

DECISION DOCUMENT

Pollution Prevention and Control Act 1999 Environmental Permitting (England and Wales) Regulations 2016 (as amended)

What is this document about?

Certain types of industry can result in significant pollution to air, land and water if the activities are not undertaken in an appropriate manner, which can have a significant impact on the health and well-being of humans, as well as, on the environment.

Due to their polluting potential certain industries are required to prevent, reduce and as far as practicable eliminate the pollution that they cause in accordance with Best Available Techniques (BAT). The level of regulation and control for each individual site (or installation) will be considered by the Regulator on its merits, taking account of the type of activity undertaken, the location of that activity and the economic situation of the industry sector and installation.

In practical terms, the larger the activity undertaken, the greater the pollution potential will be and therefore a greater level of regulation will be required. The Environment Agency will regulate most of the larger activities (known as A1 activities), while the Local Authority will regulate fewer large activities (known as A2 activities) but a greater number of smaller and more common types of activities, whose impacts would be mainly on the local community (these are known as Part B activities).

Part B activities are regulated for only their emissions to air, whereas Part A2 and A1 activities will be regulated not only for their emissions to air, water and land, but also on their management of natural resources, such as energy, water and waste and also accidental emissions and site restoration following the closure of the installation to provide a more integrated approach to the prevention and control of emissions.

The regulation of specified activities will not only result in improved emissions, protecting the health and well-being of the population and the environment, it creates an even playing field for those activities to compete in while improving resource management will result in cost savings to those businesses.

The framework that sets out the requirements for regulation are implemented through the Environmental Permitting (England and Wales) Regulations 2016 (as amended).

This decision document records our decision making process in relation to an environmental permit, whether it is for the grant of a new permit, variation, transfer or surrender of an existing environmental permit, or as a result of a review of an environmental permit.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future.

What is the decision for?

Decision Reference:	EP 602-DC1
Decision Date:	05 December 2024

What is the decision for?	
This decision document records our decision making process in relation to:	An application for the variation of an existing environmental permit And a review of an existing environmental permit against revised BAT requirements
Application or Environmental Permit reference:	Original permit reference: P02A-SG6 Variation Notice: EP 602-V2 Amended Environmental Permit reference: EP 602-R2
Installation Name:	Saica Flex Buxton
Installation address:	1 Staden Park, Staden Lane, Buxton, Derbyshire, SK17 9RZ
Operator:	Saica Flex UK Limited
Company number:	02484831
Registered address:	144 Manchester Road, Carrington, Manchester, England, M31 4QN
Detailed reason for decision:	<p>A variation application to an existing environmental permit was made by the Operator to vary environmental permit P02A-SG6 to take account of changes to the process description, printers and abatement plant utilised in the process since the permit was last varied in 2012.</p> <p>In addition, The Environmental Permitting Regulations (2016) requires the High Peak Borough Council to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards. We are required to ensure this is completed within four years of the publication of updated decisions on BAT conclusions. We will use BAT conclusions published by the European Commission for conclusions published before the UK leaves the EU, or UK BAT conclusions after the UK leaves the EU. The Environmental Permitting Regulations (2016) enables the objectives of the Industrial Emissions Directive (IED) to be met.</p> <p>Therefore, a review of the environmental permit has also been undertaken with reference to European Commission establishing best available techniques (BAT) conclusions ('BAT Conclusions') commission implementing decision (EU) 2020/2009, notified under document C(2020) 4050) establishing best available techniques (BAT) conclusions (BATc) for Surface treatment using organic solvents including preservation of wood and wood products with chemicals industry sector (STS).</p>

Our decision

Our decision

We have decided to issue a Variation Notice to the Operator (reference EP 602-V2) under regulation 20 of the Environmental Permitting Regulations with an amended environmental permit (reference EP 602-R2). This will allow the Operator to continue to operate the Installation, subject to the conditions in the Variation Notice that updates the whole permit taking into account the application to vary the environmental permit and the STS BAT Conclusion document.

We consider that, in reaching our decision, we have taken into account all relevant considerations and legal requirements and that the varied permit will ensure that a high level of protection is provided for the environment and human health.

How we reached our decision is set-out in Schedule 1.

Conditions that are set to ensure BAT conclusions are met are set-out in Schedule 2 and how these have been considered are set out in Schedule 3.

We also consider that we need to set improvement conditions so that implementation of techniques detailed in the BAT Conclusions are achieved by the installation. These are set out in Schedule 4.

Schedule 1: How we reached our decision

How we reached our decision?	
Was an application submitted and accepted? Or was an information notice served?	<p>An information Request Notice (P02A-SG6-2023-IN2) was issued to the Operator on 22-06-2023 to furnish the High Peak Borough Council by 01-10-2023 with an application to vary an environmental permit and to provide a review of compliance against the STS BAT Conclusion document.</p> <p>An application to vary an environmental permit, including a review of compliance against the STS BAT Conclusion document was submitted by the Operator on 02-02-2024 and deemed duly made by the High Peak Borough Council on 14-02-2024.</p> <p>We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review but it did not contain all the information we would need to complete that determination.</p>
Was any additional information requested?	<p>Requests for documentation, information or clarification were made on 28-03-2024, 11-06-2024, 15-07-2024, 30-09-2024, 01-11-2024, 20-11-2024, 29-11-2024, 02-12-2024, 04-12-2024.</p> <p>Additional documentation, information or clarification was provided on 16-06-2024, 24-10-2024, 31-10-2024, 12-11-2024, 13-11-2024, 28-11-2024, 02-12-2024, 04-12-2024.</p> <p>We considered the additional information contained sufficient information for us to complete the determination.</p>
Commercial confidentiality or National Security considerations?	<p>The Operator made no claim for commercial confidentiality within the variation application and we have not received any information in relation to the responses from the Operator that appear to be confidential in relation to any party.</p>
Was consultation or public participation undertaken?	<p>The proposal did not seek to change raw material inputs, waste outputs or regulated activities. There was no change to the installation boundary. Replacement of the RTO was to the betterment of the surrounding environment to achieve reduced emissions, be subject to reduced breakdowns or extended breakdowns due to availability of parts and have reduced energy consumption and reduced noise outputs. As a result no consultation was deemed necessary with regards to this application.</p>

<p>Relevant legislation:</p>	<p>The Environmental Permitting (England and Wales) Regulations 2016, regulation 20 in relation to the variation of an environmental permit.</p> <p>This implements the requirements of the Industrial Emissions Directive.</p>
<p>Relevant guidance:</p>	<p>European Commission establishing best available techniques (BAT) conclusions ('BAT Conclusions') commission implementing decision (EU) 2020/2009, notified under document C(2020) 4050) establishing best available techniques (BAT) conclusions (BATc) for Surface treatment using organic solvents including preservation of wood and wood products with chemicals industry sector (STS).</p> <p>PG6/29(12) Secretary of State's Statutory Guidance for Di-isocyanate Processes</p>

Schedule 2: Conditions implementing BAT

Permit conditions implementing BAT		
Legislation/ BAT Requirement	Subject	Condition(s)
STS BAT	BAT 1 - Environmental Management System	1.3.1 Table 1.2 IP1, 2.1.1, 3.1.1, Table 3.1,
	BAT 2 Overall environmental performance	5.1.1, 5.2.1, 3.1.1, Table 3.1,
	BAT 19 Energy efficiency	2.2.1, 3.1.1, Table 3.1, 5.1.1, 5.2.1, 6.2.6
	BAT 6 Use of Raw Materials	2.3.1, 3.1.1, Table 3.1, 3.2.1, 3.2.2, 5.1.1, 5.2.1
	BAT 22 - Avoidance, recovery and disposal of wastes produced by the activities	2.4.1, 3.1.1, Table 3.1, 3.3.1, Table 3.3, 3.3.2, 3.3.3, 5.2.1, 6.2.5
	BAT AELs	2.2.1, 4.1.2, Table 4.2, 4.1.5, Table 4.3
	Monitoring	3.1.1, Table 3.1, 4.3, 6.3.1
	Other than Normal Operating (OTNOC) and Accidents	3.1.1, Table 3.1, 3.1.3, 3.6
	Odour	3.1.1, Table 3.1, 4.6
	Site condition	3.7, 4.8,

Soil & groundwater risk assessment (baseline report)

The IED requires that the Operator of any IED installation using, producing or releasing “relevant hazardous substances” (RHS) shall, having regarded the possibility that they might cause pollution of soil and groundwater, submit a “baseline report” with its permit application. The baseline report is an important reference document in the assessment of contamination that might arise during the operational lifetime of the regulated facility and at cessation of activities. It must enable a quantified comparison to be made between the baseline and the state of the site at surrender.

At the definitive cessation of activities, the Operator has to satisfy us that the necessary measures have been taken so that the site ceases to pose a risk to soil or groundwater, taking into account both the baseline conditions and the site’s current or approved future use. To do this, the Operator has to submit a surrender application to us, which we will not grant unless and until we are satisfied that these requirements have been met.

The Operator has confirmed that the raw materials used at the installation are not classified as “relevant hazardous substances” (reference B2.6 submitted 31-10-2024).

A site condition report (reference B3) was submitted as part of the original application received on 20-04-2010 and accepted at the time as a report on the baseline conditions as required by Article 22. The report was reviewed during the original application and considered that it adequately described the condition of the soil and groundwater at that time. Consequently, we are satisfied that the baseline conditions have not changed.

A condition in relation to decommissioning is included in Section 3.7 of environmental permit EP 602-R2 to ensure that the site is returned to a satisfactory state on surrender of the environmental permit.

