

# **ALLEGATO 2**

## **APPLICAZIONE DELLE BAT**

### **SCHEDA D**

(prot. 530020 del 05/09/2019)


**SCHEDA<< D>>: VALUTAZIONE INTEGRATA AMBIENTALE<sup>1</sup>**
**GENERAL BAT FOR THE WHOLE FMD SECTOR – IPPC 6.4 B**

N.	5.1- General BAT for the whole FDM sector	Misure adottate	Applicazione Bref o BAT conclusion *	Note
1	<p><b>1</b> - Ensure, e.g. by training, that employees are aware of the environmental aspects of the company's operations and their personal responsibilities.</p>	<p>Si esegue formazione del personale sulla gestione degli aspetti ambientali presenti nel sito ponendo l'attenzione sul controllo dei processi, la riduzione degli sprechi, la prevenzione e gestione delle emergenze.</p>	Applicata	
2	<p><b>2</b> - Design/select equipment, which optimises consumption and emission levels and facilitates correct operation and maintenance, e.g. to optimise the pipework system for the capacity to minimize product losses and install pipes at a gradient to promote self-draining.</p>	<p>La scelta degli impianti e delle attrezzature è definita e attuata in modo da garantire la migliore prestazione ambientale, minimizzando le perdite e ottimizzando i consumi.</p>	Applicata	
3	<p><b>3</b> - Control noise emissions at source by designing, selecting, operating and maintaining equipment, including vehicles to avoid or reduce exposure and, where further reductions in noise levels are required, enclosing noisy equipment.</p>	<p>Oltre alle compartimentazioni già esistenti, in fase di sostituzione di macchinari e impianti in particolare la scelta si orienterà sempre, come si è già orientata nel passato, su quelle attrezzature che la tecnica avrà man mano reso meno rumorose. L'incremento dei livelli di rumorosità è evitato dal piano di manutenzione preventiva attuato.</p>	Applicata	
4	<p><b>4</b> - Operate regular maintenance programmes.</p>	<p>Si adotta la manutenzione pianificata i cui gli intervalli sono stabiliti in base all'analisi dei guasti, malfunzionamenti e indicazioni delle case costruttrici. È in uso un software per la gestione programmata della manutenzione (M.I.P. - Maintenance Industrial Plan), il cui scopo è quello di adeguare tali intervalli.</p>	Applicata	
5	<p><b>5</b> - Apply and maintain a methodology for preventing and minimising the consumption of water and energy and the production of waste incorporating:</p> <ul style="list-style-type: none"> <li>- obtaining management commitment, organization and planning;</li> <li>- analysis of production processes, including individual process steps to identify areas of high water and energy consumption and high waste emissions to identify opportunities to minimise these, taking into account the water quality requirements for each application, hygiene and food safety;</li> <li>- assessment of objectives, targets and system borders;</li> <li>- identification of options for minimising water and energy consumption, and waste production ,using a systematic approach, such as pinch technology;</li> </ul>	<p>L'impianto è certificato secondo la UNI EN ISO 14001/04 dal 2009. In accordo con la politica aziendale sono definiti obiettivi e traguardi per ridurre gli impatti ambientali. Sono definite, attuate e mantenute attive specifiche procedure che definiscono le modalità operative per una corretta gestione degli aspetti ambientali. Attraverso monitoraggi si garantisce la riduzione degli sprechi</p>	Applicata	

