recycling plant to be built in the Toronto, Ontario region.
- Apr 98 **E.B. Eddy - J.E. Martel Div. (Chapleau, Ontario)**  
 to June 98 Provided a feasibility study and conceptual design for the installation of a high speed small log curve sawing line and for the complete optimization of the existing debarking system. Total value of project was approximately \$6,500,000.00.
- April 97 **Levesque Plywood Limited (Hearst, Ontario)**  
 to Sept 97 Provided conceptual design, engineering, project management and commissioning for the installation of raw material bin sorting system. Total value of project was approximately \$950,000.00.
- Nov 96 **Globe Machine (Tacoma, Washington)**  
 to Dec 97 Provided start-up assistance on equipment sold by Globe Manufacturing to mills in Pembroke, Ontario (MacMillan Bloedel (MDF)), North Carolina (Weyerhaeuser (particleboard)), Wawa, Ontario (Jager Strandboard (OSB)) and Maniwaki, Québec (Forex Maniwaki (OSB)).
- Nov 96 **E.B. Eddy (Nairn Centre, Ontario)**  
 to July 97 Provided a feasibility study for the refurbishment and modernisation of the heat generation system and wood waste system for their sawmill operation in Nairn Centre. Total value of projects was approximately \$1,100,000.00 and \$650,000.00.

- Jan 97 **Tolko Industries (High Prairie, Alberta)**  
to June 97 Provided conceptual design, engineering, project management and commissioning for the conversion to liquid from powdered resin of a blending system. Total value of project was approximately \$530,000.00. Provided cost analysis for various projects at the same mill.
- Oct 96 **Norbord (Cochrane, Ontario)**  
to June 97 Provided assistance on a number of small projects in their Plywood mill in Cochrane.
- April 97 **Tolko Industries (High Prairie, Alberta)**  
to May 97 Provided a feasibility study for the addition of a wet screening system for their OSB plant in Alberta. Total value of project was approximately \$3,800,000.00.
- Oct 96 **Levesque Plywood Limited (Hearst, Ontario)**  
to Feb 97 Provided a feasibility study for the expansion of their existing particleboard plant. Total value of project was approximately \$22,000,000.00.
- Oct 96 **Longlac Wood Industries Inc. (Longlac, Ontario)**  
to Dec 96 Provided a feasibility study for the modernisation of their existing waferboard plant. Total value of project was approximately \$8,970,000.00.

April 96 **Stone & Webster Canada Ltd. (Toronto, Ontario)**  
 to Oct. 96 **(Eagle Forest Products Limited Partnership, Miramichi, NB)**  
 Provided project management for completion of construction and commissioning of a new OSB plant. Plant was equipped with a 12 opening (8' X 24') press. Total value of project was approximately \$80,000,000.00.

Year **Malette Inc. (Timmins OSB Division, Ontario)**  
 1994-1996 Provided conceptual design, engineering, project management, construction management and commissioning for the construction of a retrofitted OSB plant. Total value of project was approximately \$80,000,000.00. Output of plant (16 x 8' x 24') was the world's largest for an 8' or 9' wide line.

Year 1994 **Malette Inc. (Timmins OSB Division, Ontario)**  
 Provided a feasibility study for a new OSB plant to produce 466 million square feet per year of OSB.

**Isoboard Inc. (Toronto, Ontario)**

Provided consulting services on feasibility of building new plant to produce board with straw. Established cost of project and production cost.

**Norbord Inc. (Cochrane Division, Ontario)**

Provided consulting services on feasibility of expanding production at their existing plant. Established cost of project.

**Proboard Ltd. (Atikokan, Ontario)**

Provided complete engineering, project management and construction management for the installation of a complete Refining System. Total value of project was approximately \$1,000,000.00.

**Proboard Ltd. (Atikokan, Ontario)**

Provided complete engineering, project management and construction management for the installation of a Sanding/Baghouse system and various other projects. Total value of project was approximately \$2,000,000.00.

**Malette Inc. OSB Division (Timmins, Ontario)**

Provided project and construction management on reconstruction of Dryer Control Room following destruction by fire. Total value of project was approximately \$300,000.00.

**UAB (Sudbury, Ontario)**

Provided evaluation of damages following a fire at the Rexwood Particleboard Plant. Total value of damages was approximately \$300,000.00.

Year 1993 **Malette Inc., Malette Lumber Division (Timmins, Ontario)**

Provided engineering and construction management for the dismantlement and reinstallation of two (2) Wood Burner Systems for two (2) Lumber Dry Kilns. Total value of project was approximately \$400,000.00.

- Year 1992 - 1993 **Malette Inc., Waferboard Division (Timmins, Ontario)**  
 Provided conceptual design, engineering, project management and construction management for the conversion of a Particleboard Plant to manufacture oriented strand board. Total value of project was approximately \$5,350,000.00.
- Year 1992 **Malette Inc., Waferboard Division (Timmins, Ontario)**  
 Provided conceptual design, engineering, project management and construction management for a complete Wood Dryer System for a Particleboard Plant. Total value of project was approximately \$900,000.00.
- Year 1992 **Malette Inc., Waferboard Division (Timmins, Ontario)**  
 Provided engineering and project management for the conversion of a Waferboard Plant to manufacture oriented strand boards. Total value of project was approximately \$700,000.00.
- Year 1991 **Underwriters adjustment Bureau Ltd. (Ottawa, Ontario)**  
 Provided fire and wind damage appraisal to a Particleboard Plant. Total value of damages was approximately \$480,000.00.
- Atlantic Waferboard (Chatham, New Brunswick)**  
 Provided assistance to Maintenance Department and set up a Preventive Maintenance Program for an OSB mill.

**Bussell & Co. Inc. (Ontario)**

Provided fire damage appraisal of a Planer Mill/Dry Kiln Complex. Total value of damages was approximately \$500,000.00.

**Field Lumber (1956) Ltd. (Field-Out, Ontario)**

Provided project and construction management for reconstruction of sawmill, Automatic Sorter and Heat Generation System. Total value of repairs was approximately \$400,000.00.

**Underwriters Adjustment Bureau Ltd. (Sudbury, Ontario)**

Provided fire damage evaluation for the reconstruction of a building and repairs to equipment of an Automatic Lumber Sorter and Heat Generation System. Total value of damages was approximately \$525,000.00.

**Panneaux Noranda Inc. (Lac-des-Îles, Québec)**

Set up a plant quality control program and did engineering and project management for all modifications necessary to production line so as to bring quality of particleboard produced to market standards.

Year	<b>Panneaux Noranda Inc. (Lac-des-Îles, Québec)</b>
1990-1991	Provided engineering and project management for the installation of a building over existent equipment. Total value of project was approximately \$320,000.00.

Year 1990     **Norbord Inc. (Cochrane Division, Ontario)**  
 Provided engineering for a 50,000 CFM Dust Extraction System.  
 Total value of project was approximately \$150,000.00.

**Underwriters Adjustment Bureau Ltd. (Sudbury, Ontario)**

Provided damage evaluation and expenditure supervision for the reconstruction of sections of a building and repairs to equipment for a sawmill in Opatatika. Total value of damages was approximately \$65,000.00.

**Malette Kraft Pulp & Power (Smooth Rock Falls, Ontario)**

Completed a start-up of a recently constructed 200,000 lb/hr Steam Boiler. Total value of numerous modifications was approximately \$150,000.00.

Year           **Panneaux Noranda Inc. (Lac-des-Îles, Québec)**  
 1990-1991    Provided engineering and provided construction management for the installation of a melamine lamination line and a paint line for a particleboard mill. Total value of project was approximately \$6,224,000.00.

