



CASE STUDY

PDI, Kirkland, Quebec, Canada



PDI (Phipps Dickson Integra) is a sheetfed offset and digital printer installed in the suburbs of Montreal. The company offers its clients a global management of their printed communications including logistics and delivery. The company was created from the 2007 merger of Phipps Dickson (founded 1970) and Integra (1922). Each of these companies had experienced several structural changes before 2007. PDI was created administratively in 2007 (and acquired Harling Marketing). However, multiple production sites did not facilitate a single culture for the 180 staff and caused technical and organisation difficulties.

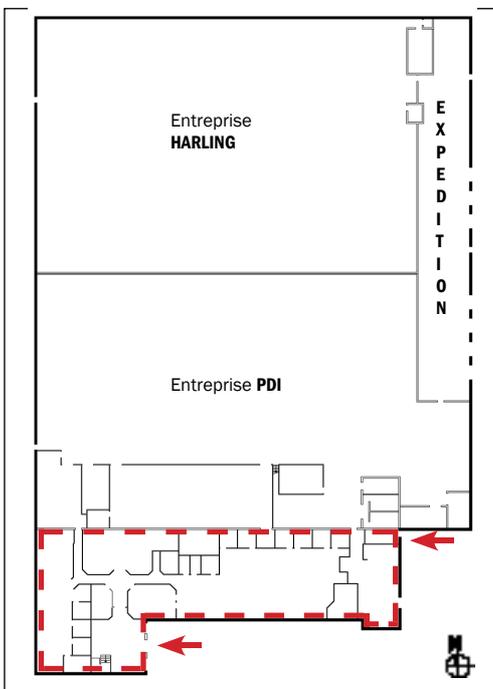
In 2009, the company decided to consolidate all its activities to a single site in Kirkland. PDI preferred to lease a building to conserve investment for new production capacity and external growth projects.

This move initiated both a common company culture and identity, as well as an increase in productivity – partly from new presses. It was also the opportunity to re-organise the company and to better address environmental issues. PDI summarises them as “3 x 3” – reduce / reuse / recycle that applies at the 3 levels of raw materials, operating procedures, and installations.

1 - Raw materials: Preference for FSC paper, reduced paper waste by reusing printed over sheets for makeready and recycling. Waste ink recycled to make coldest black ink. Lamination uses an agricultural sourced material PLA. The company recycles its cleaning solvents and cloths, blankets, plates, pallets, packaging cartons and plastics.

2 - Procedures: G7 certified for print quality management that has reduced paper waste by 40%.

3 - Installations: Approach has allowed significant reduction of electricity and water consumption.



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THE COMPANY (WWW.GROUPEPDI.COM)

Printing processes used at the site	2 sheetfed presses Heidelberg 70x102, 1 manroland 102x140; 2 Kodak Nexpress 7 Kodak Digimaster.
Tonnage of substrate processed	2300 tonnes.
Substrates held in stock	80 tonnes (max. 2 weeks supply).
Print products type	Advertising, commercial and direct marketing.
Number of staff	180
Annual turnover	21 M€
Environmental certifications/standard used	CoC FSC
Other certifications (ISO9001, ISO12647...)	PSO G7/IDEAlliance
Awards	HOOPP Collaboration (2014), Benny Awards (2014 et 2013), Canadian Printing Awards (2014 et 2012).



THE SITE

Location	Québec, Canada.
Climatic zone	Continental humid.
Installation zone	Industrial zone.
Existing risks (seismic, flooding) or specific environmental constraints	Snow storms (constant winds and heat to roof eliminates accumulation of snow).
Year of construction	Renovated 2009.
Total surface of the site	22 000 m ²
Total surface of the building	9 000 m ² (Production on ground floor, sales and admin on first floor).
Structure	<p>Concrete walls insulated with steel siding. The highest part of the building is 10 m in production zone. Steel trusses support an insulated steel roof with a bitumen finish.</p> <p>A mobile interior curtain-wall separates the workshop into two parts to reduce heat loss, sound and dust circulation. It consists of panels suspended from a rail that can be moved with panel joints closed by a Velcro system. The non-utilised mezzanine floor is closed by a lighter curtain-wall to avoid heat loss into this space. These curtain-walls allows a higher modularity of production space and easy movement of large equipment compared to fixed walls.</p>
Flooring	The complete concrete pad was replaced to allow it to support the weight of the printing presses – 6 weeks drying time was needed. The floor is treated with an anti-slip paint – different colours were used for production, circulation aisles and storage areas.

