217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Berlin Industries
Attn: Ed Majerczak
175 Mercedes Drive
Carol Stream, Illinois 60188-9401

Application No.: 00090061 I.D. No.: 043020ABK
Applicant's Designation: Date Received: September 25, 2000
Subject: Press #379
Date Issued:
Location: 175 Mercedes Drive, Carol Stream

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of new heatset web offset lithographic printing line (#379) controlled by existing regenerative incinerator (RI-1) as described in the above referenced application. This Permit is subject to standard conditions attached hereto and the following special conditions:

1.0 Unit Specific Conditions

1.1 Unit: Heatset Web Offset Lithographic Printing Line
Control: Regenerative Incinerator

1.1.1 Description

Heatset web offset lithographic printing involves the use of dryers to dry up the ink applied through the printing units. The ink oil emission is then controlled by an incinerator before being discharged to the atmosphere through the stack.

1.1.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
379	Heatset Web Offset Lithographic Printing Press With Dryer	Regenerative Incinerator (RI-1)

1.1.3 Applicability Provisions and Applicable Regulations

a. The “affected printing line” for the purpose of these unit-specific conditions, is a printing line as described in Conditions 1.1.1 and 1.1.2.

b. The affected printing line is subject to 35 IAC 212.321(a), which provides that the Permittee shall not cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321 [35 IAC 212.321(a)].

c. The Permittee shall not cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm [35 IAC 214.301].

d. Pursuant to 35 IAC 218.407(a), The Permittee shall not:

i. Cause or allow the operation of any heatset web offset lithographic printing line unless:

A. The total VOM content in the as-applied fountain solution is 5 percent or less, by volume, and the as-applied fountain solution contains no alcohol [35 IAC 218.407(a)(1)(A)(iii)];

B. The air pressure in the dryer is maintained lower than the air pressure of the press room, such that air flow through all openings in the dryer, other than the exhaust, is into the dryer at all times when the printing line is operating [35 IAC 218.407(a)(1)(B)];

C. The regenerative incinerator is installed and operated so that VOM emissions (excluding methane and ethane) from the press dryer exhaust(s) are reduced by 90 percent, by weight, or to a maximum regenerative incinerator exhaust outlet concentration of 20 ppmv (as carbon) [35 IAC 218.407(a)(1)(C)];

D. The regenerative incinerator is equipped with the applicable monitoring equipment specified in Condition 1.1.8(e) (see also 35 IAC 218.105(d)(2)) and the monitoring equipment is installed, calibrated,

operated, and maintained according to manufacturer's specifications at all times when the regenerative incinerator is in use [35 IAC 218.407(a)(1)(D)]; and

E. The regenerative incinerator is operated at all times when the printing line is in operation [35 IAC 218.407(a)(1)(E)].

ii. Cause or allow the use of a cleaning solution on any lithographic printing line unless the VOM composite partial vapor pressure of the as-used cleaning solution is less than 10 mmHg at 20°C (68°F) [35 IAC 218.407(a)(4)(B)].

iii. Cause or allow VOM containing cleaning materials, including used cleaning towels, associated with any lithographic printing line to be kept, stored or disposed of in any manner other than in closed containers [35 IAC 218.407(a)(5)].

1.1.4 Non-Applicability of Regulations of Concern

a. The affected printing line is not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Printing and Publishing Industry, 40 CFR 9 and 63, Subparts A and KK, because the affected printing line is not publication rotogravure, product and packaging rotogravure, or wide-web flexographic printing presses and the source is not a major source of HAPs.

b. The affected printing line is not subject to 35 IAC 218.204(c), Coating Operations/Paper Coating, as the paper coating limitation does not apply to a line on which printing is performed which complies with the emission limitations in 35 IAC 218 Subpart H: Printing and Publishing [35 IAC 218.204(c)].