Schedule 3: STS BAT compliance assessment

The overall status of compliance with the BAT conclusion is indicated in the table as

NA Not Applicable

CC Currently Compliant

FC Compliant in the future (within 4 years of publication of BAT conclusions)

NC Not Compliant

BAT C	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	BAT Conclusions that are not applicable to this installation	NA	<p>This installation undertakes flexography, therefore the following sections are not applicable to this installation:</p> <p>Section 1.2 BAT conclusions for the coating of vehicles , BAT 24 , Tables 7 and 8 Section 1.3 BAT conclusions for the coating of other metal and plastic surfaces Tables 9, 10 & 11 Section 1.4 - BAT conclusions for the coating of ships and yachts BAT 25 & Table 12 Section 1.5- BAT conclusions for the coating of aircraft BAT 26 & Table 13 Section 1.6 BAT conclusions for coil coating and Tables 14 &15 Section 1.7 BAT conclusions for the manufacturing of adhesive tapes Tables 16 &17 Section 1.8 BAT conclusions for the coating of textiles, foils and paper Tables 18&19 Section 1.9 BAT conclusions for the manufacturing of winding wire (BAT 27) Tables 20 & 21 Section 1.10 BAT conclusions for the coating and printing of metal packaging Tables 22, 23 & 24 Section 1.11 BAT conclusions for heatset web offset printing (BAT 28) tables 25, 26 &27 Section 1.13 BAT conclusions for publication rotogravure printing (BAT 29) and Tables 31 & 32 Section 1.14 BAT conclusions for the coating of wooden surfaces including Tables 33, 34 & 35 BATc 30-53 FOR PRESERVATION OF WOOD AND WOOD PRODUCTS WITH CHEMICALS BAT 12: Emissions to water</p>

BAT C	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			BAT 18: Dust emissions BAT 20: Water use and water generation BAT 21: Emissions to water Section 1.12 BAT Table 28
	BAT Conclusions where we accept the Operator's responses that they are currently compliant and no further explanation is required.	CC	BAT Conclusions for: BAT 2: Overall environmental performance BAT 3: Selection of raw materials BAT 4: Reduction in solvent consumption, VOC emission and overall environmental impact of raw materials used. BAT 5: Storage and handling of raw materials BAT 6: Distribution of raw materials BAT 7: Coating Application BAT 8: Drying and curing BAT 9: Cleaning (b, c, g, i) BAT 10: Monitoring – Solvent Mass Balance BAT 11: Emissions in waste gases BAT 13: Emissions during Other than normal operating conditions (OTNOC0 BAT14: VOC emissions in waste gases BAT 15: VOC emission reduction in waste gases BAT 16: Reduction of energy consumption of the VOC abatement system BAT 17: Reduction of Nitrogen Dioxide and Carbon Monoxide emissions

BAT C	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			BAT 19: Energy efficiency (a, b, c, f) BAT 22: Waste Management BAT 23: Odour emissions
	BAT Conclusions where we consider improvement conditions are required.	NC	<p>BAT 1: Environmental Management System. The Operator has confirmed that an EMS has been developed in draft and is subject to final approval by senior management, which is due in January 2025 so that it can be fully implemented. Improvement Condition IP1 is therefore included to ensure this is implemented.</p> <p>BAT 9f: Enclosed parts washing machine. The Operator is to install an enclosed parts washer. This has CAPEX approval and is due to be installed in 2025. Improvement Condition IP2 is therefore included to ensure this is implemented within the specified timescale.</p> <p>BAT19e: There is opportunity for the Operator to install a heat recovery system to the RTO to recover the energy to pre-heat the oil used in the printing presses reducing reliance on the kerosene heater. The Operator has installed a heat by-pass system to the RTO that has been designed to allow the installation of a heat recovery system in future. Due to the layout of the site and distance of the RTO to the oil system, this requires further investigation into the feasibility in the first instance and allocation of funding accordingly. Therefore, this is subject to improvement condition IP3, which is a staged condition, i.e. the Operator is required to complete certain actions by specified dates.</p>
	BAT Conclusions where we consider improvement conditions are not required.	NC	Section 1.12 BAT Tables 29, 30 in relation emission limits for fugitive emissions of VOC and emissions of VOC in waste gases respectively.

BAT C	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/ CC / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>Latest monitoring and calculations indicated that the installation would not be compliant with the new fugitive emission limit and VOC emissions in waste gases emission limits at that time.</p> <p>With regards to fugitives, it is believed that this is associated with uncertainty within the calculation. The Operator is taking steps to reduce the uncertainty for the next submission of the solvent mass balance, including:</p> <p>Emissions monitoring under different operating conditions to assess the emissions from different coating services provided and to evaluate this against production over the year, Improved solvent tracking to ensure inputs and outputs are fully accounted for. Updating the solvent mass balance calculation to minimise uncertainty.</p> <p>In terms of waste gases, the RTO has recently been modified to include a hot air by-pass and the performance is currently being re-assessed with emissions monitoring due December 2024.</p> <p>The waste gases and fugitive emission limits are included as permit conditions and where these are not met, the Operator is committed to achieving compliance. There are adequate conditions within the permit to require the Operator to rectify any exceedance and enforcement powers within the EP Regs should these be deemed necessary.</p> <p>The Operator has undertaken air emissions risk assessment for both normal operating conditions and OTNOC's. These will also be updated following emissions monitoring planned for December 2024.</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
1	<p>In order to improve the overall environmental performance, BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:</p> <ul style="list-style-type: none"> i) commitment, leadership, and accountability of the management, including senior management, for the implementation of an effective EMS;" ii) an analysis that includes the determination of the organisation's context, the identification of the needs and expectations of interested parties, the identification of characteristics of the installation that are associated with possible risks for the environment (or human health) as well as of the applicable legal requirements relating to the environment; iii) development of an environmental policy that includes the continuous improvement of the environmental performance of the installation; iv) establishing objectives and performance indicators in relation to significant environmental aspects, including safeguarding compliance with applicable legal requirements; v) planning and implementing the necessary procedures and actions (including corrective and preventive actions where needed), to achieve the environmental objectives and avoid environmental risks; vi) determination of structures, roles and responsibilities in relation to environmental aspects and objectives and provision of the financial and human resources needed; vii) ensuring the necessary competence and awareness of staff whose work may affect the environmental performance of the installation (e.g. by providing information and training); viii) internal and external communication; ix) fostering employee involvement in good environmental management practices; 	NC	<p>An EMS is in place in draft format, which the Operator has confirmed is compliant with the requirements listed in BAT 1, including:</p> <ul style="list-style-type: none"> a maintenance programme to reduce the frequency and environmental consequences of OTNOC (see BAT 13); an energy efficiency plan (see BAT 19 (a)); a waste management plan (see BAT 22 (a)); an odour management plan (see BAT 23). <p>This is now currently being implemented on site (procedures/training), with the implementation required to be fully complete by 31-03-2025 and included as an improvement condition, IP1.</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	<p>x) Establishing and maintaining a management manual and written procedures to control activities with significant environmental impact as well as relevant records;</p> <p>xi) effective operational planning and process control;</p> <p>xii) implementation of appropriate maintenance programmes;</p> <p>xiii) emergency preparedness and response protocols, including the prevention and/or mitigation of the adverse (environmental) impacts of emergency situations;</p> <p>xiv) when (re)designing a (new) installation or a part thereof, consideration of its environmental impacts throughout its life, which includes construction, maintenance, operation and decommissioning;</p> <p>xv) implementation of a monitoring and measurement programme, if necessary, information can be found in the Reference Report on Monitoring of Emissions to Air and Water from IED Installations;</p> <p>xvi) application of sectoral benchmarking on a regular basis;</p> <p>xvii) periodic independent (as far as practicable) internal auditing and periodic independent external auditing in order to assess the environmental performance and to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;</p> <p>xviii) evaluation of causes of nonconformities, implementation of corrective actions in response to nonconformities, review of the effectiveness of corrective actions, and determination of whether similar nonconformities exist or could potentially occur;</p> <p>xix) periodic review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;</p> <p>xx) following and taking into account the development of cleaner techniques.</p>		

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	<p>Specifically for surface treatment using organic solvents, BAT is also to incorporate the following features in the EMS:</p> <ul style="list-style-type: none"> (i) Interaction with quality control and assurance as well as health and safety considerations. (ii) Planning to reduce the environmental footprint of an installation. In particular, this involves the following: <ul style="list-style-type: none"> (a) assessing the overall environmental performance of the plant (see BAT 2); (b) taking into account cross-media considerations, especially the maintenance of a proper balance between solvent emissions reduction and consumption of energy (see BAT 19), water (see BAT 20) and raw materials (see BAT 6); (c) reducing VOC emissions from cleaning processes (see BAT 9). (iii) The inclusion of: <ul style="list-style-type: none"> (a) a plan for the prevention and control of leaks and spillages (see BAT 5 (a)); (b) a raw material evaluation system to use raw materials with low environmental impact and a plan to optimise the use of solvents in the process (see BAT 3); (c) a solvent mass balance (see BAT 10); (d) a maintenance programme to reduce the frequency and environmental consequences of OTNOC (see BAT 13); (e) an energy efficiency plan (see BAT 19 (a)); (f) a water management plan (see BAT 20 (a)); (g) a waste management plan (see BAT 22 (a)); (h) an odour management plan (see BAT 23). 		

