

April 6, 2010

Clarence J. Klassen, P. Eng.
Consulting Engineer
President KlassENgineering Inc.

In 1999, I formed KlassENgineering Inc. after 20 years experience in the drive and systems integration business.

I am a designated Consulting Engineer under *Professional Engineers Ontario* (PEO). My area of interest and specialty is in **web tension controls**, particularly as used in the **pulp and paper** and plastic film industries.

I specialize in an *on-site* consulting capacity in the evaluation, troubleshooting of paper machine, winder, supercalender and off machine coater **tension, offset and wrinkling problems**. I have also been involved with many mechanical rebuilds and electrical upgrades of paper mill equipment. In addition, I am qualified to prepare specifications for new drive and tension control equipment in this industry. I am a team member on many projects working closely with drive vendors, PLC vendors, mechanical equipment vendors, the end user and systems integrators. My involvement in these jobs has been primarily as a consultant/expert with duration of 1 to 4 weeks. I often provide drive training for maintenance personnel at the end of each installation or upgrade.

Professional Memberships:

- Professional Engineers Ontario, Canada (PEO)
- PEO Local Chapter Executive, Chapter Education Coordinator since 2008
- Ontario Society of Professional Engineers
- TAPPI (Technical Association of Pulp and Paper Industry)
- Technical Advisor to AIMCAL (The Association of Industrial Metallizers, Coaters and Laminators)
- Chairman and Judge at PEO sponsored *Engineering Challenges* for high school students past 5 years

Prior Experience:

- **Opcode Systems Inc.** (1989 to 1999), Secretary. Opcode Systems provided PLC, drive and HMI systems integration services for industry.
- **GE Canada** (1979 to 1989), Requisition Engineer, Drive Systems)
- **BSEE** University of Manitoba, 1979

Other interests:

- Hiking/Cross Country Skiing/Geocaching
- Woodworking
- Active in my church

My web site with photo is at www.klassen.on.ca.


Electronic

Clarence Klassen, P. Eng.
KlassENgineering Inc.
cjk

Paper Industry Drive Experience List

1999-2010:

Winders:

Atlantic Packaging Whitby ON (1)	2009
Catalyst Paper Campbell River BC (2)	2008
Norske Skog Kawerau, New Zealand (2)	2005
Norske Skog Boyer, Australia (1)	2001
St. Marys Paper Sault Ste. Marie, ON (3)	2002
Stora-Enso Whiting, WI (2)	2003
Stora-Enso Biron, WI (2)	2002
UPM-Kymmene Miramichi, NB (3)	2002
Georgia Pacific Thorold ON (1 board winder)	1999

Off Machine Coaters:

UPM-Kymmene Miramichi, NB (2)	2007
Stora-Enso Kimberly, WI (3)	2005

Rereelers:

UPM-Kymmene Miramichi, NB (4)	2001
Stora-Enso Biron, WI (1)	2002
Stora-Enso Whiting, WI (1)	2003

Supercalenders:

St. Marys Paper Sault Ste. Marie, ON (5)	2002
UPM-Kymmene Miramichi, NB (5)	2005
Stora-Enso Biron, WI (2)	2002
Stora-Enso Whiting, WI (2)	2002

Paper Machines:

Stora-Enso Kimberly, WI (1)	2004
Catalyst Paper Campbell River, BC (3)	2008
St. Marys Paper Sault Ste. Marie, ON (3)	2004
Stora-Enso Biron, WI (1)	2002
Stora-Enso Whiting, WI (1)	2002
UPM-Kymmene Miramichi, NB (2)	2004
Georgia Pacific Thorold ON (1 board machine)	1999

Other Relevant Winding Industries

Green Energy	Nanosolar	2010
Roofing Membranes	Macro Engineering (3 lines) for SC, TX and AL	2008
Corrugated Plastic	Macro Engineering for MS	2007
Plastic Film	Sealed Air, IA	2008
Plastic Film	ExxonMobil Films, Belleville, ON	2007
Plastic Film	ExxonMobil Films, LaGrange, GA	2007
Plastic Film	Berry Plastics, Belleville, ON	2008
Plastic Film	Sigma Plastics, Belleville, ON	2004
Plastic Film	Dupont Liquid Packaging, Whitby, ON	2001
Motor/Generator Test	GE Canada, Peterboro, ON	2008

Drives:

Parker 690 and 890	2010
Rockwell PowerFlex	2010
TME/GE AC drives	2010
GE Canada Silpac 3200/3100 dc	2008
Siemens AC and DC	2008
GE Innovation AC and DC Innovation upgrade	2006
SSD	2006
AB 1395 dc/dc drive retrofit	2004
Rockwell 1336 Plus, II, Force	2004
ABB DC and AC	2003
Telemecanique AC	2001

Safety Related Experience

Ontario Pre-Start Health and Safety Reviews

Since 2001 KlassENgineering has prepared Pre-Start Health and Safety Reviews (PSR) per Section 7 of the Regulations for Industrial Establishments Occupational Health and Safety Act (Ontario) Regulation 851. I have also designed control circuits to comply with CSA Z432-04 *Safeguarding of machinery* and CSA Z142-02 *Code for Power Press Operation: Health, Safety, and Guarding Requirements*.

I have taken courses in the preparation of PSR's, CSA Z-142 *Code for Power Press Operation: Health, Safety, and Guarding Requirements*, CSA Z462 *Workplace electrical safety* and the Canadian Electrical code to remain current in applicable standards.

These PSR's have been prepared for:

- ExxonMobil
- Berry Plastics
- Durham College, Whitby, ON
- Sigma Plastics
- GE Canada
- Electro Cables
- Deca Cables
- Eastern Fluid Power, Kingston, ON
- Continental Conveyors, Napanee, ON

Published Papers, Webinars & Courses

- 1992 IEEE Pulp and Paper Industry Technical Conference, **Digital paper machine drive master upgrade**
Klassen, C.; Aube, D.
- 2009 AIMCAL webinar, **Tension Control: Understanding My Drives**
- 2010 AIMCAL Converting School Instructor: **Drives for Web Handling**