1.1.5 Control Requirements

a. The regenerative incinerator combustion chamber shall be preheated to the manufacturer's recommended temperature but no less than the temperature at which compliance was demonstrated in the most recent compliance test, before the printing process is begun, and this temperature shall be maintained during operation of the affected printing line.

b. The Permittee shall follow good operating practices for the afterburners, including periodic inspection, routine maintenance and prompt repair of defects.

c. The affected printing line shall only be operated with natural gas as the fuel in the press dryer and the regenerative incinerator.

1.1.6 Emission Limitations

The affected printing line is subject to the following:

a. Emissions of volatile organic material from the affected printing line shall not exceed 1.3 tons per month and 9.70 tons per year. These limits are based on the maximum material usage and emission factors and formulas in Condition 1.1.12(c).

b. Emissions from the press dryer shall not exceed the following limits:

Pollutant	Emissions (Tons/Year)
NO_x	1.8
CO	1.5

These limits are based on the maximum firing rate of the dryer and the maximum hours of operation (8,760 hours/year).

c. The emissions of hazardous air pollutants (HAP) as listed in Section 112(b) of the Clean Air Act from the affected printing line shall not exceed 10 tons/year of any single HAP and 25 tons/year of any combination of such HAPs.

d. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

e. The source has addressed the applicability and compliance of 35 IAC Part 203, Major Stationary Sources Construction (See Attachment 1). These limits continue to ensure that the construction and/or modification addressed in this construction permit does not constitute a new major source or major modification pursuant to these rules.

1.1.7 Testing Requirements

a. Testing to demonstrate compliance with the requirements of Condition 1.1.3(d) (see also 35 IAC 218.407) shall be conducted by the Permittee within 90 days after a request by the Illinois EPA. Such testing shall be conducted at the expense of the Permittee and the Permittee shall notify the Illinois EPA in writing 30 days in advance of conducting such testing to allow the Illinois EPA to be present during such testing [35 IAC 218.409(a)].

b. Pursuant to 35 IAC 218.409(b), the methods and procedures of 35 IAC 218.105(d) and (f) shall be used for testing to demonstrate compliance with the requirements of Condition 1.1.3(d)(i)(C) (see also 218.407(a)(1)(C)), as follows:

i. To select the sampling sites, Method 1 or 1A, as appropriate, 40 CFR 60, Appendix A. The sampling sites for determining efficiency in reducing VOM from the dryer exhaust shall be located between the dryer exhaust and the control device inlet, and between the outlet of the control device and the exhaust to the atmosphere [35 IAC 218.409(b)(1)];

ii. To determine the volumetric flow rate of the exhaust stream, Method 2, 2A, 2C, or 2D, as appropriate, 40 CFR 60, Appendix A [35 IAC 218.409(b)(2)];

iii. To determine, pursuant to 35 IAC 218.409(b)(3), the VOM concentration of the exhaust stream entering and exiting the control device, Method 25 or 25A, as appropriate, 40 CFR 60, Appendix A. For thermal afterburners, Method 25 must be used except under the following circumstances, in which case Method 25A must be used:

A. The allowable outlet concentration of VOM from the control device is less than 50 ppmv, as carbon [35 IAC 218.409(b)(3)(A)];

B. The VOM concentration at the inlet of the control device and the required level of control result in exhaust concentrations of VOM of 50 ppmv, or less, as carbon [35 IAC 218.409(b)(3)(B)]; and

C. Due to the high efficiency of the control device, the anticipated VOM concentration at the control device exhaust is 50 ppmv or less, as carbon, regardless of inlet concentration. If the source elects to use Method 25A under this option, the exhaust VOM concentration must be 50 ppmv or less, as carbon, and the required destruction efficiency must be met for the source to have demonstrated compliance. If the Method 25A test results show that the required destruction efficiency apparently has been met, but the exhaust concentration is above 50 ppmv, as carbon, a retest is required. The retest shall be conducted using either Method 25 or Method 25A. If the retest is conducted using Method 25A and the test results again show that the required destruction efficiency apparently has been met, but the exhaust concentration is above 50 ppmv, as carbon, the source must retest using Method 25 [35 IAC 218.409(b)(3)(C)];