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc				
2	<p>BAT 2. In order to improve the overall environmental performance of the plant, in particular concerning VOC emissions and energy consumption, BAT is to:</p> <ul style="list-style-type: none"> — identify the process areas/sections/steps that represent the greatest contribution to the VOC emissions and energy consumption and the greatest potential for improvement (see also BAT 1); — identify and implement actions to minimise VOC emissions and energy consumption; — regularly (at least once every year) update the situation and follow up the implementation of the identified actions. 	CC	Included as condition.				
3	<p>BAT 3. In order to prevent or reduce the environmental impact of the raw materials used, BAT is to use BOTH of the techniques given below.</p> <table border="1" data-bbox="324 865 1415 1385"> <thead> <tr> <th data-bbox="324 865 981 922">Technique</th> <th data-bbox="981 865 1415 922">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="324 922 981 1385"> <p>(a) Use of raw materials with a low environmental impact As part of the EMS (see BAT 1), systematic evaluation of the adverse environmental impacts of the materials used (in particular substances that are carcinogenic, mutagenic and toxic to reproduction as well as substances of very high concern) and substitution by others with no or lower environmental and health impacts where possible, taking into consideration the product quality requirements or specifications.</p> </td> <td data-bbox="981 922 1415 1385"> <p>Generally applicable. The scope (e.g. level of detail) and nature of the evaluation will generally be related to the nature, scale and complexity of the plant and the range of environmental impacts it may have, as well as to the type and quantity of materials used.</p> </td> </tr> </tbody> </table>	Technique	Applicability	<p>(a) Use of raw materials with a low environmental impact As part of the EMS (see BAT 1), systematic evaluation of the adverse environmental impacts of the materials used (in particular substances that are carcinogenic, mutagenic and toxic to reproduction as well as substances of very high concern) and substitution by others with no or lower environmental and health impacts where possible, taking into consideration the product quality requirements or specifications.</p>	<p>Generally applicable. The scope (e.g. level of detail) and nature of the evaluation will generally be related to the nature, scale and complexity of the plant and the range of environmental impacts it may have, as well as to the type and quantity of materials used.</p>	CC	<p>The Operator has confirmed techniques:</p> <p>(a) assessed as part of sites Aspects & Impacts to be included in the EMS. These include using thinner gauge materials, using materials with recycled content and manufacturing structures specifically designed for recycling.</p>
Technique	Applicability						
<p>(a) Use of raw materials with a low environmental impact As part of the EMS (see BAT 1), systematic evaluation of the adverse environmental impacts of the materials used (in particular substances that are carcinogenic, mutagenic and toxic to reproduction as well as substances of very high concern) and substitution by others with no or lower environmental and health impacts where possible, taking into consideration the product quality requirements or specifications.</p>	<p>Generally applicable. The scope (e.g. level of detail) and nature of the evaluation will generally be related to the nature, scale and complexity of the plant and the range of environmental impacts it may have, as well as to the type and quantity of materials used.</p>						

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.		Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	<p>(b) Optimisation of the use of solvents in the process Optimisation of the use of solvents in the process by a management plan (as part of the EMS (see BAT 1)) that aims to identify and implement necessary actions (e.g. colour batching, optimising spray pulverisation).</p>	Generally applicable.		(b) Ink batching, ink returns for recycling and solvent reclaim system in-house.
4	<p>In order to reduce solvent consumption, VOC emissions and the overall environmental impact of the raw materials used, BAT is to use one or a combination of the techniques given below.</p> <ul style="list-style-type: none"> (a) Use of high-solids solvent-based paints/coatings/ varnishes/inks/ adhesives (b) Use of water-based paints/coatings/inks/ varnishes/adhesives (c) Use of radiation-cured inks/coatings/paints/ varnishes/adhesives (d) Use of solvent-free two-component adhesives (e) Use of hot-melt adhesives (f) Use of powder coatings (g) Use of laminate film for web or coil coatings (h) Use of substances which are not VOCs or are VOCs of a lower volatility 		CC	<p>The Operator has confirmed techniques:</p> <ul style="list-style-type: none"> (b) Site uses three types of water based coldseal coatings on its CL750 coating machine and can also be run on the CL850 as alternative machine. (d) Solventless two component system in use on the CL850 laminator and can also be used on the CL750 as an alternative machine. (h) Drum cleaner cloths used on both print presses (MIRA 1 & MIRA 2) to remove low level ink residues at changeover / clean down

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
5	<p>In order to prevent or reduce fugitive emissions during storage and handling of solvent-containing materials and/or hazardous materials, BAT is to apply the principles of good housekeeping by using ALL of the techniques given below.</p> <p>Management techniques</p> <p>(a) Preparation and implementation of a plan for the prevention and control of leaks and spillages</p> <p>A plan for the prevention and control of leaks and spillages is part of the EMS (see BAT 1) and includes, but is not limited to:</p> <ul style="list-style-type: none"> • site incident plans for small and large spillages; • identification of the roles and responsibilities of persons involved; • ensuring staff are environmentally aware and trained to prevent/deal with spillage incidents; • identification of areas at risk of spillage and/or leaks of hazardous materials and ranking them according to the risk; • in identified areas, ensuring suitable containment systems are in place, e.g. impervious floors; • identification of suitable spillage containment and clean-up equipment and regularly ensuring it is available, in good working order and close to points where these incidents may occur; • waste management guidelines for dealing with waste arising from spillage control; • regular (at least once per year) inspections of storage and operational areas, testing and calibration of leak detection equipment and prompt repair of leaks from valves, glands, flanges, etc. (see BAT 13). 	CC	<p>The Operator has confirmed techniques:</p> <p>(a) A plan for the prevention and control of leaks and spillages has been implemented as part of the site EMS. Site Plan detailing all identified bunded / bulk storage areas and spill kits has been developed along with defined Spill Procedure.</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	<p>Storage Techniques:</p> <p>(b) Sealing or covering of containers and bunded storage area - Storage of solvents, hazardous materials, waste solvents and waste cleaning materials in sealed or covered containers, suitable for the associated risk and designed to minimise emissions. The containers' storage area is bunded and of adequate capacity.</p> <p>(c) Minimisation of storage of hazardous materials in production areas - Hazardous materials are present in production areas only in amounts that are necessary for production; larger quantities are stored separately.</p> <p>Techniques to prevent leaks and spillages</p> <p>(d) Leaks and spillages are prevented by using pumps and seals suitable for the material handled and which ensure proper tightness. This includes equipment such as canned motor pumps, magnetically coupled pumps, pumps with multiple mechanical seals and a quench or during pumping, buffer system, pumps with multiple mechanical seals and seals dry to atmosphere, diaphragm pumps or bellow pumps.</p> <p>Techniques for pumping and handling liquids</p> <p>(e) Techniques to prevent overflows during pumping This includes ensuring for example that:</p> <ul style="list-style-type: none"> • the pumping operation is supervised; • for larger quantities, bulk storage tanks are fitted with acoustic and/or optical high-level alarms, with shut-off systems if necessary. <p>(f) Capture of VOC vapour during solvent containing material delivery - When delivering solvent-containing materials in bulk (e.g. loading or unloading of tanks), the vapour displaced from receiving tanks is captured, usually by back-venting.</p>		<p>(b) Site has installed appropriate sealed / bunded storage areas to meet the needs of the site. These are located in the sites Aganto area for storage of large sealed containers, bunded trolleys for transporting of covered ink pails within the site from ink room to press. They are also included on a site plan along with spill kit locations and these are routinely checked in line with EMS.</p> <p>(c) Site works to systems of minimal hazardous materials in production areas. This has been briefed out to the relevant departments where the hazardous materials are used and routinely audited to assure ongoing compliance</p> <p>(d) Pumping systems on presses and laminators are fitted with diaphragm pump system, proven</p>