THE PARTICIPANTS IN THE PROJ

CEO of the site

Louise KRALKA, Vice President sales and marketing



What do you identify as the key success factors of the project?

- First success key is to define and plan the renovation project in a very detailed and rigorous manner. To guarantee timing we defined fixed dates to be respected and no delay was tolerated.
- The second key aspect lies in the organisation of the project team. While we engaged an external consultant to organise the construction work and manage the external partners, we also dedicated one of our staff to the project for 12 months full time. He has more than 35 years experience in the printing industry and he was responsible for all aspects related to production. This industry expert was in permanent contact with all project participants to guarantee the quality of communication between the teams, an essential point when bringing together three companies on to the same site.
- To ensure continuity of production we evaluated the disassembly/reassembly planning of two presses to be moved. We started disassembly of one press one month prior to moving, and production took place at the old and new sites for 5 weeks.

What would you change if you started again?

- We under estimated the number of parking places to allow for shift changeover when staff from both sets were present.
- We would make a deeper evaluation of air conditioning solutions to reduce the 500k € installation cost.
- We did not recognise the needs for security cameras at the beginning of the project.

The general contractor

IPE, Gilles Blanchard



How do you perceive the performance from the new building?

Function	Poor	Moderate	Good	Excellent
Better temperature humidity & dust conditions		X		
More stable production & storage conditions				X
Improved productivity				X
Reduced energy consumption & costs of building			X	
Better and lower cost lighting day/night				X
Reduced water consumption			X	
Improved waste management		X		
Reduced contamination liability and risk				X
Reduced noise disturbance				X
Healthier & stimulating place to work				X
Image to customers				X
Flexible & future-proofed assets			X	
lower lifetime operating costs of building			X	
Overall sustainable environmental profile			X	

PROJECT CONCEPTION/ SUSTAINABLE CONSTRUCTION

Origin of construction/reorganisation	The decision to consolidate two production sites after the merger of Phipps Dickson and Integria. Renting an existing building was a financial choice to allow investment in new production equipment and external growth.
Motivation for an ecological construction	The project was the opportunity for the company to introduce production practices with an environmental approach that was pertinent and coherent with the company strategy. Major objectives were to reduce operating costs and improve working conditions.
Project organisation	An external consultant managed the building and utilities components. PDI worked directly with the contracting companies pre-selected by the consultant.
Planning	<ul style="list-style-type: none"> • February 2007 merger, decision to move in January 2008. Negotiations of new collective working agreement with staff (in Quebec all staff on same site are subject to a single agreement). • January-April 2009: Search for new site. • June 2009: Start of renovation work. • September 2009: First staff moved in from mailing company Harling Direct. • November 2009: Open day for 400 staff, clients and suppliers. This was the occasion of launching the new identity for PDI and to unite all staff coming from all sites under the same banner.
Cost of works (excluding investment in production)	1,7 M € with a parallel 3,1 M € invested in new equipment.
Durable construction cost	Zero. The environmental solutions were considered to be the most pertinent and had no additional cost.
Direct and indirect impact on the production	<p>The improvement in lighting and reduction of ambient noise improved working conditions. A significant productivity improvement came from operating at a single site, better organisation within the new building and replacing production equipment.</p> <p>The new production area is smaller than the sum of the previous sites. The objective of better space utilisation was made possible by limiting paper stock, only moving postpress equipment with a use rate over 80%, and only 2 of previous 6 presses, and investment in a more productive press (format increase from 70x102 to 102x140 to prints 200% the volume from a footprint only 20% larger).</p> <p>Achieving unity between all staff from different sites now working together in one place.</p>
Principal sustainable characteristics – pillars for HQE®	<ul style="list-style-type: none"> • Energy recovery from the presses to partly heat the workshop. • Insulation curtain-walls eliminate heat loss to unused areas. • Air humidification using an ionisation/compression system. • New lighting technologies reduce energy by 50%.
Public or private financial aid	None

WATER

Supply

The city has a single sewer system that evacuates both sanitary and rainwater. Used dampening and developer are collected and then treated at a dedicated installation.