Year 1990     **Waferboard Corp. Inc. (Timmins, Ontario)**  
 Provided engineering and project management for the reconstruction of 2-24 m BTU/hr Heat Generation Systems. Total value of project was approximately \$2,050,000.00

**R.P. Insurance Adjusters Inc. (Toronto, Ontario)**

Provided fire damage evaluation for the reconstruction of 2 - 24m BTU/hr Heat Generation Systems. Total value of damages was approximately \$2,050,000.00.

**Norbord Industries Inc. (Lac-des-Îles, Québec)**

Provided engineering for the installation of a six (6) ton overhead crane for a Maintenance Shop. Total value of project was approximately \$75,000.00.

**Atlantic Waferboard Inc. (Chatham, New Brunswick)**

Provided engineering and project management of the installation of two Dust Extraction Systems. Total value of project was approximately \$220,000.00.

Year **Atlantic Waferboard Inc. (Chatham, New Brunswick)**

1989-1990 Provided engineering and Project management of the installation of a 30m BTU/hr Heat Generating Unit. Total value of project was approximately \$1,600,000.00.

Year 1989 **Atlantic Waferboard Inc. (Chatham, New Brunswick)**

Provided engineering, preparation and management for a scheduled plant shutdown. Total value of project was approximately \$750,000.00.

**Rexwood Products Ltd. (Ontario)**

Provided engineering for fines conveying and storage system. Total value of project was approximately \$650,000.00.



- Year **Bison ACM Chemical Inc. (Canada & U.S.A.)**  
1989-1990 Claude Malette was on a retainer with Bison ACM as technical representative.
- Year 1989 **Rexwood Products Ltd. (Ontario)**  
Provided engineering, preparation and management of a scheduled plant shutdown. Total value of projects was approximately \$235,000.00.
- Year **Rexwood Products Ltd. (Ontario)**  
1988 - 1989 Provided engineering, project management and construction management for the construction of a new Particleboard Plant. Project total disbursement was approximately \$22,000,000.00.
- Year 1988 **Underwriters Adjustment Bureau Ltd. (Sudbury, Ontario)**  
Provided fire damage evaluation and expenditure supervision for the reconstruction of a building and repairs of a Log Debarking System. Total value of project was approximately \$250,000.00.
- Year 1987 **CMA** worked on a number of small assignments for various clients.

## 5. Experience Overview – Dust Control/Pneumatic Conveying

Following is a list of dust control/pneumatic conveying projects accomplished by CMA since its inception.

- |                       |   |
|-----------------------|---|
| Sept 14<br>to Present | <p><b>Georgia-Pacific (Englehart, Ontario)</b></p> <p>Provided conceptual design and budget preparation and detail engineering for the explosion suppression system for an existing baghouse system for the Georgia-Pacific OSB Mill in Englehart, Ontario.</p>   |
| July 12<br>to Feb 14  | <p><b>Tolko (Meadow Lake, Saskatchewan)</b></p> <p>Provided detail engineering (Civil, Structural, Mechanical and Electrical) and PLC/HMI programming for the installation of two (2) baghouse systems complete with the design of all ducting systems, spark detection system for the dust control and material conveying for the new screening and fines blending system. Also provided detail engineering for the explosion suppression for the new storage bin for the Tolko OSB Mill in Meadow Lake, Saskatchewan.</p> |
| July 12<br>to Jan 13  | <p><b>Norbord (Cordele, Georgia)</b></p> <p>Provided detail engineering for the installation of an explosion suppression system, flame arrestor system, spark detection system and fire protection system for the cyclone and baghouse for the new fines screening system at the Norbord Cordele Line 1 in Cordele, Georgia.</p>  |

- Feb 06 **JM Huber (Easton, Maine)**  
to Apr 08 Provided conceptual design and budget preparation, detail engineering, project management, PLC/HMI programming and commissioning for a new baghouse system complete with the design of the ducting system, spark detection system and water deluge system. The baghouse system was for dust control for the new drying/heat generation/screening system for the Huber OSB Mill in Easton, Maine.
- Aug 05 **Ainsworth (Barwick, Ontario)**  
to Sept 06 Provided conceptual design, budget preparation, detail engineering, PLC/HMI programming and commissioning for a new baghouse system complete with design of all ducting and spark detection for dust control for a new Strand Reclaim System for an OSB mill in Barwick, Ontario.
- Nov 04 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Nov 05 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for a new baghouse system complete with the design of the ducting system and the spark detection system for dust control for a new strander system (2 units) for an OSB mill in Timmins, Ontario.
- Aug 03 **Voyageur Panels (Barwick, Ontario)**  
to Mar 04 Provided conceptual design, procurement, detail engineering, PLC/HMI programming for two (2) baghouse systems complete with the design of the ducting system and the spark detection system for material conveying and for dust control for a new fines recovery project for an OSB mill in Barwick, Ontario.

- Nov 02 **Proboard Inc. (Atikokan, Ontario)**  
to Aug 03 Provided feasibility study, conceptual design, detail engineering, and procurement for the installation of two (2) baghouse systems complete with the design of the ducting system and the spark detection system for material conveying and dust control for the new green end screening project and for the existing saw system for the Proboard Particleboard Mill in Atikokan, Ontario.
- July 02 **Nexfor Norbord (Cochrane, Ontario)**  
to Aug 02 Provided conceptual design and budget preparation for the addition of baghouse systems for the Nexfor Plywood Mill in Cochrane, Ontario.
- May 02 **Footner Forest Products (High Level, Alberta)**  
to July 03 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the installation of two (2) baghouse systems complete with the design of ducting system and spark detection system for dust control and material conveying for the new fines blending project for an OSB mill in High Level, Alberta.
- Oct 01 **Kruger-Longlac Wood Industries (Toronto, Ontario)**  
to Nov 02 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for a new baghouse system complete with the design of the ducting system and spark detection system for dust control for a new second transformation plant in Toronto, Ontario. In this plant, 4' x 8' OSB sheets are cut up and laminated with a plastic membrane for use in sub flooring (DriCore).

Jan 02 **Kruger-Longlac Wood Industries (Longlac, Ontario)**  
 to Aug. 02 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the installation of a new baghouse system complete with the design of ducting system and spark detection system for material conveying for a new sanding system for a hard wood veneer plant in Longlac, Ontario.

June 01 **Columbia Forest Products (Hearst, Ontario)**  
 to June 02 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the repairs of a particle board plant following an explosion and also provide the same for the addition of a new baghouse system complete with the design of the ducting system and spark detection system for dust control and material conveying for a new second green screening system for the Particleboard Plant in Hearst, Ontario.

April 00 **Grant Forest Products Inc. (Timmins, Ontario)**  
 to Nov 00 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of a baghouse system complete with high pressure system and spark detection system for material conveying for a new truck unloading station for the Grant OSB mill in Timmins, Ontario.

April 00 **Grant Forest Products Inc. (Timmins, Ontario)**  
 to Dec 00 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the addition of two (2) new baghouse system complete with the design of the ducting system and spark detection system for dust control and material conveying for the modifications and re-

commissioning of an OSB line in Timmins, Ontario.

- Jan 00  
to June 01 **Domtar Inc. (Chapleau Division, Ontario)**  
Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for two (2) new baghouse system complete with design of the ducting system and the spark detection system for dust control for a new HewSaw Sawing Line Project, Random Length Sawmill Optimized Trimmer Project and a Chip Conveying/Blowing System in Chapleau, Ontario.
- Jan 00  
to Apr 01 **Domtar Inc. (White River Division, Ontario)**  
Provided conceptual design, engineering, project management, PLC/HMI programming for a new baghouse system complete with the design of the ducting system and spark detection system for dust control for a new HewSaw Sawing Line Project in White River, Ontario.
- Dec 99  
to March 01 **Grant Forest Products Inc. (Timmins, Ontario)**  
Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of a baghouse system complete with the design of the ducting system and spark detection system for dust control for a new bark conveying and hogging system in Timmins, Ontario.
- Dec 99  
to March 01 **Grant Forest Products Inc. (Timmins, Ontario)**  
Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of two (2) new baghouse systems complete with the design of the ducting system and the spark detection system for dust control and material conveying for a complete fines Turbo Blending System in

Timmins, Ontario.