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	<p>(g) Containment for spills and/or rapid take-up when handling solvent containing materials - When handling solvent-containing materials in containers, possible spills are avoided by providing containment, e.g. by using trolleys, pallets and/or stillages with built-in containment (e.g. 'catch pans') and/or rapid take-up by using absorbent materials.</p>		<p>to be more robust and reliable for handling our sites solvents and liquid types, they are pneumatically operated for safety i.e. atex rated. Eliminates the risks of leakage (in or out) versus peristaltic or centrifugal pumps.</p> <p>(e) Site systems include use of deadman handles for solvent dispensing at both print presses, high level alarms / sensors on adhesive trolley on our lamination machines and overspill / drain back system on our coldseal trolleys for coating machines</p> <p>(f) Solvent tank is pressure valve vented back into the delivery tanker.</p> <p>(g) Transported in trolleys / absorbent spill kits available. Drums on dolleys (not banded) but no surface waste drains in areas where dolleys are used.</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc												
6	<p>In order to reduce raw material consumption and VOC emissions, BAT is to use one or a combination of the techniques given below.</p> <table border="1" data-bbox="318 523 1415 1407"> <thead> <tr> <th data-bbox="318 523 609 561">Technique</th> <th data-bbox="609 523 1115 561">Description</th> <th data-bbox="1115 523 1415 561">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="318 561 609 928">(a) Centralised supply of VOC-containing materials (e.g. inks, coatings, adhesives, cleaning agents)</td> <td data-bbox="609 561 1115 928">Supply of VOC-containing materials (e.g. inks, coatings, adhesives, cleaning agents) to the application area by direct piping with ring lines, including system cleaning such as pig cleaning or air flushing. May not be applicable in the case of frequent changes of inks/paints/coatings/adhesives or solvents.</td> <td data-bbox="1115 561 1415 928">May not be applicable in the case of frequent changes of inks/paints/coatings/adhesives or solvents.</td> </tr> <tr> <td data-bbox="318 928 609 1040">(b) Advanced mixing systems.</td> <td data-bbox="609 928 1115 1040">Computer-controlled mixing equipment to achieve the desired paint/coating/ink/adhesive</td> <td data-bbox="1115 928 1415 1040">Generally Applicable</td> </tr> <tr> <td data-bbox="318 1040 609 1407">(c) Supply of VOC-containing materials (e.g. inks, coatings, adhesives, cleaning agents) at the point of</td> <td data-bbox="609 1040 1115 1407">In the case of frequent changes of inks/paints/ coatings/adhesives and solvents or for small-scale usage, supply of inks/paints/coatings/adhesives and solvents from small transport containers placed near the application area using a closed system.</td> <td data-bbox="1115 1040 1415 1407">Generally Applicable</td> </tr> </tbody> </table>	Technique	Description	Applicability	(a) Centralised supply of VOC-containing materials (e.g. inks, coatings, adhesives, cleaning agents)	Supply of VOC-containing materials (e.g. inks, coatings, adhesives, cleaning agents) to the application area by direct piping with ring lines, including system cleaning such as pig cleaning or air flushing. May not be applicable in the case of frequent changes of inks/paints/coatings/adhesives or solvents.	May not be applicable in the case of frequent changes of inks/paints/coatings/adhesives or solvents.	(b) Advanced mixing systems.	Computer-controlled mixing equipment to achieve the desired paint/coating/ink/adhesive	Generally Applicable	(c) Supply of VOC-containing materials (e.g. inks, coatings, adhesives, cleaning agents) at the point of	In the case of frequent changes of inks/paints/ coatings/adhesives and solvents or for small-scale usage, supply of inks/paints/coatings/adhesives and solvents from small transport containers placed near the application area using a closed system.	Generally Applicable	CC	<p>The Operator has confirmed techniques:</p> <p>(a) Solvent pumped direct to presses. Bulk pumping system for white inks / varnishes has been newly installed.</p> <p>(b) Rexon Ink dispenser accurately blends and dispenses inks and allows for advance bulk preparation of inks for use. Unit is also used to reblend press return inks into new blends thus reducing ink waste.</p>
Technique	Description	Applicability													
(a) Centralised supply of VOC-containing materials (e.g. inks, coatings, adhesives, cleaning agents)	Supply of VOC-containing materials (e.g. inks, coatings, adhesives, cleaning agents) to the application area by direct piping with ring lines, including system cleaning such as pig cleaning or air flushing. May not be applicable in the case of frequent changes of inks/paints/coatings/adhesives or solvents.	May not be applicable in the case of frequent changes of inks/paints/coatings/adhesives or solvents.													
(b) Advanced mixing systems.	Computer-controlled mixing equipment to achieve the desired paint/coating/ink/adhesive	Generally Applicable													
(c) Supply of VOC-containing materials (e.g. inks, coatings, adhesives, cleaning agents) at the point of	In the case of frequent changes of inks/paints/ coatings/adhesives and solvents or for small-scale usage, supply of inks/paints/coatings/adhesives and solvents from small transport containers placed near the application area using a closed system.	Generally Applicable													

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.			Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	application using a closed system				(d) Presses have line purging with solvent capture into holding tank on the press (fitted with high level sensor system) and then decanted into drums which are then passed through to the site distiller. New inks then dispensed through cleaned units. (e) Production planning campaign where possible same colour jobs
(d)	Automation of colour change	Automated colour changing and ink/paint/coating line purging with solvent capture	Generally Applicable		
(e)	Colour grouping	Modification of the sequence of products to achieve large sequences with the same colour.	Generally Applicable		
(f)	Soft purge in spraying	Refilling the spray gun with new paint without intermediate rinsing.	Generally Applicable		
7	BAT 7. In order to reduce raw material consumption and the overall environmental impact of the coating application processes , BAT is to use one or a combination of the techniques given below.			CC	The Operator has confirmed techniques: (a) Lamination use roller application for adhesive (b) Print presses use doctor blade / roller application
Technique	Description	Applicability			
Techniques for non-spraying application					
(a)	Roller coating	Application where rollers are used to transfer or meter the liquid coating onto a moving strip.	Only applicable to flat substrates (1)		
(b)	Doctor blade over roller	The coating is applied to the substrate through a gap between a blade and a roller. As the coating and substrate pass, the excess is scraped off.	Generally applicable (1)		

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc															
8	<p>Drying/curing - BAT 8. In order to reduce energy consumption and the overall environmental impact from drying/curing processes, BAT is to use one or a combination of the techniques given below.</p> <table border="1" data-bbox="322 539 1422 1391"> <thead> <tr> <th data-bbox="322 539 618 576">Technique</th> <th data-bbox="624 539 1070 576">Description</th> <th data-bbox="1077 539 1422 576">Applicability</th> </tr> </thead> <tbody> <tr> <td data-bbox="322 580 618 762">(a) Inert gas convection drying/curing</td> <td data-bbox="624 580 1070 762">The inert gas (nitrogen) is heated in the oven, enabling solvent loading above the LEL. Solvent loads of > 1 200 g/m³ nitrogen are possible.</td> <td data-bbox="1077 580 1422 762">Not applicable where dryers need to be opened regularly (1).</td> </tr> <tr> <td data-bbox="322 767 618 986">(b) Induction drying/curing</td> <td data-bbox="624 767 1070 986">Online thermal curing or drying by electromagnetic inductors that generate heat inside the metallic work-piece by an oscillating magnetic field.</td> <td data-bbox="1077 767 1422 986">Only applicable to metal substrates (1).</td> </tr> <tr> <td data-bbox="322 991 618 1134">(c) Microwave and high-frequency drying</td> <td data-bbox="624 991 1070 1134">Drying using microwave or high-frequency radiation.</td> <td data-bbox="1077 991 1422 1134">Only applicable to water- based coatings and inks and non-metallic substrates</td> </tr> <tr> <td data-bbox="322 1139 618 1391">(d) Radiation curing</td> <td data-bbox="624 1139 1070 1391">Radiation curing is applied based on resins and reactive diluents (monomers) which react on exposure to radiation (infrared (IR), ultraviolet (UV)), or high-energy electron beams (EB).</td> <td data-bbox="1077 1139 1422 1391">Only applicable to specific coatings and inks (1)</td> </tr> </tbody> </table>	Technique	Description	Applicability	(a) Inert gas convection drying/curing	The inert gas (nitrogen) is heated in the oven, enabling solvent loading above the LEL. Solvent loads of > 1 200 g/m ³ nitrogen are possible.	Not applicable where dryers need to be opened regularly (1).	(b) Induction drying/curing	Online thermal curing or drying by electromagnetic inductors that generate heat inside the metallic work-piece by an oscillating magnetic field.	Only applicable to metal substrates (1).	(c) Microwave and high-frequency drying	Drying using microwave or high-frequency radiation.	Only applicable to water- based coatings and inks and non-metallic substrates	(d) Radiation curing	Radiation curing is applied based on resins and reactive diluents (monomers) which react on exposure to radiation (infrared (IR), ultraviolet (UV)), or high-energy electron beams (EB).	Only applicable to specific coatings and inks (1)	CC	<p>The Operator has confirmed techniques:</p> <p>(f) Print presses currently recirculate air during drying process</p>
Technique	Description	Applicability																
(a) Inert gas convection drying/curing	The inert gas (nitrogen) is heated in the oven, enabling solvent loading above the LEL. Solvent loads of > 1 200 g/m ³ nitrogen are possible.	Not applicable where dryers need to be opened regularly (1).																
(b) Induction drying/curing	Online thermal curing or drying by electromagnetic inductors that generate heat inside the metallic work-piece by an oscillating magnetic field.	Only applicable to metal substrates (1).																
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(d) Radiation curing	Radiation curing is applied based on resins and reactive diluents (monomers) which react on exposure to radiation (infrared (IR), ultraviolet (UV)), or high-energy electron beams (EB).	Only applicable to specific coatings and inks (1)																

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	(e) Combined convection/IR radiation drying	Drying of a wet surface with a combination of circulating hot air (convection) and an infrared radiator.	Generally applicable (1).		
	(f) Convection drying/curing combined with heat recovery	Heat from off-gases is recovered (see BAT 19 (e)) and used to preheat the input air of the convection dryer/curing oven.	Generally applicable (1).		
	(1) The selection of the drying/curing techniques may be restricted by the substrate type and shape, product quality requirements and the need to ensure that the materials used, coating application techniques, drying/curing techniques and off-gas treatment systems are mutually compatible.				
9	Cleaning processes - BAT 9. In order to reduce VOC emissions from cleaning processes, BAT is to minimise the use of solvent-based cleaning agents and to use a combination of the techniques given below.			CC / NC	The Operator has confirmed techniques:
Technique	Description	Applicability	(a) Protection of spraying areas and equipment		

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.		Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	(b) Solids removal prior to complete cleaning	Solids are removed in a (dry) concentrated form, usually by hand, with or without the aid of small amounts of cleaning solvent. This reduces the amount of material to be removed by solvent and/or water in subsequent cleaning stages, and therefore the amount of solvent and/or water used.		(b) Presses purge residue inks back into the ink dispense units (for reuse) prior to solvent purge within the presses. In lamination, plastic sheeting is applied to surfaces to prevent soiling and reducing cleaning requirements.
	(c) Manual cleaning with pre-impregnated wipes	Wipes pre-impregnated with cleaning agents are used for manual cleaning. Cleaning agents may be solvent-based, low-volatility solvents or solvent-free.		(c) Site uses cloths applied with pump dispenser solvent for manually cleaning
	(d) Use of low-volatility cleaning agents	Application of low-volatility solvents as cleaning agents, for manual or automated cleaning, with high cleaning power.		
	(e) Water-based cleaning	Water-based detergents or water-miscible solvents such as alcohols or glycols are used for cleaning.		