iv. Notwithstanding the criteria or requirements in Method 25 which specifies a minimum probe temperature of 129°C (265°F), the probe must be heated to at least the gas stream temperature of the dryer exhaust, typically close to 176.7°C (350°F) [35 IAC 218.409(b)(4)];

v. During testing, the printing line(s) shall be operated at representative operating conditions and flow rates [35 IAC 218.409(b)(5)]; and

vi. During testing, an air flow direction indicating device, such as a smoke stick, shall be used to demonstrate 100 percent emissions capture efficiency for the dryer in accordance with Condition 1.1.3(d)(i)(B) (see also 35 IAC 218.407(a)(1)(B)) [35 IAC 218.409(b)(6)].

c. Pursuant to 35 IAC 218.409(c), testing to demonstrate compliance with the VOM content limitations in Condition 1.1.3(d)(i)(A) (see also 35 IAC 218.407(a)(1)(A)), and to determine the VOM content of fountain solutions, fountain solution additives, cleaning solvents, cleaning solutions, and inks (pursuant to the requirements of 35 IAC

218.411(a)(1)(B)), shall be conducted upon request of the Illinois EPA, as follows:

i. The applicable test methods and procedures specified in 35 IAC 218.105(a) shall be used; provided, however, Method 24 shall be used to demonstrate compliance [35 IAC 218.409(c)(1)]; or

ii. The manufacturer's specifications for VOM content for fountain solution additives, cleaning solvents, and inks may be used if such manufacturer's specifications are based on results of tests of the VOM content conducted in accordance with methods specified in 35 IAC 218.105(a); provided, however, Method 24 shall be used to determine compliance [35 IAC 218.409(c)(2)].

d. Testing to determine the VOM composite partial vapor pressure of cleaning solvents, cleaning solvent concentrates, and as-used cleaning solutions shall be conducted in accordance with the applicable methods and procedures specified in 35 IAC 218.110 [35 IAC 218.409(e)].

e. Testing for VOM content of inks and other printing materials shall be performed as follows [35 IAC 218.105(a)]:

i. On at least an annual basis:

A. The VOM content of representative inks and coatings "as applied" on the affected printing line shall be determined according to USEPA Reference Methods 24 and 24A of 40 CFR 60 Appendix A and the procedures of 35 IAC 218.105(a).

B. This testing may be performed by the supplier of a material provided that the supplier provides appropriate documentation for such testing to the Permittee and the Permittee's records pursuant to Condition 1.1.9 directly reflect the application of such material and separately account for any additions of solvent.

C. Upon written request from the Permittee, the Illinois EPA may waive this requirement on a year-by-year basis, if

prior testing shows a margin of compliance and no significant changes in coating supplies have occurred.

ii. Upon reasonable request by the Illinois EPA, the VOM content of specific inks, coatings, and cleaning solvents used on affected printing lines shall be determined according to USEPA Reference Methods 24 and 24A of 40 CFR 60 Appendix A and the procedures of 35 IAC 218.105(a) [35 IAC 218.105(a)].

1.1.8 Monitoring Requirements

a. Fountain Solution VOM Content. Pursuant to 35 IAC 218.410(b), the Permittee shall determine the VOM content of the as-applied fountain solution based on the setting of the automatic feed equipment which makes additions of VOM up to a pre-set level. The equipment used to make automatic additions must be installed, calibrated, operated and maintained in accordance with manufacturer's specifications [35 IAC 218.410(b)(2)].

b. Regenerative Incinerator. Pursuant to 35 IAC 218.410(c), the Permittee shall:

i. Install, calibrate, maintain, and operate temperature monitoring device(s) with an accuracy of 3°C or 5°F on the regenerative incinerator in accordance with Condition 1.1.8(e) (see also 35 IAC 218.105(d)(2)) and in accordance with the manufacturer's specifications. Monitoring shall be performed at all times when the afterburner is operating [35 IAC 218.410(c)(1)]; and

ii. Install, calibrate, operate and maintain, in accordance with manufacturer's specifications, a continuous recorder on the temperature monitoring device(s), such as a strip chart, recorder or computer, with at least the same accuracy as the temperature monitor [35 IAC 218.410(c)(2)].

c. Cleaning Solution.

