217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

R. R. Donnelley & Sons Company
Attn: Isabelle Day
US Route 45 North
Mattoon, Illinois 61938-1668

Application No.: 03030060
Applicant's Designation:
I.D. No.: 029803AAA
Date Received: March 24, 2003
Subject: Web Offset Press MM-718
Date Issued: July 2, 2003
Location: Route 45 North, Mattoon

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a new heatset web offset lithographic printing press (MM-718) ducted to the existing regenerative thermal oxidizer system 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 (MM-718)
Control: Tandem RTO System (Two Regenerative Thermal Oxidizers)

1.1.1 Description

Heatset web offset lithographic printing involves the use of dryers to dry the ink applied through the printing units. The ink oil emission from the dryers is then controlled by a tandem RTO system.

This construction permit addresses the construction of press MM-718.

1.1.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
MM-718	Heatset Web Offset Lithographic Printing Press with Dryer System	Tandem RTO System

1.1.3 Applicability Provisions and Applicable Regulations

a. An "affected printing line" for the purpose of these unit-specific conditions, is a heatset web offset lithographic 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. The Permittee may not cause or allow the operation of the affected printing line unless the fountain solution contains no more than eight (8) percent, by weight, of volatile organic material [35 IAC 215.408(b)].

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 63, Subparts A and KK, because the affected printing lines are not publication rotogravure, product and packaging rotogravure, or wide-web flexographic printing presses.

b. This permit is issued based on the affected printing lines, specifically MM-718 and MM-722 not representing a major modification subject to Section 112(g) of the Clean Air Act because the printing lines combined are less than 10 tons for single Hazardous Air Pollutants (HAP) and less than 25 tons for the combination of HAPs.

c. The drying ovens and the oxidizers associated with the affected printing lines are not subject to 35 IAC 216.121, Emissions of Carbon Monoxide from Fuel

Combustion Emission Units, because the drying ovens and the oxidizers are not by definition fuel combustion emission units, as defined in 35 IAC 211.2470.

d. This permit is issued based on The affected printing line not subject to 35 IAC 215.204(c), Coating Operations/Paper Coating, as the paper coating limitation does not apply to equipment used for both printing and paper coating if coating operations comply with requirements of 35 IAC 215.401. [35 IAC 215.204(c)]

e. The affected press is not subject to 35 IAC 215, Subpart K, specifically 35 IAC 215.301, because the affected press complies with 35 IAC 215, Subpart P [35 IAC 215.403].

1.1.5 Control Requirements

a. The Permittee shall follow good operating practices for the oxidizers, including periodic inspection, routine maintenance and prompt repair of defects. For this purpose:

i. The Tandem RTO System shall be operated to reduce VOM emissions from the dryer exhaust by 97%.

ii. The oxidizers' combustion chambers shall be preheated to the manufacturer's recommended temperatures but no less than the temperatures 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.

iii. The Permittee shall use reasonably available measures to minimize uncontrolled emissions including but not limited to use of off-shift labor.

b. Each affected printing line shall only be operated with natural gas as the primary fuel in the press dryer system and the oxidizers. Propane is maintained as a backup fuel only for the press dryers and control system.

c. Notwithstanding Condition 1.1.5(a), the Permittee is allowed to operate Press MM-718 without oxidizer control or with the oxidizer temperature below that

specified in Condition 1.1.5(a)(ii) if the emissions from the press meet the requirements of Condition 1.1.3(d) and no other permit emissions limitations (e.g., monthly limits in Condition 1.1.6) and requirements will be violated. Emissions from operation under these conditions shall be based on a 0% VOM destruction efficiency.

d. i. Total ink usage by printing lines MM-722 and MM-718 shall not exceed 67.5 tons/month and 405 tons/year and 127 tons/month and 756 tons/year, respectively.

ii. Usage of cleaning solution that contains HAPs shall not exceed 7.58 tons/month and 45.5 tons/year, for printing lines MM-722 and MM-718 combined.