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.		Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	(f) Enclosed washing machines	Automatic batch cleaning/degreasing of press/machine parts in enclosed washing machines. This can be done using either: (a) organic solvents (with air extraction followed by VOC abatement and/or recovery of the used solvents) (see BAT 15); or (b) VOC-free solvents; or (c) alkaline cleaners (with external or internal waste water treatment).	NC	(f) Soak tank currently in use, waste solvent contents controlled and disposed of through approved hazardous waste contractor. [Regulator comment: This is being replaced by an enclosed washing machine and subject to improvement condition IP2.] (g) Presses fitted with solvent flushing system which goes to site reclaim distiller for recovery / reuse. (I) Ultrasonic Annilox cleaner in use
(g) Purging with solvent recovery	Collection, storage and, if possible, reuse of the solvents used to purge the guns/applicators and lines between colour changes.			
(h) Cleaning with high-pressure water spray	High-pressure water spray and sodium bicarbonate systems or similar are used for automatic batch cleaning of press/machine parts.			
(i) Ultrasonic cleaning	Cleaning in a liquid using high-frequency vibrations to loosen the adhered contamination.			

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.		Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	(j) Dry ice (CO ₂) cleaning	Cleaning of machinery parts and metallic or plastic substrates by blasting with CO ₂ chips or snow.		
	(k) Plastic shot-blast cleaning	Excess paint build-up is removed from panel jigs and body carriers by shot-blasting with plastic particles.		
	(1) The selection of the drying/curing techniques may be restricted by the substrate type and shape, product quality requirements and the need to ensure that the materials used, coating application techniques, drying/curing techniques and off-gas treatment systems are mutually compatible.			
10	BAT is to monitor total and fugitive VOC emissions by compiling, at least once every year , a solvent mass balance of the solvent inputs and outputs of the plant, as defined in Part 7(2) of Annex VII to Directive 2010/75/EU and to minimise the uncertainty of the solvent mass balance data by using all of the techniques given below.		CC	BAT 10 is included in the permit as a condition.
	Technique	Description		
	(a) Full identification and quantification of the relevant solvent inputs and outputs, including the associated uncertainty	This includes: — identification and documentation of solvent inputs and outputs (e.g. emissions in waste gases, emissions from each fugitive emission source, solvent output in waste); — substantiated quantification of each relevant solvent input and output and recording of the		

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.		Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
		<p>methodology used (e.g. measurement, calculation using emission factors, estimation based on operational parameters);</p> <ul style="list-style-type: none"> — identification of the main sources of uncertainty of the aforementioned quantification, and implementation of corrective actions to reduce the uncertainty; — regular update of solvent input and output data. 		
	(b) Implementation of a solvent tracking system	A solvent tracking system aims to keep control of both the used and unused quantities of solvents (e.g. by weighing unused quantities returned to storage from the application area).		
	(c) Monitoring of changes that may influence the uncertainty of the solvent mass balance data.	<p>Any change that could influence the uncertainty of the solvent mass balance data is recorded, such as:</p> <ul style="list-style-type: none"> — malfunctions of the off-gas treatment system: the date and duration are recorded; — changes that may influence air/gas flow rates, e.g. replacement of fans, drive pulleys, motors; the date and type of change are recorded. 		
	<p>Applicability The level of detail of the solvent mass balance will be proportionate to the nature, scale and complexity of the installation, and the range of environmental impacts it may have, as well as to the type and quantity of materials used.</p>			

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.				Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc	
11	BAT is to monitor emissions in waste gases with at least the frequency given below and in accordance with EN standards.				CC	Included as a condition Sampling of TVOC <10kg C/h and therefore once every year. Additional sampling of NOx and CO once every year.	
Substance/ Parameter	Sectors/Sources		Standard(s)	Minimum monitoring frequency			Monitoring associated with
TVOC	All sectors	Any stack with a TVOC load < 10 kg C/h	EN 12619	Once every year ⁽¹⁾⁽²⁾⁽³⁾			BAT 14, BAT 15
		Any stack with a TVOC load ≥ 10 kg C/h	Generic EN standards ⁽⁴⁾	Continuous			
NOX	Thermal treatment of off-gases		EN 14792	Once every year ⁽⁷⁾			BAT 17
CO	Thermal treatment of off-gases		EN 15058	Once every year ⁽⁷⁾	BAT 17		