- June 99  
to Feb 01
- Columbia Forest Products (Hearst, Ontario)**
- Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for three (3) baghouse systems complete with the design of the ducting system and spark detection system for dust control and material conveying for the addition of a pre-drying and refining system and for the replacement/increase in dry screening/refining system and for the replacement of the complete press/forming line system for a particleboard plant in Hearst, Ontario.
- Dec 98  
to Sept 99
- Columbia Forest Products, Levesque Div. (Hearst, Ontario)**
- Provided conceptual design, engineering, project management and commissioning for the installation of a baghouse system complete with the design of ducting system and spark detection system for material conveying for a new sawing system for a particleboard plant in Hearst, Ontario.
- Dec 98  
to Oct 99
- Tolko Industries (High Prairie, Alberta)**
- Provided conceptual design, engineering, project management and commissioning for a baghouse system complete with the design of the ducting system and spark detection system for dust control and material conveying for a fines blending system for an OSB plant in High Prairie, Alberta.

- Oct 98 **Columbia Forest Products, Levesque Div. (Hearst,**  
to Mar 99 **Ontario)**  
Provided conceptual design, engineering, project management and commissioning for the installation of a complete sander baghouse system complete with the design of the ducting system and spark detection system for dust control and material conveying for a particleboard plant in Hearst, Ontario.
- Sept 97 **Columbia Forest Products, Levesque Div. (Hearst,**  
to Aug 98 **Ontario)**  
Provided conceptual design, engineering, project management and commissioning for the installation of a baghouse system complete with the design of ducting system and spark detection system for dust control for the blending system, resin metering system and another baghouse system complete with the design of the ducting system and spark detection system for material conveying for a wet screening system for a particleboard plant in Hearst, Ontario.
- Year **Malette Inc. (Timmins OSB Division, Ontario)**  
1994-1996 Provided conceptual design, engineering, project management, construction management and commissioning for the installation of six (6) baghouse systems complete with the design of the ducting system and spark detection system for dust control and for material conveying for the construction of a new OSB Plant in Timmins, Ontario.



- Year 1994     **Proboard Ltd. (Atikokan, Ontario)**  
Provided complete engineering, project management and construction management for the installation of a Sanding/Baghouse system complete with the design of the ducting system and spark detection system for a Particleboard Plant in Atikokan, Ontario.
- Year  
1992 - 1993     **Malette Inc., Waferboard Division (Timmins, Ontario)**  
Provided conceptual design, engineering, project management and construction management for the installation of two (2) baghouse systems complete with the design of the ducting system and the spark detection system for dust control and material conveying for the conversion of a Particleboard Plant to manufacture oriented strand board in Timmins, Ontario.
- Year 1990     **Atlantic Waferboard Inc. (Chatham, New Brunswick)**  
Provided engineering and project management of the installation of two (2) baghouse Systems complete with the design of the ducting system and spark detection system for dust control for an OSB mill in Chatham, New Brunswick.
- Year  
1988 - 1989     **Rexwood Products Ltd. (New Liskeard, Ontario)**  
Provided engineering, project management and construction management for the installation of five (5) baghouse systems for dust control and material conveying for the construction of a new Particleboard Plant in New Liskeard, Ontario.

## 6. Experience Overview – Explosion Suppression / Mitigation

Following is a list of explosion suppression / mitigation projects accomplished by CMA since its inception.

- |                       |   |
|-----------------------|---|
| Sept 14<br>to Present | <p><b>Georgia-Pacific (Englehart, Ontario)</b></p> <p>Provided conceptual design and budget preparation and detail engineering for the explosion suppression system for an existing baghouse system for the Georgia-Pacific OSB Mill in Englehart, Ontario.</p>   |
| July 12<br>to Feb 14  | <p><b>Tolko (Meadow Lake, Saskatchewan)</b></p> <p>Provided detail engineering (Civil, Structural, Mechanical and Electrical) and PLC/HMI programming for the installation of two (2) baghouse systems complete with the design of all ducting systems, spark detection system for the dust control and material conveying for the new screening and fines blending system. Also provided detail engineering for the explosion suppression for the new storage bin for the Tolko OSB Mill in Meadow Lake, Saskatchewan.</p> |
| July 12<br>to Jan 13  | <p><b>Norbord (Cordele, Georgia)</b></p> <p>Provided detail engineering for the installation of an explosion suppression system, flame arrestor system, spark detection system and fire protection system for the cyclone and baghouse for the new fines screening system at the Norbord Cordele Line 1 in Cordele, Georgia.</p>  |

- Feb 06 **JM Huber (Easton, Maine)**  
to Apr 08 Provided conceptual design and budget preparation, detail engineering, project management, PLC/HMI programming and commissioning for a new baghouse system complete with the design of the ducting system, spark detection system and water deluge system. The baghouse system was for dust control for the new drying/heat generation/screening system for the Huber OSB Mill in Easton, Maine.
- Aug 05 **Ainsworth (Barwick, Ontario)**  
to Sept 06 Provided conceptual design, budget preparation, detail engineering, PLC/HMI programming and commissioning for a new baghouse system complete with design of all ducting and spark detection for dust control for a new Strand Reclaim System for an OSB mill in Barwick, Ontario.
- Nov 04 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Nov 05 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for a new baghouse system complete with the design of the ducting system and the spark detection system for dust control for a new strander system (2 units) for an OSB mill in Timmins, Ontario.
- Aug 03 **Voyageur Panels (Barwick, Ontario)**  
to Mar 04 Provided conceptual design, procurement, detail engineering, PLC/HMI programming for two (2) baghouse systems complete with the design of the ducting system and the spark detection system for material conveying and for dust control for a new fines recovery project for an OSB mill in Barwick, Ontario.

- Nov 02 **Proboard Inc. (Atikokan, Ontario)**  
to Aug 03 Provided feasibility study, conceptual design, detail engineering, and procurement for the installation of two (2) baghouse systems complete with the design of the ducting system and the spark detection system for material conveying and dust control for the new green end screening project and for the existing saw system for the Proboard Particleboard Mill in Atikokan, Ontario.
- July 02 **Nexfor Norbord (Cochrane, Ontario)**  
to Aug 02 Provided conceptual design and budget preparation for the addition of baghouse systems for the Nexfor Plywood Mill in Cochrane, Ontario.
- May 02 **Footner Forest Products (High Level, Alberta)**  
to July 03 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the installation of two (2) baghouse systems complete with the design of ducting system and spark detection system for dust control and material conveying for the new fines blending project for an OSB mill in High Level, Alberta.
- Oct 01 **Kruger-Longlac Wood Industries (Toronto, Ontario)**  
to Nov 02 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for a new baghouse system complete with the design of the ducting system and spark detection system for dust control for a new second transformation plant in Toronto, Ontario. In this plant, 4' x 8' OSB sheets are cut up and laminated with a plastic membrane for use in sub flooring (DriCore).