1.1.6 Emission Limitations

a. i. Emissions from the affected printing line (MM-718) shall not exceed the followings:

Pollutants	Tons/Month	Tons/Year
CO	0.44	2.65
NO_x	0.53	3.15
VOM	4.73	28.35

ii. Emissions of HAPs from printing lines MM-718 and MM-722 combined shall not exceed 2 tons/month and 8 tons/year for a single HAP and 4 tons/month and 22 tons/year for the combination of HAPs.

b. 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).

c. The source has addressed the applicability and compliance of 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The limits in this permit and Construction Permit 03020041 recently issued for the Press MM-722 ensure that these Presses (MM-718 and 722) do not constitute a major modification, because the combined emissions from these projects is below the VOM threshold of 40 Tons/year.

1.1.7 Testing Requirements

a. Testing to determine the volatile organic material content of fountain solution, inks and all coatings shall be conducted in accordance with Method 24, 40 CFR 60, Appendix A. Any alternate test method must be approved by the Illinois EPA, which shall consider data comparing the performance of the approved test method(s). If the Illinois EPA determines that such data demonstrates that the proposed alternative will achieve results equivalent to the approved test method(s), the Illinois EPA shall approve the proposed alternative [35 IAC 215.409].

b. i. Any tests of volatile organic material emissions, including tests conducted to determine control device destruction efficiency, shall be conducted in accordance with the methods and procedures specified in 35 IAC 215.102 [35 IAC 215.410(a)].

ii. Upon a reasonable request by the Illinois EPA, the Permittee shall conduct emissions testing for the thermal oxidizer system, at his own expense. [35 IAC 215.410(b)].

iii. The Permittee shall notify the Illinois EPA of that intent not less than 30 days before the planned initiation of VOM emissions tests so the Illinois EPA may observe the test [35 IAC 215.410(c)].

1.1.8 Monitoring Requirements

Each oxidizer shall be equipped with continuous monitoring device which is installed, calibrated, operated and maintained according to vendor specifications at all times the oxidizers are in use. The monitoring device shall monitor the combustion chamber temperature of the oxidizer.

1.1.9 Recordkeeping Requirements

a. 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:

i. Records of weight of ink used (amount purchased minus amount discarded or recycled) (pounds);

ii. Weight percent VOM and HAPs in ink (wt. %);

iii. Volume of fountain solution additive used (amount purchased minus amount discarded or recycled) (gallons);

iv. Pounds VOM and HAPs per gallon of fountain solution additive (pounds/gallon);

v. Volume of manual cleaning solvent used (amount purchased minus amount discarded or recycled) (gallons);

vi. Pounds VOM and HAPs per gallon of manual cleaning solvent (pounds/gallon);

vii. Volume of automatic cleaning solvent used (amount purchased minus amount discarded or recycled) (gallons);

viii. Pounds VOM and HAPs per gallon of automatic cleaning solvent (pounds/gallon);

ix. The aggregate monthly and annual VOM and HAPs emissions from the affected printing line (tons/month and tons/year) including records for emissions when the RTOs are not in operation or are operating below the temperature specified in Condition 1.1.5(a)(ii);

x. Temperature monitoring data of each RTO (continuous); and

b. For periods when the Permittee operates printing lines MM-722 or MM-718, which is normally vented to the oxidizer system, without oxidizer control or the oxidizer temperature below that specified in Condition 1.1.5(a)(ii) as allowed by Condition 1.1.5(c), the Permittee shall calculate and keep records of emissions from the lines to demonstrate that operation in such a manner did not cause a violation of the emissions limits of Condition 1.1.6. The Permittee shall keep the following records for each period, when operating under these conditions, to support these emission records:

i. Start of period, end of period and duration of operation (hours).

ii. Amount of each VOM containing material used (ink, fountain solution, solvents) (gallons).

iii. VOM and HAPs content on each material used (ink, fountain solution, solvents) (pounds/gallon).

c. The Permittee shall maintain records of the following items for the affected printing line related to the dryers to demonstrate compliance with Condition 1.1.6.

i. Maximum firing rate of the dryers (million Btu/hr).

ii. Annual NO_x and CO emissions based on fuel use, with all supporting calculations.