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	<p>(1) To the extent possible, the measurements are carried out at the highest expected emission state under normal operating conditions.</p> <p>(2) In the case of a TVOC load < 0.1 kg C/h, or in the case of an unabated and stable TVOC load of < 0.3 kg C/h, the monitoring frequency may be reduced to once every 3 years or the monitoring may be replaced by calculation provided that it ensures the provision of data of an equivalent scientific quality.</p> <p>(3) For the thermal treatment of off-gases, the temperature in the combustion chamber is continuously measured. This is combined with an alarm system for temperatures falling outside the optimised temperature window.</p> <p>(4) Generic EN standards for continuous measurements are EN15267-1, EN15267-2, EN15267-3 & EN14181.</p> <p>(5) The monitoring only applies if DMF is used in the processes.</p> <p>(6) In the absence of an EN standard, the measurement includes the DMF contained in the condensed phase.</p> <p>(7) In the case of a stack with a TVOC load of < 0.1 kg C/h, the monitoring frequency may be reduced to once every three years.</p>		
13	<p>In order to reduce the frequency of the occurrence of OTNOC and to reduce emissions during OTNOC, BAT is to use both of the techniques given below.</p> <p>(a) Identification of critical equipment - Equipment critical to the protection of the environment ('critical equipment') is identified on the basis of a risk assessment. In principle, this concerns all equipment and systems handling VOCs (e.g. off-gas treatment system, leak detection system).</p> <p>(b) Inspection, maintenance and monitoring - A structured programme to maximise critical equipment availability and performance which includes</p>	CC	<p>The Operator has confirmed techniques:</p> <p>(a) RTO, LEL monitors on presses, laminator, coldseal machines. Full list included within EMS.</p> <p>(b) All monitors are serviced / calibrated 6 monthly. RTO is annually serviced by external</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	standard operating procedures, preventive maintenance, regular and unplanned maintenance. OTNOC periods, duration, causes and, if possible, emissions during their occurrence are monitored.		contractor and records are kept. Monthly visual inspections are carried out on the RTO by sites maintenance team. Only authorised and trained staff are permitted to operate the RTO. The RTO is continuously digitally monitored for operation. Any periods of non-operation or alarm activation of the RTO are logged. The print presses are subject to weekly planned maintenance with supporting records kept.
14	<p>BAT 14. In order to reduce VOC emissions from the production and storage areas, BAT is to use technique (a) and an appropriate combination of the other techniques given below.</p> <p>(a) System selection, design and optimisation An off-gas system is selected, designed and optimised taking into account parameters such as:</p> <ul style="list-style-type: none"> • -amount of extracted air; • -type and concentration of solvents in extracted air; • -type of treatment system (dedicated/ centralised); • -health and safety; • -energy efficiency. <p>The following order of priority for the system selection may be considered:</p> <ul style="list-style-type: none"> • segregation of off-gases with high and low VOC concentrations; 	CC	<p>(a) RTO selected based on site requirements as detailed in document reference B2.3 submitted as part of an application to vary an environmental permit.</p> <p>The VOC abatement technique utilising an RTO, is fitted with a hot air by-pass designed so that a heat recovery system can be included and is subject to improvement condition IP3 – see BAT 19(e).</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	<ul style="list-style-type: none"> • techniques to homogenise and increase the VOC concentration (see BAT 16 (b) and (c)); • techniques for the recovery of solvents in off- gases (see BAT 15); • VOC abatement techniques with heat recovery (see BAT 15); • VOC abatement techniques without heat recovery (see BAT 15) System selection, design and optimisation <p>Generally applicable.</p> <p>(b) Air extraction as close as possible to the point of application of VOC- containing materials Air extraction as close as possible to the point of application with full or partial enclosure of solvent application areas (e.g. coaters, application machines, spray booths). Extracted air may be treated by an off-gas treatment system. May not be applicable where enclosure leads to difficult machinery access during operation. Applicability may be restricted by the shape and size of the area to be enclosed.</p> <p>(c) Air extraction as close as possible to the point of preparing paints/coatings/adhesives/inks Air extraction as close as possible to the point of preparing paints/coatings/adhesives/inks (e.g. mixing area). Extracted air may be treated by an off-gas treatment system. Only applicable where paints/coatings/ adhesives/inks are prepared.</p> <p>(d) Extraction of air from the drying/curing processes The curing ovens/dryers are equipped with an air extraction system. Extracted air may be treated by an off-gas treatment system. Only applicable to drying/curing processes.</p>		<p>The Operator has confirmed techniques:</p> <p>(b) Print presses have sealed pressurised air flow system so minimises fugitive emissions.</p> <p>(c) Air extraction fitted within the ink dispensing room</p> <p>(d) Press ovens extract to RTO</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	<p>(e) Minimisation of fugitive emissions and heat losses from the ovens/dryers either by sealing the entrance and the exit of the curing ovens/dryers or by applying sub- atmospheric pressure in drying The entrance to and the exit from curing ovens/ dryers are sealed to minimise fugitive VOC emissions and heat losses. The sealing may be ensured by air jets or air knives, doors, plastic or metallic curtains, doctor blades, etc. Alternatively, ovens/dryers are kept under sub-atmospheric pressure. Only applicable when curing ovens/dryers are used.</p> <p>(f) Extraction of air from the cooling zone When substrate cooling takes place after drying/ curing, the air from the cooling zone is extracted and may be treated by an off-gas treatment system. Only applicable when substrate cooling takes place after drying/curing.</p> <p>(g) Extraction of air from storage of raw materials, solvents and solvent- containing wastes Air from raw material stores and/or individual containers for raw materials, solvents and solvent- containing wastes is extracted and may be treated by an off-gas treatment system. May not be applicable for closed containers or for storage of raw materials, solvents and solvent- containing wastes with a low vapour pressure and low toxicity.</p> <p>(h) Extraction of air from cleaning areas Air from the areas where machine parts and equipment are cleaned with organic solvents, either by hand or automatically, is extracted and may be treated by an off-gas treatment system. Only applicable to areas where machine parts and equipment are cleaned with organic solvents.</p>		<p>(e) Print presses have sealed pressurised air flow system so minimises fugitive emissions.</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc												
15	<p>Reducing VOC emissions in waste gases and increase resource efficiency, by using one or a combination of the techniques given below.</p> <table border="1" data-bbox="322 501 1420 1380"> <thead> <tr> <th data-bbox="322 501 595 555">Technique</th> <th data-bbox="602 501 1173 555">Description</th> <th data-bbox="1180 501 1420 555">Applicability</th> </tr> </thead> <tbody> <tr> <td colspan="3" data-bbox="322 560 1420 608">I. Capture and recovery of solvents in off-gases</td> </tr> <tr> <td data-bbox="322 612 595 995">(a) Condensation</td> <td data-bbox="602 612 1173 995">A technique for removing organic compounds by reducing the temperature below their dew points so that the vapours liquefy. Depending on the operating temperature range required, different refrigerants are used, e.g. cooling water, chilled water (temperature typically around 5 °C), ammonia or propane.</td> <td data-bbox="1180 612 1420 995">Applicability may be restricted where the energy demand for recovery is excessive due to the low VOC content.</td> </tr> <tr> <td data-bbox="322 1000 595 1380">(b) Adsorption using activated carbon or zeolites</td> <td data-bbox="602 1000 1173 1380">VOCs are adsorbed on the surface of activated carbon, zeolites or carbon fibre paper. Adsorbate is subsequently desorbed, e.g. with steam (often on site), for reuse or disposal and the adsorbent is reused. For continuous operation, typically more than two adsorbers are operated in parallel, one of them in desorption mode. Adsorption is also commonly applied</td> <td data-bbox="1180 1000 1420 1380">Applicability may be restricted where the energy demand for recovery is excessive due to the low VOC content.</td> </tr> </tbody> </table>	Technique	Description	Applicability	I. Capture and recovery of solvents in off-gases			(a) Condensation	A technique for removing organic compounds by reducing the temperature below their dew points so that the vapours liquefy. Depending on the operating temperature range required, different refrigerants are used, e.g. cooling water, chilled water (temperature typically around 5 °C), ammonia or propane.	Applicability may be restricted where the energy demand for recovery is excessive due to the low VOC content.	(b) Adsorption using activated carbon or zeolites	VOCs are adsorbed on the surface of activated carbon, zeolites or carbon fibre paper. Adsorbate is subsequently desorbed, e.g. with steam (often on site), for reuse or disposal and the adsorbent is reused. For continuous operation, typically more than two adsorbers are operated in parallel, one of them in desorption mode. Adsorption is also commonly applied	Applicability may be restricted where the energy demand for recovery is excessive due to the low VOC content.	CC	<p>The Operator has confirmed techniques:</p> <p>(f) Site has Regenerative Thermal Oxidiser (RTO) installed</p>
Technique	Description	Applicability													
I. Capture and recovery of solvents in off-gases															
(a) Condensation	A technique for removing organic compounds by reducing the temperature below their dew points so that the vapours liquefy. Depending on the operating temperature range required, different refrigerants are used, e.g. cooling water, chilled water (temperature typically around 5 °C), ammonia or propane.	Applicability may be restricted where the energy demand for recovery is excessive due to the low VOC content.													
(b) Adsorption using activated carbon or zeolites	VOCs are adsorbed on the surface of activated carbon, zeolites or carbon fibre paper. Adsorbate is subsequently desorbed, e.g. with steam (often on site), for reuse or disposal and the adsorbent is reused. For continuous operation, typically more than two adsorbers are operated in parallel, one of them in desorption mode. Adsorption is also commonly applied	Applicability may be restricted where the energy demand for recovery is excessive due to the low VOC content.													

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		as a concentration step to increase the subsequent oxidation efficiency.			
	(c) Absorption using a suitable liquid	Use of a suitable liquid to remove pollutants from the off-gas by absorption, in particular soluble compounds and solids (dust). Solvent recovery is possible, for example, using distillation or thermal desorption. (For dust removal, see BAT 18.).	Generally applicable		
	II. Thermal treatment of solvents in off-gases with energy recovery				
	(d) Sending off-gases to a combustion plant	Part or all of the off-gases are sent as combustion air and supplementary fuel to a combustion plant (including CHP (combined heat and power) plants) used for steam and/or electricity production. Not applicable for off- gases containing substances referred to in IED Article 59(5).	Applicability may be restricted due to safety considerations.		
	(e) Recuperative thermal oxidation	Thermal oxidation using the heat of the waste gases, e.g. to preheat the incoming off-gases.	Generally applicable		
	(f) Regenerative thermal oxidation with multiple beds or with a	An oxidiser with multiple beds (three or five) filled with ceramic packing. The beds are heat exchangers, alternately heated by flue-waste gases from oxidation, then the flow is	Generally applicable		

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.			Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	valve less rotating air distributor	reversed to heat the inlet air to the oxidiser. The flow is reversed on a regular basis. In the valveless rotating air distributor, the ceramic medium is held in a single rotating vessel divided into multiple wedges.			
	(g) Catalytic oxidation	Oxidation of VOCs assisted by a catalyst to reduce the oxidation temperature and reduce the fuel consumption. Exhaust heat can be recovered with recuperative or regenerative types of heat exchangers. Higher oxidation temperatures (500–750 °C) are used for the treatment of off-gas from the manufacturing of winding wire.	Applicability may be restricted by the presence of catalyst poisons.		
	III. Treatment of solvents in off-gases without solvent or energy				
	(h) Biological off-gas treatment	Off-gas is dedusted and sent to a reactor with biofilter substrate. The biofilter consists of a bed of organic material (such as peat, heather, compost, root, tree bark, softwood and different combinations) or some inert material (such as clay, activated carbon, and polyurethane), where the off-gas stream is biologically oxidised by naturally occurring microorganisms	Only applicable to the treatment of biodegradable solvents.		

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.			Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
		into carbon dioxide, water, inorganic salts and biomass. The biofilter is sensitive to dust, high temperatures or high variations in the off-gas, e.g. of the inlet temperature or the VOC concentration. Supplementary nutrient feeding may be needed.			
	(i) Thermal oxidation	Oxidation of VOCs by heating off-gases with air or oxygen to above their auto-ignition point in a combustion chamber and maintaining a high temperature long enough to complete the combustion of VOCs to carbon dioxide and water.	Generally Applicable		
	BAT-associated emission levels (BAT-AELs) are given in Tables 11, 15, 17, 19, 21, 24, 27, 30, 32 and 35 of these BAT conclusions.				
16	Reducing energy consumption of the VOC abatement system , BAT is to use one or a combination of the techniques given below. <ul style="list-style-type: none"> (a) Maintaining the VOC concentration sent to the off-gas treatment system by using variable-frequency drive fans (b) Internal concentration of solvents in the off-gases (c) External concentration of solvents in the off-gases through adsorption (d) Plenum technique to reduce waste gas volume 			CC	The Operator has confirmed techniques: <ul style="list-style-type: none"> (a) RTO is fitted with a variable frequency drive fan to modulate the airflow to match the exhaust from the presses as they are in operation (or idle). (b) Off gases are cycled to increase concentration

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.			Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
17	To reduce NOX emissions in waste gases while limiting CO emissions from the thermal treatment of solvents in off-gases, BAT is to use technique (a) or both of the techniques given below.			CC	<p>(a) RTO selected based on site requirements as detailed in document reference B2.3 submitted as part of an application to vary an environmental permit.</p> <p>RTO is fitted with a continuous temperature alarm and logger to ensure temperature remains in the optimum zone for VOC destruction and has an auto-shutdown function if the temperature is outside of this zone.</p> <p>(b) burner low NOx emissions. NOx and CO emission limits set as conditions in the environmental permit.</p>
Technique	Description	Applicability			
(a) Optimisation of thermal treatment conditions (design and operation)	Good design of the combustion chambers, burners and associated equipment/devices is combined with optimisation of combustion conditions (e.g. by controlling combustion parameters such as temperature and residence time) with or without the use of automatic systems and the regular planned maintenance of the combustion system according to suppliers' recommendations.	Design applicability may be restricted for existing plants.			