The Permittee shall keep records for cleaning solutions used on the affected printing line as set forth in Condition 1.1.9(e)(i) (see also 35 IAC 218.411(d)(2)(C)) [35 IAC 218.410(e)(2)].

d. An Permittee shall use Illinois EPA and USEPA approved continuous monitoring equipment which is installed, calibrated, maintained, and operated according to vendor specifications at all times the regenerative incinerator is in use. The continuous monitoring equipment must monitor the combustion chamber temperature of the regenerative incinerator [35 IAC 218.105(d)(2)(A)(i)].

1.1.9 Recordkeeping Requirements

The Permittee shall maintain records of the following items for the affected printing line to demonstrate compliance with Conditions 1.1.3, 1.1.5, and 1.1.6:

a. Records of the testing of VOM content of coatings, inks, fountain solution, and cleaning solvents pursuant to Condition 1.1.7(c) through (e), which include the following:

i. Identification of material tested.

ii. Results of analysis.

iii. Documentation of analysis methodology.

iv. Person performing analysis.

b. Records of the testing of the efficiency of each capture system and control device pursuant to Conditions 1.1.7(a) and (b), which include the following:

i. The date, place and time of sampling or measurements;

ii. The date(s) analyses were performed;

iii. The company or entity that performed the analyses;

iv. The analytical techniques or methods used;

v. The results of such analyses; and

vi. The operating conditions as existing at the time of sampling or measurement.

c. Pursuant to 35 IAC 218.411(b)(3), the Permittee shall collect and record daily the following information:

i. Regenerative incinerator monitoring data in accordance with Condition 1.1.8(c) (see also 35 IAC 218.410(c)) [35 IAC 218.411(b)(3)(A)];

ii. A log of operating time for the regenerative incinerator, monitoring equipment, and the associated printing line [35 IAC 218.411(b)(3)(B)];

iii. A maintenance log for the regenerative incinerator and monitoring equipment detailing all routine and non-routine maintenance performed, including dates and duration of any outages [35 IAC 218.411(b)(3)(C)]; and

iv. A log detailing checks on the air flow direction or air pressure of the dryer and press room to insure compliance with the requirements of Condition 1.1.3(d)(i)(B) (see also 35 IAC 218.407(a)(1)(B)) at least once per 24-hour period while the line is operating [35 IAC 218.411(b)(3)(D)].

d. Pursuant to 35 IAC 218.411(c)(2), the Permittee shall collect and record the following information for each fountain solution:

The name and identification of each batch of fountain solution prepared for use on one or more lithographic printing lines, the lithographic printing line(s) or centralized reservoir using such batch of fountain solution, and the applicable VOM content limitation for the batch [35 IAC 218.411(c)(2)(A)];

e. Pursuant to 35 IAC 218.411(d)(2), for lithographic printing line cleaning operations, the Permittee shall collect and record the following information for each cleaning solution used on the affected printing line:

i. Pursuant to 35 IAC 218.411(d)(2)(C), for each batch of cleaning solution:

A. The name and identification of each cleaning solution [35 IAC 218.411(d)(2)(C)(i)];

B. Date and time of preparation, and each subsequent modification, of the batch [35 IAC 218.411(d)(2)(C)(ii)];

C. The molecular weight, density, and VOM composite partial vapor pressure of each cleaning solvent, as determined in accordance with Condition 1.1.7(d) (see also 35 IAC 218.409(e)) [35 IAC 218.411(d)(2)(C)(iii)];

D. The total amount of each cleaning solvent used to prepare the as-used cleaning solution [35 IAC 218.411(d)(2)(C)(iv)]; and

