Toronto Region Sustainability Program

TRSP P2

Lithographic Printing » Pollution Prevention Case Study

Annan & Bird Lithographers

Company Overview

Annan & Bird is a large, sheet-fed, commercial lithographic printer located in Mississauga, Ontario. Annan & Bird specializes in large format printing. The 50,000 square foot facility employs 140 full time employees working in multiple shifts. The firm has experienced considerable growth since it was first established in 1987, and is in the process of building its internal management systems at their new facility including human resources, quality, and Environmental Health & Safety to meet the expansion.

Annan & Bird is committed to complying with or exceeding all applicable laws and regulations. The senior management at Annan & Bird acknowledged the opportunity of participating in the Toronto Region Sustainability Program (TRSP) as a multi-media approach to achieving the company's numerous environmental management objectives.

P2 Assessment Process

Through the TRSP, Annan & Bird contracted John Piggott of EcoSafe Environmental Health & Safety Management to assess the facility's operations, to identify priority pollutants and waste streams and recommend solutions to prevent them at the source. The primary purpose of the pollution prevention (P2) assessment was to assist Annan & Bird in meeting and/or exceeding the regulatory requirements from all levels of government, including the Region of Peel's Sewer Use By-law provisions. In addition to improving process efficiencies and reducing overall costs, the senior management was also interested in applying for ISO 9001:2000, ISO 14001:2004 and EcoLogo certification.

The P2 Assessment provided a customized multi-media evaluation of Annan & Bird's equipment, processes, raw materials, chemical use and storage, along with the emissions and waste discharges. Throughout the P2 assessment, the consultant worked closely with Annan & Bird staff to gain access to information required during the audit and engage them to maintain a momentum for on-going P2 projects. The consultant provided the firm with a detailed report with a recommended action plan, which identified P2 options for key processes at Annan & Bird.

Summary of Findings

There were numerous significant areas recognized for P2 opportunities at the Annan & Bird facility. In the **Pre-press area**, the ***computer to plate (CTP) developer*** generates liquid chemical wastes with elevated levels of biological oxygen demand (BOD), Phosphorous, and Sulphates, which resulted in a compliance notice issued to the firm by Regional Municipality Wastewater Inspector (under Sewer Use By-Law).

In the **pressroom**, the press chemistry forms a major source of volatile organic compound (VOC) air emissions originated from the use of Isopropyl Alcohol (IPA) in the fountain solution (39 tonnes/yr), solvents in rubber rejuvenator (11 tonnes/year), and the blanket and roller wash (14 tonnes/year). In addition, the ***spent waste fountain solution*** generated an estimated 19,680 litres of hazardous liquid waste per year that was collected in drums and picked up for disposal off site at a cost of more than $14,000. This holds contaminants such as cobalt, copper and zinc that would otherwise migrate from inks and chemicals in fountain solutions and add to the sewer loading if untreated. Other sources include periodic press parts cleaning in sinks, which may cause short term (spike) elevated contaminant levels.

Annan & Bird's biggest single item cost for waste management was for the supply of **printer's towels/wipers**, laundry, and replacement services. The total cost for 2003 was $49,000, which was estimated to increase to $62,000 for 2004.

"Annan & Bird Lithographers holds itself accountable when it comes to issues concerning the environment and health & safety. We have a responsibility to our customers, our employees, and the community. John Piggott of Ecosafe and OCETA have assisted us to put safety measures in place, reduce our waste (and, in some cases, reduce our costs) and develop awareness programs for our employees. We are confident that our awareness and willingness to make environmentally friendly changes benefit everyone."

John Bird, VP Operations, Annan & Bird

P2 Solutions, Environmental Results and Related Cost Savings

The table below summarizes P2 projects being undertaken by Annan & Bird from the list of P2 recommendations outlined in the assessment report. When implementation is complete, the P2 measures at Annan & Bird are projected to reduce annually:

• 61 tonnes VOCs • 14 tonnes hazardous wastes • 13 tonnes process wastes • 16 tonnes GHGs • 8,265 m^3 natural gas

With annual savings of **$192,000** and an overall payback of **8 months**.

Process	P2 Solutions	Environmental Reductions	Cost Savings & Payback
Pressroom **Use of Isopropyl Alcohol (IPA) and Waste Fountain Solution**	Installation of reverse osmosis system and eliminate use of isopropyl alcohol	This P2 alternative reduced 75% of IPA use, as well as 39 tonnes of VOC generation annually	Estimated saving of $59 K annually due to reduction in use of IPA with a payback of 1.2 months
	Installation of a closed-loop Ultra Filtration Membrane unit on site to treat spent fountain solution	This P2 option reduced 70% of waste fountain concentrate to be hauled off-site; 13.1 tonnes of process wastes/annually	Annual estimated saving of $45 K due to reduction of fountain concentrate and waste disposal costs with a payback of 4 months
	Use existing centralized fount dosing system for automatic blending of Heidelberg press	The fount dosing system reduces manual labor requirements (100 hours per year)	Annual Savings resulting from reduced labor requirements: $3.5 K with a payback of 2.4 months
Pressroom **Waste Blanket Wash and Printers Towels/Wipers**	Installation of a solvent recovery distillation unit to recapture and re-use press wash solvent is under evaluation	The solvent recovery system will recover 95% of solvents for use, and reduce 13.4 tonnes of VOC emissions and 14.1 tonnes of hazardous waste annually	Annan & Bird will save $ 21.7 K in waste haulage and solvent purchases annually with a payback of 6 months once implemented
	On-site wiper cleaning and solvent recovery system for maximum solvent recovery is under investigation	The on-site wiper cleaning will recover 50% of solvent and reduce 8.3 tonnes of VOC emissions	This option will reduce off-site laundry and solvent purchase costs to save $60 K annually with a payback of 2 years
Pre-press **CTP Developer**	Developer recirculation and reduction unit is under investigation to reduce chemical consumption and waste produced	The unit will filter and recapture 50% of the spent developer for commingling with replenisher	This P2 option will reduce amount and cost of replenisher and waste haulage by 50% with an ROI of 8 months
Compressor Air Intake	Utilization of outside air in cooler months	Annual reductions of 8,265 m^3 natural gas and 16.3 tonnes of GHGs	Annual savings of $2.8 K Payback unknown

Sewer Use By-Law Compliance

In addition to the above, Annan & Bird redesigned the CTP waste chemical treatment system to incorporate an aerator, and replace the pH neutralizer powder chemical with liquid to reduce the sulphates and BOD loading. A collection and precipitation of suspended solids from the developer is planned. Treatment through the UF membrane will enable the effluent to meet the Sewer Use By-Law criteria and save on haulage costs.

Funding and Program Support:

The Ontario Trillium Foundation / La Fondation Trillium de l'Ontario

Ontario

Environment Canada / Environnement Canada

Markham

Durham Region

Toronto and Region Conservation for The Living City

Toronto Economic Development

Delivered by: OCETA — Partnering for a Sustainable Future

For more information, please contact:
Fred Granek, Vice President, Sustainability, OCETA
2070 Hadwen Rd, Unit 201A, Mississauga, ON L5K 2C9
Tel: 905 822 4133 x224, email: fgranek@oceta.on.ca
Web site: www.oceta.on.ca/TORSUS/