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.			Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc											
	(b) Use of low-NOX burners	The peak flame temperature in the combustion chamber is reduced, delaying but completing the combustion and increasing the heat transfer (increased emissivity of the flame). It is combined with increased residence time in order to achieve the desired VOC destruction. s.	Applicability may be restricted at existing plants by design and/or operational constraint													
<p>Table 1</p> <p>BAT-associated emission level (BAT-AEL) for NO_x emissions in waste gases and indicative emission level for CO emissions in waste gases from the thermal treatment of off-gases</p> <table border="1" data-bbox="367 954 1384 1198"> <thead> <tr> <th>Parameter</th> <th>Unit</th> <th>BAT-AEL ⁽¹⁾ (Daily average or average over the sampling period)</th> <th>Indicative emission level ⁽²⁾ (Daily average or average over the sampling period)</th> </tr> </thead> <tbody> <tr> <td>NO_x</td> <td rowspan="2">mg/Nm³</td> <td>20–130 ⁽²⁾</td> <td>No indicative level</td> </tr> <tr> <td>CO</td> <td>No BAT-AEL</td> <td>20–150</td> </tr> </tbody> </table> <p>⁽¹⁾ The BAT-AEL and indicative level do not apply where off-gases are sent to a combustion plant. ⁽²⁾ The BAT-AEL may not apply if nitrogen-containing compounds (e.g. DMF or NMP (N-methylpyrrolidone)) are present in the off-gas.</p> <p>The associated monitoring is given in BAT 11</p>						Parameter	Unit	BAT-AEL ⁽¹⁾ (Daily average or average over the sampling period)	Indicative emission level ⁽²⁾ (Daily average or average over the sampling period)	NO _x	mg/Nm ³	20–130 ⁽²⁾	No indicative level	CO	No BAT-AEL	20–150
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NO _x	mg/Nm ³	20–130 ⁽²⁾	No indicative level													
CO		No BAT-AEL	20–150													

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19	<p>In order to use energy efficiently, BAT is to use techniques (a) and (b) and an appropriate combination of the techniques (c) to (h) given below.</p> <p>(a) Energy efficiency plan Descriptor An energy efficiency plan is part of the EMS (see BAT 1) and entails defining and calculating the specific energy consumption of the activity, setting key performance indicators on an annual basis (e.g. MWh/tonne of product) and planning the periodic improvement targets and related actions. The plan is adapted to the specificities of the plant in terms of process(es) carried out, materials, products, etc.</p> <p>(b) Energy balance record The drawing up once every year of an energy balance record which provides a breakdown of the energy consumption and generation (including energy export) by the type of source (e.g. electricity, fossil fuels, renewable energy, imported heat and/or cooling).</p> <p>This includes:</p> <ul style="list-style-type: none"> (i) defining the energy boundary of the STS activity; (ii) information on energy consumption in terms of delivered energy; (iii) information on energy exported from the plant; (iv) energy flow information (e.g. Sankey diagrams or energy balances) showing how the energy is used throughout the process. <p>The energy balance record is adapted to the specificities of the plant in terms of process(es) carried out, materials, etc.</p> <p>Applicability: The level of detail and nature of the energy efficiency plan and of the energy balance record will generally be related to the nature, scale and complexity of the installation and the types of energy sources used. It may not be applicable if the STS activity is carried out within a larger installation, provided that the energy efficiency plan and the energy balance record of the larger installation sufficiently cover the STS activity.</p>	CC / NC	<p>The Operator has confirmed techniques:</p> <p>(a) Energy efficiency plan drafted from site assessment and added into EMS.</p> <p>(b) The site has an energy balance system ENABLON which reports and monitors monthly energy usage</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	<p>Process related Techniques</p> <p>(c) Thermal insulation of tanks and vats containing cooled or heated liquids, and of combustion and steam systems This may be achieved for example by:</p> <ul style="list-style-type: none"> - using double-skinned tanks; - using pre-insulated tanks; - applying insulation to combustion equipment, steam pipes and pipes containing cooled or heated liquids. Generally applicable <p>(d) Heat recovery by cogeneration – CHP (combined heat and power) or CCHP (combined cooling, heat and power) Description: Recovery of heat (mainly from the steam system) for producing hot water/steam to be used in industrial processes/activities. CCHP (also called tri- generation) is a cogeneration system with an absorption chiller that uses low-grade heat to produce chilled water.</p> <p>(e) Heat recovery from hot gas streams - Energy recovery from hot gas streams (e.g. from dryers or cooling zones), e.g. by their recirculation as process air, through the use of heat exchangers, in processes, or externally. Applicability of (d) & (e) may be restricted by the plant layout, the characteristics of the hot gas streams (e.g. flow rate, temperature) or the lack of a suitable heat demand.</p> <p>(f) Flow adjustment of process air and off-gases - Adjustment of the flow of process air and off-gases according to the need. This includes reduction of air ventilation during idle operation or maintenance. Generally applicable.</p> <p>(g) Spray booth off-gas recirculation -Capture and recirculation of the off-gas from the spray booth in combination with efficient paint overspray</p>	<p>NC</p>	<p>(c) Domestic hot water tanks are thermally insulated, Chiller unit is pre-insulated and all water pipes feeding chilled water to lamination machines are insulated. Thermal oil boiler is insulated as are the feed pipes to the coldseal machine and print presses</p> <p>(e) New hot air air bypass system now fitted to RTO Heat reclaim system to be requested for CAPEX 2026</p> <p>[Regulator comment: Subject to improvement condition IP3]</p> <p>(f) Hot air feed in print presses adjusts when press stops i.e. heater stops / extraction</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc												
	<p>separation. Energy consumption is less than in the case of fresh air use. Applicability may be restricted by health and safety considerations.</p> <p>(h) Optimised circulation of warm air in a large- volume curing booth using an air turbulator -Air is blown into a single part of the curing booth and distributed using an air turbulator which turns the laminar airflow into the desired turbulent flow. Only applicable to spray coating sectors</p>		continues. Also applies to coldseal machine drying ovens.												
	<table border="1" data-bbox="324 643 1413 1043"> <thead> <tr> <th colspan="3" data-bbox="324 643 1413 730">Table 3 BAT-associated environmental performance levels (BAT-AEPLs) for specific energy consumption</th> </tr> <tr> <th data-bbox="324 730 622 826">Sector</th> <th data-bbox="622 730 992 826">Product Type</th> <th data-bbox="992 730 1413 826">BAT-AEPL (Yearly average)</th> </tr> </thead> <tbody> <tr> <td data-bbox="324 826 622 986">Flexography and non- publication rotogravure printing</td> <td data-bbox="622 826 992 986">All product types</td> <td data-bbox="992 826 1413 986">50–350 Wh/m² of printed area</td> </tr> <tr> <td colspan="3" data-bbox="324 986 1413 1043">The associated monitoring is given in BAT 19 (b).</td> </tr> </tbody> </table>	Table 3 BAT-associated environmental performance levels (BAT-AEPLs) for specific energy consumption			Sector	Product Type	BAT-AEPL (Yearly average)	Flexography and non- publication rotogravure printing	All product types	50–350 Wh/m ² of printed area	The associated monitoring is given in BAT 19 (b).				<p>The environmental permit requires the annual reporting of this parameter.</p> <p>We are satisfied that the Installation is currently compliant with BAT associated environmental performance level for energy consumption.</p> <p>This is included as a permit condition.</p>
Table 3 BAT-associated environmental performance levels (BAT-AEPLs) for specific energy consumption															
Sector	Product Type	BAT-AEPL (Yearly average)													
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BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.		Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc											
22	BAT 22. In order to reduce the quantity of waste sent for disposal, BAT is to use the techniques (a) and (b) and one or both of the techniques (c) and (d) given below.		CC	<p>The Operator has confirmed techniques:</p> <p>(a) Site has identified all its relevant waste streams at site and identified and implemented systems to optimise waste recovery through licensed waste disposal contractors with opportunities for future improvements in line with waste hierarchy protocols. These have been added to site Waste Management Action Plan in site EMS.</p> <p>(b) All waste streams are measured / monitored and recorded</p> <p>(c) On site solvent distiller system in operation</p>											
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:15%;"></th> <th style="width:20%;">Technique</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="315 588 416 820">(a)</td> <td data-bbox="423 588 730 820">Waste management plan</td> <td data-bbox="736 588 1429 820">A waste management plan is part of the EMS (see BAT 1) and is a set of measures aiming to: 1) minimise the generation of waste, 2) optimise the reuse, regeneration and/or recycling of waste and/or the recovery of energy from waste, and 3) ensure the proper disposal of waste.</td> </tr> <tr> <td data-bbox="315 825 416 1007">(b)</td> <td data-bbox="423 825 730 1007">Monitoring of waste quantities</td> <td data-bbox="736 825 1429 1007">Annual recording of waste quantities generated for each type of waste. The solvent content in the waste is determined periodically (at least once every year) by analysis or calculation.</td> </tr> <tr> <td data-bbox="315 1011 416 1259">(c)</td> <td data-bbox="423 1011 730 1259">Recovery/recycling of sol- vents</td> <td data-bbox="736 1011 1429 1259"> Techniques may include: <ul style="list-style-type: none"> – recovering/recycling solvents from liquid waste by filtration or distillation on site or off site; – recovering/recycling the solvent content of wipes by gravitational draining, wringing or centrifugation. </td> </tr> </tbody> </table>					Technique	Description	(a)	Waste management plan	A waste management plan is part of the EMS (see BAT 1) and is a set of measures aiming to: 1) minimise the generation of waste, 2) optimise the reuse, regeneration and/or recycling of waste and/or the recovery of energy from waste, and 3) ensure the proper disposal of waste.	(b)	Monitoring of waste quantities	Annual recording of waste quantities generated for each type of waste. The solvent content in the waste is determined periodically (at least once every year) by analysis or calculation.	(c)	Recovery/recycling of sol- vents	Techniques may include: <ul style="list-style-type: none"> – recovering/recycling solvents from liquid waste by filtration or distillation on site or off site; – recovering/recycling the solvent content of wipes by gravitational draining, wringing or centrifugation.
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	(d)	Waste-stream-specific techniques	Techniques may include: <ul style="list-style-type: none"> – reducing the water content of the waste, e.g. by using a filter press for the sludge treatment; – reducing the sludge and waste solvent generated, e.g. by reducing the number of cleaning cycles (see BAT 9); – using reusable containers, reusing the containers for other purposes, or recycling the container material; – sending the spent limestone generated from dry scrubbing to a lime or cement kiln. 	(d) Containers are either recycled or reused this includes ink pails, IBC's
23	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements: <ul style="list-style-type: none"> • a protocol containing actions and timelines; • a protocol for response to identified odour incidents, e.g. complaints; • an odour prevention and reduction programme designed to identify the source(s), to characterise the contributions of the source(s), and to implement prevention and/or reduction measures. Applicability The applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.		CC	The Operator has confirmed techniques: Site has a system for monitoring external areas for odour emissions that may impact / affect local areas. Assessments are logged as part of site Odour Management Plan incorporated within site EMS