- Jan 02 **Kruger-Longlac Wood Industries (Longlac, Ontario)**  
to Aug. 02 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the installation of a new baghouse system complete with the design of ducting system and spark detection system for material conveying for a new sanding system for a hard wood veneer plant in Longlac, Ontario.
- April 00 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Nov 00 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of a baghouse system complete with high pressure system and spark detection system for material conveying for a new truck unloading station for the Grant OSB mill in Timmins, Ontario.
- April 00 **Grant Forest Products Inc. (Timmins, Ontario)**  
to Dec 00 Provided conceptual design, detail engineering, project management, PLC/HMI programming and commissioning for the addition of two (2) new baghouse system complete with the design of the ducting system and spark detection system for dust control and material conveying for the modifications and re-commissioning of an OSB line in Timmins, Ontario.
- Jan 00 **Domtar Inc. (Chapleau Division, Ontario)**  
to June 01 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for two (2) new baghouse system complete with design of the ducting system and the spark detection system for dust control for a new HewSaw Sawing Line Project, Random Length Sawmill Optimized Trimmer Project and a Chip Conveying/Blowing System in Chapleau, Ontario.

- Jan 00 **Domtar Inc. (White River Division, Ontario)**  
to Apr 01 Provided conceptual design, engineering, project management, PLC/HMI programming for a new baghouse system complete with the design of the ducting system and spark detection system for dust control for a new HewSaw Sawing Line Project in White River, Ontario.
- Dec 99 **Grant Forest Products Inc. (Timmins, Ontario)**  
to March 01 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of a baghouse system complete with the design of the ducting system and spark detection system for dust control for a new bark conveying and hogging system in Timmins, Ontario.
- Dec 99 **Grant Forest Products Inc. (Timmins, Ontario)**  
to March 01 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for the installation of two (2) new baghouse systems complete with the design of the ducting system and the spark detection system for dust control and material conveying for a complete fines Turbo Blending System in Timmins, Ontario.
- June 99 **Columbia Forest Products (Hearst, Ontario)**  
to Feb 01 Provided conceptual design, engineering, project management, PLC/HMI programming and commissioning for three (3) baghouse systems complete with the design of the ducting system and spark detection system for dust control and material conveying for the addition of a pre-drying and refining system and for the replacement/increase in dry screening/refining system and for the replacement of the complete press/forming line system for a

particleboard plant in Hearst, Ontario.

Dec 98  
to Sept 99 **Columbia Forest Products, Levesque Div. (Hearst, Ontario)**

Provided conceptual design, engineering, project management and commissioning for the installation of a baghouse system complete with the design of ducting system and spark detection system for material conveying for a new sawing system for a particleboard plant in Hearst, Ontario.

Dec 98  
to Oct 99 **Tolko Industries (High Prairie, Alberta)**

Provided conceptual design, engineering, project management and commissioning for a baghouse system complete with the design of the ducting system and spark detection system for dust control and material conveying for a fines blending system for an OSB plant in High Prairie, Alberta.

Oct 98  
to Mar 99 **Columbia Forest Products, Levesque Div. (Hearst, Ontario)**

Provided conceptual design, engineering, project management and commissioning for the installation of a complete sander baghouse system complete with the design of the ducting system and spark detection system for dust control and material conveying for a particleboard plant in Hearst, Ontario.

Sept 97  
to Aug 98 **Columbia Forest Products, Levesque Div. (Hearst, Ontario)**

Provided conceptual design, engineering, project management and commissioning for the installation of a baghouse system complete with the design of ducting system and spark detection system for

dust control for the blending system, resin metering system and another baghouse system complete with the design of the ducting system and spark detection system for material conveying for a wet screening system for a particleboard plant in Hearst, Ontario.

- Year **Malette Inc. (Timmins OSB Division, Ontario)**  
 1994-1996 Provided conceptual design, engineering, project management, construction management and commissioning for the installation of six (6) baghouse systems complete with the design of the ducting system and spark detection system for dust control and for material conveying for the construction of a new OSB Plant in Timmins, Ontario.
- Year 1994 **Proboard Ltd. (Atikokan, Ontario)**  
 Provided complete engineering, project management and construction management for the installation of a Sanding/Baghouse system complete with the design of the ducting system and spark detection system for a Particleboard Plant in Atikokan, Ontario.
- Year **Malette Inc., Waferboard Division (Timmins, Ontario)**  
 1992 - 1993 Provided conceptual design, engineering, project management and construction management for the installation of two (2) baghouse systems complete with the design of the ducting system and the spark detection system for dust control and material conveying for the conversion of a Particleboard Plant to manufacture oriented strand board in Timmins, Ontario.



- Year 1990      **Atlantic Waferboard Inc. (Chatham, New Brunswick)**  
Provided engineering and project management of the installation of two (2) baghouse Systems complete with the design of the ducting system and spark detection system for dust control for an OSB mill in Chatham, New Brunswick.
- Year              **Rexwood Products Ltd. (New Liskeard, Ontario)**  
1988 - 1989    Provided engineering, project management and construction management for the installation of five (5) baghouse systems for dust control and material conveying for the construction of a new Particleboard Plant in New Liskeard, Ontario.

## 7. Experience Overview - Mining

Following is a list of mining projects accomplished by CMA since its inception.

- |                       |   |
|-----------------------|---|
| Jan 16<br>to present  | <p><b>Gowest Gold (Timmins, Ontario)</b></p> <p>Provide detail engineering for the surface infrastructure projects for the new Gowest Gold mine in Timmins, Ontario.</p>  |
| Jan 16<br>to present  | <p><b>Imerys (Timmins, Ontario)</b></p> <p>Provide PLC/HMI programming for continuous mill improvements for the Imerys Talc mill in Timmins, Ontario.</p>   |
| May 16<br>to Oct 16   | <p><b>Kirkland Lake Gold (Matheson, Ontario)</b></p> <p>Provided conceptual design and detail construction budgets for the generator back-up power for the Kirkland Lake Gold mine of Holt and Holloway in Timmins and Taylor in Matheson, Ontario.</p>   |
| April 13<br>to Dec 13 | <p><b>Imerys (Timmins, Ontario)</b></p> <p>Provided detail engineering (Civil and Structural) for the installation of a new GSM Mill at the Imerys Talc Mill in Timmins, Ontario.</p>   |
| Feb 13<br>to Present  | <p><b>Rubicon Minerals Corporation (Red Lake, Ontario)</b></p> <p>Provided detail engineering (Civil, Structural, Mechanical and Electrical) and PLC/HMI programming for various projects for the Rubicon Gold Mine in Red Lake, Ontario. Projects were:</p> <ul style="list-style-type: none"> <li>- Provided all required design for the shaft loading pocket system and for the shaft stations.</li> <li>- Provided all required design for the underground crusher system.</li> <li>- Provide design for the rehabilitation and maintenance of the</li> </ul> |

existing shaft set and shaft station caused by ground movement.

- Provided headframe integrity analysis and collar house modifications for proper removal of conveyances.
- Provided all required design for the complete mine underground infrastructures:
  - Rail Car System
  - Dewatering System
  - Repair Shops
  - Grizzly Station
  - Ventilation Systems
  - Water Supply/PRV System
  - Loading Chutes
  - Fire Doors
  - Compressed Air System
  - Surface/Underground Fuel Delivery System

- Jan 13 **Xstrata Fraser Mine (Onaping, Ontario)**  
to Nov 14 Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the design of a surface to underground fuel delivery system for the Xstrata Fraser Nickel/Copper Mine in Onaping, Ontario.
- Dec 12 **Xstrata Strathcona Mill (Onaping, Ontario)**  
to Oct 14 Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the design of the expansion of the underground fill plant (paste plant) for the Xstrata Strathcona Nickel/Copper Mill in Onaping, Ontario.
- April 12 **Xstrata Falconbridge Smelter (Sudbury, Ontario)**  
to Dec 12 Provided detail engineering (Civil, Structural, Mechanical and

Electrical) for the thaw shed modifications/expansion and the bulk custom receiving building expansion/baghouse system for the nickel particulate project for the Xstrata Falconbridge Nickel Smelter in Sudbury, Ontario. Provided conceptual design and construction budget for the installation of a 260,000 CFM baghouse and stack system for the converter secondary gas system. Also provide preliminary engineering for four (4) building systems for the Smelter Complex.

