

Procedure: BACT1 Review for Lithographic Offset Printing - Automatic Blanket Wash System

Procedure

The following procedures should be used to determine cost-effectiveness for the automatic blanket wash system:

Step	Action						
1	<p>The automatic blanket wash system is currently technologically feasible in Lithographic Offset Printing for:</p> <ul style="list-style-type: none"> • Sheetfed press with 4 or more press units AND a blanket cylinder with at least 26". • Web press. 						
2	<p>Calculate the annual solvent usage of the proposed automatic blanket wash system, using the following equation:</p> <p>A = 0.0625*N*H</p> <p>where A = annual solvent usage (gallons/yr) 0.0625 = typical usage (gallons per hour per press unit) N = number of press units H = annual operating hours of the press (hours/yr)</p>						
3	<p>Compare the calculated annual solvent usage [A] to the manual solvent usage proposed by the applicant [M]:</p> <table border="1" data-bbox="548 1010 1393 1272"> <thead> <tr> <th data-bbox="548 1010 971 1052">If A (See Step 2) is ...</th> <th data-bbox="971 1010 1393 1052">Then ...</th> </tr> </thead> <tbody> <tr> <td data-bbox="548 1052 971 1234">Greater than or equal to M</td> <td data-bbox="971 1052 1393 1234">Stop. An automatic blanket system is NOT cost-effective; because the automatic blanket wash system requires more solvent than manual cleaning.</td> </tr> <tr> <td data-bbox="548 1234 971 1272">Less than M</td> <td data-bbox="971 1234 1393 1272">Proceed to Step 4.</td> </tr> </tbody> </table>	If A (See Step 2) is ...	Then ...	Greater than or equal to M	Stop. An automatic blanket system is NOT cost-effective; because the automatic blanket wash system requires more solvent than manual cleaning.	Less than M	Proceed to Step 4.
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Greater than or equal to M	Stop. An automatic blanket system is NOT cost-effective; because the automatic blanket wash system requires more solvent than manual cleaning.						
Less than M	Proceed to Step 4.						
4	<p>Calculate the VOC reduction from the use of an automatic blanket wash system:</p> <p>R = (M-A)*D/2000</p> <p>where R = VOC reduction (ton/yr) M = annual usage of solvent proposed by applicant for manual blanket wash cleaning (gallon/year) A = annual usage of solvent calculated for automatic blanket wash system (gallon/year) [See Step 2] D = VOC content of blanket wash (pound/gallon)</p>						

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Procedure
(continued)

Step	Action						
5	<p>Calculate the annualized cost of the automatic blanket wash system, using the following equation:</p> $C = [\$35,000 * N] * (0.253) + \$20,000(S),$ <p>where C = annualized cost of the automatic blanket wash system (\$) \$35,000 = cost per press unit 0.253 = factor to convert total cost to annualized cost N = number of press units \$20,000 = cost of solvent recycling system S = number of solvent recycling systems</p>						
6	<p>Calculate the cost-effectiveness of the automatic blanket wash system, using the following equation:</p> $E = R/C$ <p>where E = cost-effectiveness of automatic blanket wash system (\$/ton) R = VOC Reduction (ton/yr) [See Step 4] C = annualized cost of the automatic blanket wash system (\$) [See Step 5]</p>						
7	<p>Determine whether the automatic blanket wash system is cost-effective by comparing E (from Step 6) to the BACT cost-effective level (\$17,500/ton):</p> <table border="1" data-bbox="548 1255 1393 1486"> <thead> <tr> <th data-bbox="548 1255 971 1297">If E (See Step 6) is ...</th> <th data-bbox="971 1255 1393 1297">Then ...</th> </tr> </thead> <tbody> <tr> <td data-bbox="548 1297 971 1409">Greater than \$17,500/ton</td> <td data-bbox="971 1297 1393 1409">Stop. It is NOT cost-effective to require an automatic blanket wash system.</td> </tr> <tr> <td data-bbox="548 1409 971 1486">Less than or equal to \$17,500/ton</td> <td data-bbox="971 1409 1393 1486">Require an automatic blanket wash system as BACT1.</td> </tr> </tbody> </table>	If E (See Step 6) is ...	Then ...	Greater than \$17,500/ton	Stop. It is NOT cost-effective to require an automatic blanket wash system.	Less than or equal to \$17,500/ton	Require an automatic blanket wash system as BACT1.
If E (See Step 6) is ...	Then ...						
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Less than or equal to \$17,500/ton	Require an automatic blanket wash system as BACT1.						

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Recommended but not required A solvent recycling system is recommended for any facility with more than 3 presses. The installed equipment cost for the recycling system is estimated to be approximately \$20,000. Approximately 10% of the solvent used in automatic blanket wash can be captured and recycled, rather than disposed of.

Effective Date March 7, 2000

Helpful Definitions

- **BACT1** – “Technologically Feasible/Cost Effective” Best Available Control Technology. This first category of BACT (i.e., BACT1) is a more stringent level of BACT control and is technology forcing; it generally refers to advanced control devices or techniques. The control equipment or technology must be commercially available, demonstrated as effective and reliable on a full-scale unit and shown to be cost-effective on a dollars per ton of pollutant-removed basis. \$17,500 is the cost-effectiveness threshold for BACT1 for POCs/NPOCs.
- **POC** – Precursor organic compounds, as defined in [Regulation 2-1-208](#).
- **NPOC** – Non-precursor organic compounds, as defined in [Regulation 2-1-207](#).
- **Lithographic printing** – is the printing technique where the printing and non-printing surfaces are essentially on the same plane. The image area of the plane repels water and attracts oil-based inks, while the non-image area attracts water and repels oil-based inks. Lithography can be divided into two broad subdivisions based upon ink drying and substrate feed mechanisms:
 - Sheetfed press – the substrate is fed into the press one sheet at a time.
 - Web press – prints on a continuous roll of substrate, known as a web.
- **Press unit** – is one unit devoted to printing one color. A lithographic press can be made up of several press units.
- **Blanket cylinder** – is the part of the lithographic press which transfers the image onto the substrate (e.g., paper).
- **Automatic blanket wash system** – automated system of washing the blanket cylinders of a sheetfed or web press using solvent.
- **Recycling system** – is a system that recycles the recovered solvent of an automatic blanket wash system.

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Procedure: BACT1 Review for Lithographic Offset Printing - Automatic Blanket Wash System, Continued

**Basis:
Solvent Usage
for Automatic
Blanket Wash
System**

The following rules of thumb can be used to estimate the amount of solvent used by an automatic blanket wash system:

- 2 blankets per press unit
- 4 ounces of solvent per blanket
- 1 cleaning per hour
- 128 ounces per gallon

2 blankets/press unit * 4 oz/blanket * 1 clean/hour * gallon/128 oz
= **0.0625 gallon/hour-press unit**

Contact

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**Document
Control**

Version	Revised By	Description	Date
1.1	MCL	New Procedure	3/7/2000
1.2	MCL	Mapping of Procedure	3/13/08

Approval

Name & Title	Signature	Date
Brian Bateman, Director of Engineering	Signed by Brian Bateman	2/28/2008