Reduction actions

The air humidification system uses 20% less water than conventional systems. The company stopped watering the grass.

ENERGY



Consumption

Consumption: Annual electricity consumption 3660 MWh. Total energy cost is 1,2% of turnover (including 35k€ for gas). Sources of consumption are:

- Production equipment
- Heating and air conditioning
- Lighting
- Humidification system
- Postpress compressor (each press has its own)

The reliability of the Quebec grid (rebuilt after an ice storm in 1998) makes a back-up generator redundant.

Estimation of need

Based on historical consumption and modified after discussion with equipment suppliers. The estimation was then increased (+600A).

Reduction actions

Even though Quebec has abundant low cost hydro electric energy, a number of reduction actions were made:
Installation of insulated curtain -walls several centimetres thick to isolate zones to be heated or cooled.
Recovery of heat from the presses to heat the workshop using an air/air exchanger system.
Doors with rapid opening/closing to limit heat loss.
New lighting technologies reduce consumption by about 50% compared to conventional systems.
Energy is monitored monthly in kWh and money. If there are large variations then reasons are evaluated.
Another source of energy reduction is solar heated sanitary water

Monitoring

Currently only annual.

LIGHTING



Types of lighting

Company chose a windowless production area with high performance artificial lighting to provide consistent illumination to optimise printing quality. Fluorescent tubes with a temperature of 5000K reduce dazzle and eye strain of operators while guaranteeing a consistent light quality for everyone. The white insulating curtains provide good light reflection. Lighting in the storage zone uses old technology because it is only used occasionally. Natural lighting in the staff canteen provides staff comfort.

Reduction actions

ROI of new technologies is around 2 years because they reduce energy consumption by 50%.
Offices are fitted with timers to automatically turn off lights in the evening.

CIRCULATION



Organisation

There are 6 unloading docks. Electric trucks are used for materials handling. The workflow is rectangular: paper is delivered on the east side and immediately transferred to the west where it then passes through production and is delivered back to the east side for delivery.

Optimisation actions

The company has strictly limited paper storage that staff optimise to avoid unnecessary immobilisation of finance. This is facilitated by three paper suppliers each making twice daily deliveries. A truck trailer is available for temporary storage.
There was a parking problem when shifts changed because there were only enough spaces for a single shift. Additional parking has been rented close by.

AIR QUALITY/ NOISE



Ventilation & heating control

The entire building (workshop and offices) is air conditioned with the exception of the loading docks. The company has 22 air conditioning (16 reversible) installed on the roof or workplaces; 10 gas space heaters are installed in the workshop and delivery zone. Air ventilation volume in the workshop changes with the seasons – the summer volume is about half of winter flow – external air is used to refresh the workshop.

Indoor air quality control

The company rigorously selects chemical products to minimise emissions at the source. IPA alcohol consumption has been reduced by 90% by limiting its use.

Humidification

Humidity in Montreal is often low in winter and high in summer. For this reason air humidifying systems are installed in both the offset and digital pressrooms.

Noise reduction actions in the work areas

The insulation curtains are efficient sound absorbers that help improve working conditions.

FIRE SAFETY

DANGEROUS MATERIALS / WASTE



Sorting of waste at the site

The company applies regulation sorting of dangerous and ordinary waste.

Equipment to minimise accidental pollution (retention)

Inflammable products are stored in dedicated secure cabinets.

Waste collection conditions

Cleaning solvents are recycled using a distillation device to reduce the waste quantity of mixed solvent/water/ink by 70%. Cleaning cloths are rented from a company that cleans them.

Fire protection/ Definition of needs

Protection needs were defined by the city fire service, who also controls the installation annually.

Fire protection equipment

The entire building (offices and workshop) is equipped with an automatic sprinkler system, completed by extinguishers.

LANDSCAPE/ BIODIVERSITY



Landscape integration

Poplar trees are planted on three sides of the building.

Green spaces

The grass is no longer watered as a conservation measure.