- April 12 **Xstrata Fraser Mine (Onaping, Ontario)**  
to July 12 Provided conceptual design and budget preparation for the design of a surface to underground fuel delivery system for the Xstrata Fraser Nickel/Copper Mine in Onaping, Ontario.
- May 12 **Goldcorp (Timmins, Ontario)**  
to June 12 Provided conceptual design and budget preparation for a water pond pump feed system for the Goldcorp open pit gold mine in Timmins, Ontario.
- Feb 12 **Roche/Coventry Mine (Montreal, Québec)**  
to July 12 Provided required engineering (Civil, Structural, Mechanical and Electrical) for a preliminary economic assessment (PEA) for the underground and surface infrastructure for the Coventry gold mine for Roche consultants of Montreal.
- Feb 12 **Xstrata Fraser Mine (Onaping, Ontario)**  
to Feb 13 Provided detail engineering (Electrical, Civil) for the replacement of a multitude of MCC (Motor Control Centers) at the Xstrata nickel/copper Mine in Onaping, Ontario.

- Sept 11 **Xstrata Fraser Morgan Site (Onaping, Ontario)**  
to Dec 11 Provided conceptual design and budget preparation for a number of projects at the Xstrata Fraser Morgan underground nickel mine in Onaping, Ontario. Projects were:
- Fraser mine traction wheel car unloading system.
  - Fraser mine crusher area PLC upgrade.
  - Fraser mine hoist motor cooling system.
  - Onaping mine dewatering system.
- Dec 11 **Xstrata Fraser Morgan Site (Onaping, Ontario)**  
to July 12 Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the installation of an air cooling system for the hoist motors for the Xstrata Fraser Nickel Mine in Onaping, Ontario.
- Oct 11 **Lac Des Iles Mines Ltd. (Lac des Iles, Ontario)**  
to Feb 13 Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the construction of Concrete Rock Rill (CRF) backfill plant for the Lac Des Iles Mines Ltd. palladium mine in Lac des Iles (near Thunder Bay), Ontario.
- Nov 11 **Lac Des Iles Mines Ltd. (Lac des Iles, Ontario)**  
to Nov 14 Provided detail engineering for various projects at the Lac Des Iles Mines Ltd. Palladium mine in Lac des Iles (near Thunder Bay), Ontario. Projects were:
- Provided foundation design for mine exhaust fan system.
  - Provided all required design for underground crusher area overhead crane system.
  - Provided detail engineering (Structural, Mechanical, Civil and Electrical) for the underground crusher system.
  - Provided detail engineering (Civil, Structural, Mechanical

and Electrical) for two underground rock breaker/grizzly systems.

- Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the shaft sinker muck bunker adjacent to the head frame.
- Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the fly rock protection fence system for the mine exhaust fan system.
- Provided conceptual design and budget preparation for the mine dry/administrative office complex.
- Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the five shaft stations and two skip loading pocket stations and the shaft bottom station for the new mine shaft system.
- Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the fire protection system for the hoist house, headframe, collar house and mine dry.

- Jan 12            **Brigus Black Fox Gold Mine (Matheson, Ontario)**  
to Nov 12        Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the complete underground electrical infrastructure for the Brigus Black Fox Gold mine in Matheson, Ontario.
- May 11            **Cementation/Resolution (Arizona)**  
to June 13        Provided detail review and stamping of mechanical drawings for the #9 and #10 Shaft sinking and underground development for the Resolution Cooper Mine in Arizona.
- May 11            **Cementation/Hecla (Idaho)**  
to June 13        Provided detail review and stamping of mechanical drawings for the shaft sinking and the underground development for the Hecla

Silver Mine in Idaho.

- May 11 **Goldcorp (Red Lake, Ontario)**  
to Dec 13 Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the construction of a Paste Delivery System for the Goldcorp Gold Mines in Red Lake, Ontario. System involved the design of a paste storage/truck loading system and two separate paste storage/truck unloading systems.
- March 11 **Goldcorp (Red Lake, Ontario)**  
to Feb 12 Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the construction of a Concrete Batch Plant for the Goldcorp Gold Mines in Red Lake, Ontario.
- April 11 **Goldcorp (Red Lake, Ontario)**  
to May 12 Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the construction of a Shotcrete Unloading System for the Goldcorp Gold Mines (Shaft #3 and Reid Shaft) in Red Lake, Ontario.
- Jan 11 **Accurate Electric/Northgate (Matachewan, Ontario)**  
to Nov 11 Provided detail electrical design for the Truck Shop and Warehouse for the Northgate Gold Mine in Matachewan, Ontario.
- May 11 **DMC/Jansen (Toronto, Ontario)**  
to Aug 11 Provided some detail engineering (Civil and Structural) for the shaft sinking phase for the DMC Jansen Potash Project in Saskatchewan.

- June 11      **Brigus Gold (Timmins, Ontario)**  
 Provided detail engineering (Civil, Structural and Mechanical) for the installation of a Jib Crane System for the Brigus Gold Mine in Timmins, Ontario.
- May 11      **Xstrata Kidd Met Site (Timmins, Ontario)**  
 to June 11    Provided project management for the dismantling and relocation of a 50MW transformer from the Xstrata Kidd Met Site in Timmins, Ontario to the Xstrata Falconbridge Smelter in Sudbury, Ontario.
- Jan 11      **Cementation/Northgate (Matachewan, Ontario)**  
 to Oct 13    Provided detail engineering (Civil, Structural and Mechanical) for the construction of a new Headframe ore/waste silo complete with outfeed conveyor system for the Northgate underground gold mine in Matachewan, Ontario.
- Jan 11      **Xstrata Sudbury Smelter (Sudbury, Ontario)**  
 to Sept 11    Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the construction of a furnace exhaust gas guillotine system (031 Fan) and the replacement of an existing ventilation system (012) for the Xstrata Nickel Smelter in Sudbury, Ontario.
- Jan 11      **Brigus Gold (Timmins, Ontario)**  
 to Aug 11    Provided detail engineering (Civil, Structural and Mechanical) for the modification to a rock screening system at the Brigus Gold mine mill in Timmins, Ontario.
- Feb 10      **Lake Shore Gold (Timmins, Ontario)**  
 to March 11    Provided conceptual design and budget preparation for Headframe load out conveyor and storage system for the Lake Shore Gold



Timmins West Gold mine in Timmins, Ontario.

- July 10 **Cementation/Hecla (Idaho, USA)**  
to Jan 11 Provided detail engineering (Civil, Structural and Mechanical) for the construction of ore bin unloaders, conveyor systems, dewatering (permanent and for shaft sinking), air/water services and ventilation systems.
- May 10 **Cementation/Northgate (Matachewan, Ontario)**  
to Dec 10 Provided detail engineering (Civil, Structural, Mechanical and Electrical) for the construction of a new Hoist House for the Northgate underground gold mine in Matachewan, Ontario
- May 10 **Goldcorp Hollinger (Timmins, Ontario)**  
to June 13 Provided conceptual design, budget preparation and detail engineering (Civil, Structural, Mechanical and Electrical) for the dewatering system of the McIntyre shaft for the Goldcorp Hollinger Gold Mine Project in Timmins, Ontario.
- April 10 **Lake Shore Gold Corp. (Timmins, Ontario)**  
to Sept 13 Provided complete PLC and HMI programming for the conversion to PLC5 and the expansion of Lake Shore's Bell Creek Gold mill in Timmins, Ontario.
- April 10 **Lake Shore Gold Corp. (Timmins, Ontario)**  
to July 10 Provided detail engineering (Mechanical, Civil, Structural and Electrical) for the conversion of DC motors to AC motors for the production and service hoists at Lake Shore's underground gold mine in Timmins, Ontario.