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1.12 BAT conclusions for flexography and non-publication rotogravure printing																								
1.12	The emission levels for flexography and non-publication rotogravure printing given below are associated with the general BAT conclusions given in Section 1.1.																							
	<p>As an alternative to the BAT-AEL in Table 28, the BAT-AELs in both Table 29 and Table 30 may be used.</p> <table border="1" data-bbox="324 675 1413 1038"> <thead> <tr> <th colspan="3" data-bbox="324 675 1413 802">Table 29 BAT-associated emission level (BAT-AEL) for fugitive emissions of VOCs from flexography and non- publication rotogravure printing</th> </tr> <tr> <th data-bbox="324 802 813 858">Parameter</th> <th data-bbox="813 802 1133 858">Unit</th> <th data-bbox="1133 802 1413 858">BAT-AEL</th> </tr> </thead> <tbody> <tr> <td data-bbox="324 858 813 986">Fugitive VOC emissions as calculated by the solvent mass balance</td> <td data-bbox="813 858 1133 986">Percentage (%) of the solvent input</td> <td data-bbox="1133 858 1413 986">< 1–12 (Yearly average)</td> </tr> <tr> <td colspan="3" data-bbox="324 986 1413 1038">The associated monitoring is given in BAT 10</td> </tr> </tbody> </table> <table border="1" data-bbox="324 1098 1413 1417"> <thead> <tr> <th colspan="3" data-bbox="324 1098 1413 1225">Table 30 BAT-associated emission level (BAT-AEL) for VOC emissions in waste gases from flexography and non- publication rotogravure printing</th> </tr> <tr> <th data-bbox="324 1225 533 1361">Parameter</th> <th data-bbox="533 1225 723 1361">Unit</th> <th data-bbox="723 1225 1413 1361">BAT-AEL (Daily average or average over the sampling period)</th> </tr> </thead> <tbody> <tr> <td data-bbox="324 1361 533 1417">TVOC</td> <td data-bbox="533 1361 723 1417">mg C/Nm³</td> <td data-bbox="723 1361 1413 1417">1–20 ⁽¹⁾⁽²⁾</td> </tr> </tbody> </table>	Table 29 BAT-associated emission level (BAT-AEL) for fugitive emissions of VOCs from flexography and non- publication rotogravure printing			Parameter	Unit	BAT-AEL	Fugitive VOC emissions as calculated by the solvent mass balance	Percentage (%) of the solvent input	< 1–12 (Yearly average)	The associated monitoring is given in BAT 10			Table 30 BAT-associated emission level (BAT-AEL) for VOC emissions in waste gases from flexography and non- publication rotogravure printing			Parameter	Unit	BAT-AEL (Daily average or average over the sampling period)	TVOC	mg C/Nm ³	1–20 ⁽¹⁾ ⁽²⁾	NC	<p>Latest monitoring and calculations indicate that the installation would not be compliant with the new fugitive emission limit and VOC emissions in waste gases emission limits.</p> <p>With regards to fugitives, it is believed that this is associated with uncertainty within the solvent mass balance calculation. Odour monitoring is routinely undertaken by the Operator and no notable fugitive odours have been noted outside the process buildings. The Operator is taking steps to reduce the uncertainty for the next calculation period, including:</p> <p>Emissions monitoring under different operating conditions to assess the emissions from different coating services provided</p>
Table 29 BAT-associated emission level (BAT-AEL) for fugitive emissions of VOCs from flexography and non- publication rotogravure printing																								
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BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
	<p>(1) The upper end of the BAT-AEL range is 50 mg C/Nm³ if techniques are used which allow the reuse/recycling of the recovered solvent.</p> <p>(2) For plants using BAT 16 (c) in combination with an off-gas treatment technique, an additional BAT-AEL of less than 50 mg C/Nm³ applies to the waste gas of the concentrator.</p> <p>The associated monitoring is given in BAT 11.</p>		<p>and to evaluate this against production over the year, Improved solvent tracking to ensure inputs and outputs are fully accounted for.</p> <p>Updating the solvent mass balance calculation to minimise uncertainty.</p> <p>In terms of waste gases, the RTO has recently been modified (November 2024) to include a hot air by-pass and the performance is currently being re-assessed with emissions monitoring due December 2024.</p> <p>The waste gases and fugitive emission limits are included as permit conditions and where these are not met, the Operator is committed to achieving compliance. There are adequate conditions within the permit to require the Operator to rectify any exceedance and enforcement</p>

BATC no	Summary of BAT Conclusion requirement for Surface Treatment using Solvents.	Status NA/CC/ FC/ NC	Assessment proposed by the operator to demonstrate compliance with the BATc
			<p>powers within the EP Regs should these be deemed necessary.</p> <p>The Operator has undertaken air emissions risk assessments for both normal operating conditions and OTNOC's. These will also be updated following emissions monitoring planned for December 2024.</p>

Key Issues

Where relevant and appropriate, we have incorporated the techniques described by the Operator submitted as part of the application for variation (submitted 02-02-2024) and responses to requests for further information as specific operating techniques required by the permit, through their inclusion in Table 3.1 of the amended environmental permit.

The following BAT requirements are recorded as not likely to be compliant, or not demonstrated as compliant by 08-12-2024, however, provisions are in place to ensure that BAT requirements are met.

BAT 1, BAT 9e and BAT 19f are subject to improvement conditions as specified in Schedule 4.

BAT Tables 29 and 30 The Operator is taking steps to demonstrate compliance as detailed in Schedule 3. There are already permit conditions for the Operator to take actions to ensure emission limits are complied with should monitoring show exceedance of the limits, therefore no improvement conditions are included.

Schedule 4: Improvement conditions

Improvement conditions		
Reason for improvement conditions:	Based on the information in the Operator's submissions, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These improvement conditions are set out below and justifications for them is provided at the relevant section of the decision document.	
Improvement condition reference	Condition	Justification
IP1	<p>All aspects of the Environmental Management System required under condition 2.1.1 shall be fully implemented by the specified date unless otherwise agreed in writing by the Regulator.</p> <p>[to be fully implemented by 31/03/2025]</p>	To comply with BAT
IP2	<p>The Operator shall implement a fully enclosed flexo-parts washer. The system proposed shall be submitted to the Regulator for approval before it can be used and shall be implemented by the date specified in this table unless otherwise agreed in writing by the Regulator.</p> <p>[to be implemented by 09/12/2025]</p>	To comply with BAT
IP3	<p>The Operator shall review the feasibility of an energy recovery from hot gas streams system.</p> <p>The outcome of the review shall be submitted to the Regulator for approval.</p> <p>Where a scheme is deemed feasible, as agreed in writing by the Regulator, a project plan shall be prepared, identifying key stages of the project and implementation dates and be submitted to the Regulator for approval.</p> <p>The feasibility study shall be submitted to the Regulator for approval by: [30/06/2025]</p> <p>Where required, the project schedule shall be submitted to the Regulator by: [30/09/2025]</p> <p>The 'approved scheme' shall then be implemented within the agreed timeframes unless otherwise agreed in writing by the Regulator.</p>	To comply with BAT

Glossary

APC	Air Pollution Control
BAT	Best Available Technique(s)
BAT-AEEL	BAT Associated Energy Efficiency Level
BAT-AEL	BAT Associated Emission Level
BATc	BAT conclusion
BREF	Best available techniques reference document
CEM	Continuous emissions monitor
DLN	Dry Low NO _x burners
ELV	Emission limit value derived under BAT or an emission limit value set out in IED
EMS	Environmental Management System
EPR / EP Regs	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154)
IC	Improvement Condition
IED	Industrial Emissions Directive (2010/75/EU)
IPPCD	Integrated Pollution Prevention and Control Directive (2008/1/EC) – now superseded by IED
NO _x	Oxides of nitrogen (NO plus NO ₂ expressed as NO ₂)
RTO	Regenerative Thermal Oxidiser
SGN	Sector guidance note
TGN	Technical guidance note