E. The VOM composite partial vapor pressure of each as-used cleaning solution, as determined in accordance with Condition 1.1.7(d) (see also 35 IAC 218.409(e)) [35 IAC 218.411(d)(2)(C)(v)].

ii. The date, time and duration of scheduled inspections performed to confirm the proper use of closed containers to control VOM emissions, and any instances of improper use of closed containers, with descriptions of actual practice and corrective action taken, if any [35 IAC 218.411(d)(2)(D)].

f. Amount of ink (pounds/month and tons/year), fountain solution (gallons/month and gallons/year), and cleaning solvent/blanket wash (gallons/month and gallons/year) used and the VOM content of the ink (weight percent);

g. The aggregate monthly and annual VOM and HAP emissions from the affected printing lines based on the ink and solvent usage, with supporting calculations; and

h. Records of the monthly and annual aggregate CO, NO_x, PM, SO_2, and VOM emissions from the press dryers and the afterburners associated with the affected printing lines shall be maintained, based on fuel consumption and the applicable emission factors, with supporting calculations.

1.1.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of noncompliance of the affected printing line with the permit requirements as follows. Reports shall describe the probable cause of such

deviations, and any corrective actions or preventive measures taken:

a. Pursuant to 35 IAC 218.411(b), the Permittee shall comply with the following:

i. Pursuant to 35 IAC 218.411(b)(2), if testing of the regenerative incinerator is conducted pursuant to Condition 1.1.7(b) (see also 35 IAC 218.409(b)), the Permittee shall, within 90 days after conducting such testing, submit a copy of all test results to the Illinois EPA and shall submit a certification to the Illinois EPA that includes the following:

A. A declaration that all tests and calculations necessary to demonstrate whether the affected printing line is in compliance with Condition 1.1.3(d)(i)(C) (see also 35 IAC 218.407(a)(1)(C)) have been properly performed 35 IAC 218.411(b)(2)(A)];

B. A statement whether the affected printing line is or is not in compliance with Condition 1.1.3(d)(i)(C) (see also 35 IAC 218.407(a)(1)(C)) and a statement whether the affected printing line is or is not in compliance with Condition 1.1.3(d)(i)(C) (see also 35 IAC 218.407(a)(1)(C)) [35 IAC 218.411(b)(2)(B); and

C. The operating parameters of the afterburner or other approved control device during testing, as monitored in accordance with Condition 1.1.8(c) (see also 35 IAC 218.410(c)) as applicable [35 IAC 218.411(b)(2)(C)].

ii. Notify the Illinois EPA in writing of any violation of Condition 1.1.3(d)(i)(C) (see also 35 IAC 218.407(a)(1)(C)) within 30 days after the occurrence of such violation. Such notification shall include a copy of all records of such violation [35 IAC 218.411(b)(4)].

b. The Permittee shall notify the Illinois EPA in writing of any violation of Condition 1.1.3(d) (see also 35 IAC 218.407) within 30 days after the occurrence of such violation. Such notification

shall include a copy of all records of such violation [35 IAC 218.411(c)(3)].

c. For cleaning operations, the Permittee shall notify the Illinois EPA in writing of any violation of Condition 1.1.3(d) (see also 35 IAC 218.407) within 30 days after the occurrence of such violation. Such notification shall include a copy of all records of such violation [35 IAC 218.411(d)(3)].

d. Emissions of NO_x, CO, PM, VOM and SO_2 in excess of the limits in Conditions 1.1.6(a) and (b) based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

1.1.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

1.1.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 1.1.9 and the emission factors and formulas listed below:

a. Compliance with Condition 1.1.3(b) and (c) is assumed to be achieved by the work-practices inherent in operation of a natural gas-fired press dryer.

b. Compliance with Conditions 1.1.3(c) and (d) is addressed by proper operation of the regenerative incinerator, as addressed by Conditions 1.1.5(a), (b) and 1.1.8(c).

c. To determine compliance with Condition 1.1.6(a), emissions from the affected printing line shall be calculated based on the following:

Ink VOC Emissions (E_I):

$$E_I = (M_I W_I/100)(1-R_I/100)(J_I/100)[1-(K/100)]$$

Fountain Solution VOC Emissions (E_F):

$$E_F = (M_F W_F/100)(J_F/100)[1-(K/100)] + (M_F W_F/100)[1-(J_F/100)]$$

Manual Cleaning Solvent VOC Emissions (E_M):

$$E_M = (M_M W_M/100)(1-R_M/100)$$

Automatic Cleaning Solvent VOC Emissions (E_A):

$$E_A = (M_A W_A/100)(J_A/100)[1-(K/100)]+ (M_A W_A/100)[1-(J_A/100)]$$

Total VOM Emissions (E_T):

$$E_T = E_I + E_F + E_M + E_A$$

Where:

M_I = Weight of ink used (pounds);

W_I = Weight percent VOC in ink (wt. %);

R_I = Percent of ink VOC retained in printed product (20%);

K = Control efficiency of thermal oxidizer* (97%);

J_I = Capture efficiency of dryer and control system for ink VOC (100%);

M_F = Volume of fountain solution used, as applied (gallons);

W_F = VOM content of fountain solution, as applied (lb VOM/gallon);

J_F = Capture efficiency of dryer and control system for fountain solution VOC (70%);

M_M = Volume of manual cleaning solvent used (gallons);

W_M = VOM content of manual cleaning solvent (lb VOM/gallon);

R_M = Percent of manual cleaning solvent VOC retained in wipers (0%);

M_A = Volume of automatic cleaning solvent used (gallons);

W_A = VOM content of automatic cleaning solvent (lb VOM/gallon);

J_A = Capture efficiency of dryer and control system for automatic cleaning solution VOC (40%);

* As specified by manufacturer or vendor of the regenerative incinerator or by testing pursuant to Condition 1.1.7.

c. Compliance with the emission limits in condition 1.1.6(b) is assured because the dryer emission limits are based on the maximum capacity of the emission unit. As a result, no compliance procedures are set in this permit addressing these requirements.

2. The affected printing line may be operated for a period of 180 days under this construction permit.

3. This permit is issued based upon the shutdown of existing press #359 prior to operation of the new press #379.

Please note that the Permittee should seek to amend their CAAPP permit to include the construction and/or modification covered under this permit through the administrative amendment process by submitting an application that includes the information contained in form 273-CAAPP. This application must also identify and address any changes from the associated construction permit application. Note that information previously submitted in the construction permit application may be incorporated by reference into the application to amend the CAAPP permit. The Permittee must also provide updated information on fees as contained in form 292-CAAPP, “Fee Determination for CAAPP Permit.

If you have any questions on this, please call Jason Schnepp at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JMS:jar

cc: Region 1

Attachment 1

Nonattainment NSR Applicability

Contemporaneous Time Period of 1996 Through 2000

Table I – Emissions Increases Associated With The Proposed Modification

Item of Equipment	Proposed Commencement of Operation Date	VOM Emissions Increase (Tons/Year)	Permit Number
Press #379	2000	9.70	00090061

Table II – Source-Wide Creditable Contemporaneous Emission Increases

Item of Equipment	Commencement of Operation Date	VOM Emissions Increase (Tons/Year)	Permit Number
Press #356	1999	22.7	99070033
#357	1999		
#358	1997		

Table III – Source-Wide Creditable Contemporaneous Emission Decreases

Item of Equipment	Commencement of Operational Change Date	VOM Emissions Decrease (Tons/Year)	Permit Number
Press #359[a]	2000	7.50	N/A

Table IV – Net Emissions Change

	(Tons/Year)
Increases Associated With The Proposed Modification	9.70
Creditable Contemporaneous Emission Increases	22.70
Creditable Contemporaneous Emission Decreases	- 7.50
	24.90

[a] This decrease is based on the actual emissions averaged from the two year period preceding the operational change. This includes calendar years 1998 and 1999. This press will be shut down prior to operation of the new press #379.

JMS:jar