- Dec 09            **Detour Gold Mine (Detour Lake, Ontario)**  
to June 10      Provided mine safety manual and indoctrination procedure for the  
Detour Lake Gold Mine in Detour Lake, Ontario.
- Nov 09            **Connotec/Vale Refinery (Thompson, Manitoba)**  
to Jan 11        Provided detail engineering (Civil, Structural and Mechanical) for  
the replacement of the building structural steel for the Refinery  
Tank House at the Thompson Manitoba Nickel Refinery. Total  
value of project is approximately \$7,000,000.00.
- Nov 09            **Lakeshore Gold Corp. (Timmins, Ontario)**  
to Nov 10        Provided programming and start-up assistance for the new  
ammonia treatment plant, the automation of the stench gas system  
and provide PLC/HMI programming for various projects for Lake  
Shore's underground gold mine in Timmins, Ontario.
- Nov 09            **Goldcorp Hoyle Pond (Timmins, Ontario)**  
to Nov 10        Provided detail engineering (Civil, Structural, Mechanical and  
Electrical) for the Tunnel and Gallery system for the new services  
(13,800 volt cable, water lines and air lines) to the existing Hoist  
House of the Goldcorp Gold Mine in Timmins, Ontario.
- June 09           **Connotec/Vale Smelter (Thompson, Manitoba)**  
to Aug 09        Provided detailed engineering (Civil, Structural and Mechanical)  
for the installation of a sampler system at the Vale INCO  
Thompson, Manitoba Nickel Smelter. Total value of project was  
approximately \$500,000.00.
- June 09           **Areva TD (Montreal, Quebec)**  
to Dec 10        Provided project management services for the new Ontario Hydro

substation project at Gold Center, Ontario. Project's duration was 14 months.

March 09  
to present

**Goldcorp (Red Lake, Ontario)**

Provided pre-feasibility study and detail engineering for 5.5km drift project and also provide detail mechanical, civil/structural and electrical engineering on various expansion projects at the four (4) Goldcorp gold mines at the Red Lake site.

Among others, CMA is providing services for:

- All required detail engineering for a 19,000ft underground High Speed Tram system between the Reid Gold Mine and the new Bruce Channel Gold deposit.
- All required detail engineering (Mechanical, Civil and Structural) for the construction of the new Hoist House for the Cochenour mine that will service the Bruce Channel Gold ore body.
- Assisted with the Trade-Off Study for the deepening of the No. 3 Shaft. CMA provided all required work for the Winze and Ramp for the Trade-Off Study.
- Provide mechanical, electrical, civil and structural engineering services for the "Life of Mine" design for the new Bruce Channel Mine.
- Provide detail electrical design for surface infrastructure for the Campbell Complex, Balmer Complex, new Hostel and new Dry.
- Provided all required detailed engineering (Civil, Structural and Mechanical) for the construction of a sinking winch hoist house for the Cochenour mine that will service the Bruce Channel gold ore body.
- Provided detail engineering for various hydrostatic

bulkheads for the existing Cochenour underground gold mine.

- Provide design of main loading pocket for new Bruce Channel deposit for loading high speed tram.

- May 09           **Apollo Gold (Timmins, Ontario)**  
to May 10        Provided detail engineering for various mill modifications for the Apollo Gold Stock mill in Timmins, Ontario.
- Jan 09           **Vale INCO (Copper Cliff, Ontario)**  
to Mar 09        Provided detail engineering (Mechanical, Civil, Structural and Electrical) for various projects for the Vale INCO smelter in Copper Cliff, Ontario.
- Jan 09           **Xstrata (Mattagami, Québec)**  
to Aug 09        Provided PLC and HMI programming for Xstrata Zinc mine in Mattagami, Québec.
- Jan 09           **Debeers (Victor Mine, Ontario)**  
to June 09       Provided detail engineering for the redesign of a number of chutes in the mill for the Debeers Victor Diamond mine in the James Bay lowland area.
- Oct 08           **Cementation Canada (North Bay, Ontario)**  
to Dec 08        Provided assistance for the preparation of the pre-feasibility study for the development of the underground winze Project for the Craig Nickel Mine Project.
- June 08          **Dumas Contracting (Timmins, Ontario)**  
to Jan 09        Provided detail engineering (Mechanical, Civil, Structural and

Electrical) for the complete design of the underground infrastructure (vent doors, dewatering system, rock breakers and maintenance shop) and the mine Vent Raise fan System for the Crowflight nickel mine project in Wabowden, Manitoba. Total value of the project was approximately \$4,000,000.00.

June 08  
to Oct 08

**McIntosh (North Bay, Ontario)**

Provided detail engineering (Mechanical, Civil and Structural) for the complete underground fuel delivery and storage system for the Diavik Diamond Mine Project. Total value of the project was approximately \$1,500,000.00.

Mar 08  
to Jan 09

**Xstrata Smelter (Sudbury, Ontario)**

Provided conceptual design, budget preparation, detail engineering (Mechanical, Civil, Structural and Electrical) and project management for 10 individual projects for the Xstrata Smelter in Sudbury, Ontario. Total value of projects varied from \$10,000.00 to \$4,000,000.00.

Feb 08  
to Dec 08

**Cementation Canada (North Bay, Ontario)**

Provided detail engineering (Mechanical, Civil, Structural and Electrical) for a new Hoist House for the Vale Inco Copper Cliff Deep nickel mine project. Total value of the project was approximately \$25,000,000.00.

Feb 08  
to Feb 09

**McIntosh (Sudbury, Ontario)**

Provided detail engineering (Mechanical, Civil and Structural) for the complete mine exhaust system for the Xstrata Nickel Rim mine in Sudbury, Ontario.

- Jan 08 **McIntosh (Sudbury, Ontario)**  
to Oct 08 Provided electrical engineering design for the underground dewatering and ore handling systems for the Xstrata Nickel Rim mine in Sudbury, Ontario.
- Jan 08 **Liberty Mines (Timmins, Ontario)**  
to Feb 08 Provided Civil and Structural engineering for an overhead crane system for the maintenance shop for the Liberty Nickel mine in Timmins, Ontario. CMA also provided commissioning assistance for their newly constructed mill.
- Jan 08 **Lake Shore Gold Mine (Timmins, Ontario)**  
to Feb 08 Provided detail engineering for the replacement of Ball mill fines ore infeed conveyor for the Lake Shore Gold mine in Timmins, Ontario.
- Sept 07 **Goldcorp (Timmins, Ontario)**  
to Dec 07 Provided electrical engineering design, PLC/HMI programming and start up assistance for the remote operation of a rock breaker and a locomotive system for the Goldcorp Hoyle Pond mine in Timmins, Ontario.
- Oct 07 **J.S. Redpath (North Bay, Ontario)**  
to Nov 07 Provided electrical engineering design for the collar house, shaft and hoist room for the Liberty mine in Timmins, Ontario.
- July 06 **J.S. Redpath (North Bay, Ontario)**  
to Jan 07 Provided electrical engineering design, PLC/HMI programming and start up assistance for a ventilation shaft project for the Porcupine Joint Venture Hoyle Pond mine in Timmins, Ontario.