1.1.10 Reporting Requirements

a. The Permittee shall promptly notify the Illinois EPA, of noncompliance of printing lines MM-722 or MM-718 with the permit requirements as follows. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

i. Emissions in excess of the limits in Condition 1.1.6(a) based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

ii. Other noncompliance within 90 days of occurrence.

b. The Permittee shall notify the Illinois EPA if printing line MM-722 or MM-718 operates without the control device for a period longer than 36 hours or for more than 100 hours per year.

1.1.11 Operational Flexibility/Anticipated Operating Scenarios

None

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(c) is assumed to be achieved by the work-practices inherent in operation of a natural gas-fired/propane press dryer system.

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

Ink VOM Consumption (C_I):

$$C_I = M_I W_I / 100$$

Fountain Solution VOM Consumption (C_F):

$$C_F = V_F P_F$$

Manual Blanket Wash VOM Consumption (C_M):

$$C_M = V_M P_M$$

Automatic Blanket Wash VOM Consumption (C_A):

$$C_A = V_A P_A$$

Ink VOM Emissions (E_I):

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

Fountain Solution VOM Emissions (E_F):

$$E_F = C_F[1-(K/100)(J_F/100)]$$

Automatic Cleaning Solvent VOM Emissions (E_A):

$$E_A = C_A[1-(K/100)(J_A/100)]$$

Manual Cleaning Solvent VOM Emissions (E_M):

$$E_M = C_M(1-R_M/100)$$

Total VOM Emissions (E_T):

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

Where:

M_I = Weight of ink used (amount purchased minus amount discarded or recycled) (pounds)

W_I = Weight percent VOM in ink (wt. %)

V_F = Volume of fountain solution additive used (amount purchased minus amount discarded or recycled) (gallons)

P_F = Pounds VOM per gallon of fountain solution additive (pounds/gallon)

V_M = Volume of manual cleaning solvent used (amount purchased minus amount discarded or recycled) (gallons)

P_M = Pounds VOM per gallon of manual cleaning solvent (pounds/gallon)

V_A = Volume of automatic cleaning solvent used (amount purchased minus amount discarded or recycled) (gallons)

P_A = Pounds VOM per gallon of automatic cleaning solvent (pounds/gallon)

C_I = Ink VOM Consumption (tons)

C_F = Fountain Solution VOM Consumption (pounds)

C_A = Automatic Cleaning Solvent VOM Consumption (pounds)

C_M = Manual Cleaning Solvent VOM Consumption (pounds)

R_I = Percent of Ink VOM Retained In Printed Product (20%)

R_M = Percent of Manual Cleaning Solvent VOM retained in wipers (50%)

K = Control efficiency of oxidizers* (97%)

J_I = Capture Efficiency Of Dryer and Control System For Ink VOM (100%)

J_F = Capture Efficiency Of Dryer and Control System For Fountain Solution (70%)

J_A = Capture Efficiency Of Dryer and Control System For Automatic Cleaning Solvent VOM (40%)

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

c. Emissions from the press dryers on the affected printing line attributable to fuel combustion shall be calculated based on the following emission factors:

i. Natural Gas Firing:

Pollutant	Emission Factor (Lb/Million scf)
CO	84
NO_x	100
PM	7.6
SO_2	0.6
VOM	5.5

ii. Propane Firing:

Pollutant	Emission Factor (Lb/Million scf)
CO	0.021
NO_x	0.15
PM	0.0044
SO_2	0.001
VOM	0.0055

These are the emission factors for natural gas and propane combustion, Tables 1.4-1, 1.4-2, and 1.5-1, AP-42, Volume I, Fifth Edition.

Press Dryer System Emissions (lb) = (Fuel Consumed or Firing Rate) x (The Appropriate Emission Factor)

Please note that the Permittee may operate the affected printing line under this construction permit until the Illinois EPA next takes action on the CAAPP Permit.

If you have any questions on this permit, please contact Ricardo Ng at 217/782-2113.

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

DES:RNG:psj

cc: Region 3