- June 06 **PJV [Porcupine Joint Venture] (Timmins, Ontario)**  
to Dec 06 Provided electrical engineering design, PLC/HMI programming and start up assistance for a complete underground ventilation fan automation project for a gold mine. Total value of project was approximately \$700,000.00.
- June 05 **St. Andrew Goldfields (Matheson, Ontario)**  
to Aug 05 Provided conceptual design, detail engineering, project management and commissioning for the installation of a High Voltage line, Transformer, PDC system for a new Gold mine. Total value of project was approximately \$785,000.00.
- Aug 04 **St. Andrew Goldfields (Matheson, Ontario)**  
to Aug 05 Provided mining planning, electrical, civil and mechanical detail engineering for 3 separate gold mine sites (Stock, Clavos, Taylor).
- Aug 04 **Porcupine Joint Venture (South Porcupine, Ontario)**  
to Aug 10 Providing detail electrical design and PLC programming for various project for an underground gold mine.
- Apr 04 **Falconbridge Inc. (Timmins, Ontario)**  
to Jan 05 Provided mechanical pre-commissioning and commissioning procedures for the underground equipment at mine D of the Kidd Creek mine in Timmins, Ontario. Also provided on site project coordination of the construction of some of the same equipment.
- Feb 04 **Agrium Inc. (Kapusksing, Ontario)**  
to Jan 05 Provided on an ongoing basis detail engineering on a number of projects for a phosphate mine in Kapuskasing, Ontario. Also provided as-built Mechanical and Civil drawings of the existing mill complex.

Apr 03      **Placer Dome (Musselwhite, Ontario)**  
to May 03    Provided system evaluation of complete underground crushing  
system for a Gold mine. Provided lists of problems and solutions  
complete with associated cost for suggested modifications.



## 8. Experience Overview – Biomass

- Aug 09      **Hearst Biomass Energy (Hearst, Ontario)**  
to Nov 10    Provided engineering (Civil, Structural, Mechanical and Electrical) for preparation of layouts and construction budgets for the construction of a new 10 MW Biomass power generation unit in Hearst, Ontario. Total Value of project is approximately \$35,000,000.00.
- Feb 09      **Sunbay Energy (Chapleau, Ontario)**  
to May 09    Provided conceptual design, budget preparation, and detail engineering for a new 20 megawatt biomass generating plant in Chapleau, Ontario. Total value of project is approximately \$95,000,000.00.

## 9. CURRICULUM VITAE

**Name:** **Claude Malette**

**Education:** September 1975 to May 1979  
Queen's University in Kingston, Ontario  
Bachelors of Applied Science in Mechanical Engineering

**Languages:** Fluently bilingual in English and French

### **Work Experience:**

- |                                       |  |
|---------------------------------------|--|
| November 1986<br>to Present           | <p><b>Principal with CMA engineering Inc. (CMA)</b></p> <p>CMA does engineering and management consulting work in the manufacturing end of the forest products and mining industry.</p>  |
| February 1986<br>to<br>October 1986   | <p><b>Louisiana Pacific Panel Products Ltd.,<br/>Dawson Creek, British Columbia</b></p> <p>As Project Manager, participated in the conception, engineering and equipment purchasing of a 450-TDP Waferboard Plant with total disbursement of \$50 million.</p>                 |
| September 1983<br>to<br>January 1986  | <p><b>Waferboard Corporation Limited<br/>Timmins, Ontario</b></p> <p>Director of Engineering and Services.</p>   |
| December 1981<br>to<br>September 1983 | <p><b>Waferboard Corporation Limited<br/>Timmins, Ontario</b></p> <p>Plant Manager for a period of twelve months of a newly constructed Particleboard Plant and Project Manager for a period of nine months during conception, engineering and construction of same plant.</p> |

May 1979  
to  
December 1981

**Malette Waferboard (Division of Waferboard Corp.)  
St-Georges de Champlain, Québec**

Plant superintendent for a period of fifteen months of a newly constructed Waferboard Plant and project superintendent/engineer for a period of seventeen months during conception, design and construction of plant.

May 1979  
to  
September 1979

**Waferboard Corporation Limited  
Timmins, Ontario**

Project Engineer for the conception, design and equipment purchasing of a 70,000,000 board ft/year lumber dressing mill and a 30 ton fixed pivoting jib crane.

## **Professional Affiliations**

Claude Malette is a licensed professional engineer in:

- Ontario
- Quebec
- Manitoba
- Nunavut
- State of Maine
- State of Arizona
- State of Idaho

**Name:** **Gilles Lemire**

**Education:** September 1990 to May 1994  
University of Ottawa  
Bachelor of Arts in Economics

**Languages:** Fluently bilingual in English and in French

### **Work Experience:**

May 1994 to present **CMA engineering Inc.**  
Provide project management services.  
Provide detail mechanical engineering and CAD operation.

- Projects:**
- Weyerhaeuser - Grayling**
    - Replacement/Modernization of Press System Study
  - Arbec – Grand-Mère**
    - WESP, Baghouse System and Press Exhaust Stack Project
  - Pembroke MDF - Pembroke**
    - Resin Metering System Control Replacement Project
  - Georgia-Pacific - Hosford**
    - Core Strand Blending System Study
    - Railcar Wax Unloading System Study
    - Powder Resin Distribution System Study
  - Norbord USA - Joanna**
    - Debarking and Stranding System Project
    - Fines Separation Systems
  - Norbord - Inverness**
    - Primary & Secondary Screen/Fines Blending System Study
  - Norbord - Genk**
    - Primary & Secondary Screen/Fines Blending System Study
  - Norbord USA - Jefferson**
    - Fines Separation Systems

**Tolko – Meadow Lake**

- Primary Strand Screening System
- Secondary Fines Screening System
- Fines Blending System

**Norbord USA - Cordele**

- Primary Strand Sifting System
- Secondary Fines Screening System

**Roche – Coventry Resources**

- Scoping Study

**Norbord USA – Guntown**

- Fines Screening/Blending Project
- Fines Secondary Screening System
- Four (4) Blender Outfeed Conveyors

**Lac Des Iles Mines Ltd.**

- Mine & Admin Office/Dry

**Brigus Gold – Black Fox Mine**

- Electrical Underground Infrastructure
- Fire Protection

**DMC – Graymont**

- Fire Suppression Tender Package

**Xstrata Sudbury Smelter**

- Bulk Custom Feed Receiving
- Thaw Shed Upgrades

**Norbord USA – Nacogdoches**

- Fines Screening/Blending Project

**Goldcorp – Red Lake Gold Mines**

- Bruce Channel Sustainable Production Scoping Study
- High Speed Tram Feasibility Study

**Northgate Minerals – Young Davidson Project**

- Hoist House Project (Sub-Consultant to Cementation)

**Vale Inco – Thompson, MB Refinery**

- Refinery Steel Replacement Project

**Detour Gold Corporation**

- Provided a Safety Manual and Construction Site Indoctrination Program

**Xstrata – Onaping Depth**

- Pre-Feasibility Study (Sub-Consultant to Cementation)

**Vale Inco – Copper Cliff Smelter Complex**

- Scrap Bin #5 Repairs
- MK Converter Lifting Procedure

**Crowflight Minerals**

- Underground Infrastructure (Dewatering, Main Ventilation System, Rock Breakers) (Sub-Consultant to Dumas Mining)

**Xstrata – Nickel Rim**

- Mine Exhaust Fan System

**Goldcorp Musselwhite**

- Underground Crushing System
- Underground Conveying System
- Surface Fire Protection System

**Luzenac Talc Mines**

- Grinding System Project

**Agrium**

- Material Handling
- Structural Steel Project

**Huber Engineered Woods**

- MACT Compliance Project

**Columbia Forest Products, Levesque Div.**

- Several plant upgrade projects

**Kruger – DriCore Production Line Project****Grant Forest Products, Timmins OSB Div.**

- Turbo Blending Project
- Rotor Debarker Project
- Ponds 7 & 8 Project & Strander Project

**Footner Forest Products**

- Turbo Blending Project

**Voyageur Panel**

- Turbo Blending Project

**Tolko High Prairie OSB**

- Turbo Blending Project
- Rotor Debarker Project

**Eagle Forest Products Project**

- Mechanical Coordinator

**Tembec – OSB 3 Project**

- Provided general project administration and purchasing/expediting requirements for project.

Completed various other projects for Nexfor, Proboard, Domtar, Tembec, Temple Inland, Weyerhaeuser and others.

**Name:** **Francesco Pugliese**

**Education:** 1999 to 2004  
Bachelor Degree of Engineering (Mechanical)  
Carleton University, Ottawa, Ontario

**Languages:** English

**Work Experience:**

2004  
to present

**CMA Engineering Inc  
Timmins, Ontario**  
Provide project management services.  
Provide conceptual design, detail equipment design, equipment procurement, piping systems, generating installation specifications and overall mechanical, civil and structural engineering.

- Projects:**
- Imerys - Timmins**
    - GSM Mill Installation
  - Norbord USA - Guntown**
    - Fines Secondary Screening System
    - Four (4) Blender Outfeed Conveyor Systems
  - Rubicon Minerals Corporation – Red Lake**
    - Shaft Loading Pocket System
    - Underground Crusher System
    - Shaft Set and Shaft Stations
    - Headframe Integrity Analysis
    - Collar House Modifications
    - Rail Car System
    - Dewatering System
    - Repair Shops
    - Grizzly Station
    - Ventilation Systems
    - Water Supply/PRV System
    - Loading Chutes
    - Fire Doors
    - Compressed Air System
    - Surface/Underground Fuel Delivery System
  - Mine Hoists International Ltd.**
    - Hoist Shop Complex Foundation System



**Xstrata Sudbury Smelter**

- Bulk Custom Feed Receiving
- Thaw Shed Upgrades

**Lac Des Iles Mines Ltd.**

- Concrete Rock Fill Plant
- Foundation design for mine exhaust fan system
- Underground crusher area overhead crane system
- Conical Sump
- Headframe Offices
- Underground Crusher System
- Underground Rock Breaker/Grizzly Systems
- Fly Rock Protection
- Shaft Sinker Muck Bunker
- Shaft Stations
- Loading Pocket Stations
- Shaft Bottom Station
- Fire Protection
- Mine Dry

**Goldcorp – Various Projects at Red Lake**

- Shop Design
- Battery Charging Station
- Hoist House Design
- Shaft Deepening
- Underground High Speed Tram
- Concrete Batch Plant
- Shotcrete Unloading System

**Hecla – Lucky 7 Mine**

- Various underground projects including material handling, mine services, shaft construction. (Sub-Consultant to Cementation)

**Northgate Minerals – Young Davidson Project**

- Complete Hoist House design (Sub-Consultant to Cementation)

**Vale Inco – Copper Cliff Deep Project**

- Complete Hoist House design

**Vale Inco – Totten Mine**

- Temporary mucking system

**Xstrata – Nickel Rim**

- Exhaust Fan System (Sub-Consultant to McIntosh)

**Liberty Mines**

- Maintenance Shop Overhead Crane System

**Lake Shore Gold Mines**

- Fines Ore Conveyor

**Huber Engineered Woods - Easton, Maine**

- MACT Compliance Project

**Ainsworth Engineered - Barwick, Ontario**

- Strand Reclaim Project

**Ainsworth Engineered - Cook, Minnesota**

- Strander Project

**Huber Engineer Woods - Crystal Hill, Virginia**

- Dual Screw Upgrade Project
- Orienter Upgrade Project

**Huber Engineer Woods – Commerce, Georgia**

- Dual Screw Upgrade Project

**Norbord Industry Inc. – Val-D’Or, Québec**

- Debarker Upgrade Project

**MGR (Tembec-Panneaux) – Grand-Mère, Québec**

- Bark Conveyor System

**Agrium – Kapuskasing, Ontario**

- SAG Mill Conveyor Project

**Grant Forest Products – Timmins, Ontario**

- Ponds 7 & 8 Project
- Strander Project

2003-2004

**GlaxoSmithKline Inc (GSK)  
Mississauga, Ontario**

Validated engineered drawings and equipment information.

2000-2002  
(Summer)**Boiler Lancer  
Kidd Creek Metallurgical Division  
Porcupine, Ontario**

## **Professional Affiliations**

Francesco Pugliese is a licensed Professional Engineer in the Province of Ontario and British Columbia.

**Name:** **Joey Ratté**

**Education:** Sept. 2006 to Aug. 2010  
University of Windsor in Windsor, Ontario  
Bachelor of Applied Sciences

**Languages:** Fluently Bilingual in French and English

## **Work Experience:**

2010 to present **CMA engineering Inc.**  
Mechanical Engineer  
Provide detail mechanical/civil engineering and CAD operation.

**Projects:** **Weyerhaeuser - Grayling**  
- Replacement/Modernization of Press System Study

**Georgia-Pacific - Englehart**  
- Replacement of Existing Ash Cyclones with Ash Box Drop Out System  
- Explosion Suppression System  
- New Debarking Systems Study

**Norbord USA – Joanna, South Carolina**  
- Debarking/Stranding Project

**Rubicon Minerals Corporation – Red Lake**  
- Shaft Loading Pocket System  
- Headframe Integrity Analysis  
- Collar House Modifications  
- Dewatering System  
- Loading Chutes

**Xstrata Nickel Fraser Mine – Onaping**  
- Surface to Underground Fuel Delivery System

**Xstrata Nickel Strathcona Mill – Onaping**  
- Underground Fill Plant

**Xstrata Nickel Sudbury Smelter, Falconbridge Ontario**  
- Bulk Custom Feed Receiving  
- Thaw Shed Upgrades

**Lac des Iles Mines**

- Paste Delivery Project

**Tolko – Meadow Lake**

- Primary Strand Screening System
- Secondary Fines Screening System
- Fines Blending System

**Goldcorp – Red Lake Gold Mines**

- Paste Delivery Project
- Hallway to Shaft #3
- Cochenour Hoist House
- Sinking Winch House
- Underground High Speed Tram
- Various Underground Projects

**Goldcorp – Porcupine Gold Mine**

- Hollinger Dewatering Project
- Water Pond Feed System

**Cementation – Northgate**

- Headframe ore/waste silo complete with outfeed conveyor system.

**Norbord USA, Nacogdoches**

- Fines Screening/Blending Project

**Cementation – Resolution**

- Review of mechanical drawings for the #9 and #10 sinking and the underground development.

**Cementation – Hecla**

- Mine Services (PRV Station)
- Grey Water Verification

**Norbord – LaSarre**

- New resin/wax storage and piping system
- Finishing Line Project
- Primary Screening Study
- Secondary Screening Study
- Fines Blending Study
- Dryer System Study
- WEST and ESP System Study

**Xstrata – Sudbury Smelter**

- 031 Fan Isolation Valve
- 012 Fan Replacement Casing and Impellor

**Brigus Gold**

- Jib Crane System

Sept. 2009  
to June 2010

**University of Windsor**

SAE – Mini-Baja, Frame Subsystem Designer

- Designed frame for 2010 SAE Mini-Baja team
- Improved efficiency of previous structure designs
- Utilized various machines in the shop, including lathe, mill and air tools