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	<ul style="list-style-type: none"> <li>- carrying out an evaluation and doing a feasibility study;</li> <li>- implementing a programme for minimizing the consumption of water and energy and waste production;</li> <li>- monitoring of water and energy consumption; waste production levels and the effectiveness of control measures .This can involve both measurement and visual inspection;</li> </ul>			
6	<p><b>6</b> - Implement a system for monitoring and reviewing consumption and emission levels for both individual production processes and at site level, to enable actual performance levels to be optimised. Examples of parameters to monitor include energy consumption; water consumption; wastewater volumes; emissions to air and water; solid waste generation; product and by-product yield; consumption of harmful substances and frequency and severity of unplanned releases and spillages. A good knowledge of the process inputs and outputs is required to identify priority areas and options for improving environmental performance. A good monitoring system will include records of operating conditions, sampling and analytical methods and will ensure that measuring equipment is calibrated. Further information is available in the "Reference Document on the General Principles of Monitoring" [96, EC, 2003].</p>	Sono monitorati e controllati tutti i processi produttivi, verificando e migliorando i livelli di performance.	Applicata	
7	<p><b>7</b> - Maintain an accurate inventory of inputs and outputs at all stages of the process from reception of raw materials to dispatch of products and end-of-pipe treatments.</p>	Sono inventariati in ogni fase del processo le materie prime, i semilavorati e i prodotti finiti.	Applicata	
8	<p><b>8</b> - Apply production planning to minimise associated waste production and cleaning frequencies.</p>	La pianificazione della produzione è tale da ridurre gli scarti e ottimizzare la frequenza dei cicli di pulizia	Applicata	
9	<p><b>9</b> - Transport solid FDM raw materials, products, co-products, by-products and waste dry, including avoiding fluming except where washing involving the re-use of water is carried out during fluming and where fluming is necessary to avoid damage to the material being transported.</p>	Ove possibile sono utilizzati trasporti senza l'uso di acqua.	Applicata	
10	<p><b>10</b> - Minimize storage times for perishable materials.</p>	La pianificazione integrata organizza piani di produzione e relativi piani di consegna delle materie prime. Sono effettuate verifiche real time tramite sistemi informativi (SAP).	Applicata	
11	<p><b>11</b>- Segregate outputs, to optimize use, re-use, recovery, recycling and disposal (and minimize wastewater contamination).</p>	Gli output di ogni processo sono raccolti in modo da consentire il riutilizzo e/o lo smaltimento, evitando ove possibile l'invio al depuratore.	Applicata	
12	<p><b>12</b> - Prevent materials from falling on the floor, e.g. by using accurately positioned splash protectors, screens, flaps, drip trays and troughs.</p>	Le linee produttive sono realizzare prevenendo eventuali perdite di materiali grazie all'adozione di protezioni.	Applicata	
13	<p><b>13</b> - Optimize the segregation of water</p>	Esiste una netta separazione tra	Applicata	

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	streams, to optimise re-use and treatment.	le acque di processo fresche e/o riutilizzate e le acque reflue.		
14	<b>14</b> - Collect water streams, such as condensate and cooling water separately to optimize reuse.	Tutte le acque di raffreddamento sono recuperate. Le acque delle pompe da vuoto sono recuperate parzialmente poiché in alcuni casi non sono qualitativamente idonee per il recupero.	Applicata	
15	<b>15</b> - Avoid using more energy than needed for heating and cooling processes, without harming the product.	Le fasi di trattamento termico sono gestite in modo da garantire anche l'efficienza energetica.	Applicata	
16	<b>16</b> - Apply good housekeeping.	È definito e attuato in programma di pulizia degli impianti e delle aree di lavorazione.	Applicata	
17	<b>17</b> - Minimise noise nuisance from vehicles.	Come da procedura i veicoli che accedono in stabilimento devono spegnere i motori durante la sosta e/o le operazioni di carico e scarico.	Applicata	
18	<b>18</b> - Apply storage and handling methods as concluded in the "Storage BREF" [95, EC, 2005]. Further controls may be required to provide and maintain the required hygiene and food safety standards.	Lo stoccaggio e la manipolazione è organizzato nel rispetto della sicurezza alimentare e nella tutela dell'ambiente.	Applicata	
19	<b>19</b> - Optimise the application and use of process controls to, e.g. prevent and minimise the consumption of water and energy and to minimise the generation of waste and in particular: <ul style="list-style-type: none"> <li>• where heat processes are applied and/or materials are stored or transferred at critical temperatures, or within critical temperature ranges, to control the temperature by dedicated measurement and correction</li> <li>• where materials are pumped or flow, to control flow and/or level, by dedicated measurement of pressure and/or dedicated measurement of flow and/or dedicated measurement of level end using control devices, such as valves</li> <li>• where liquids are stored or reacted in tanks or vessels, either during manufacturing or cleaning processes, use level-detecting sensors and level-measurement sensors</li> <li>• to use analytical measurement and control techniques to reduce waste of material and water and reduce waste water generation in processing and cleaning and in particular to: <ul style="list-style-type: none"> <li>- measure PH to control additions of acid or alkali and to monitor waste water streams to control mixing and neutralizing prior to further treatment or discharge</li> <li>- measure conductivity to monitor levels of dissolved salts prior to water re-use and detect levels of detergent prior to detergent re-use</li> <li>- where fluids may be cloudy or opaque due to the presence of</li> </ul> </li> </ul>	I processi produttivi sono ottimizzati in modo da ridurre il consumo di acqua, energia e produzione di rifiuti, attraverso il controllo di vari parametri quali pH, misuratori di pressione, indicatori di livello.	Applicata	

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	suspended matter, measure turbidity to monitor process water quality and to optimize both the recovery of material/product from water and the re-use of cleaning water.			
20	<b>20</b> - Use automated water start/stop controls to supply process water only when it is required.	Tramite l'utilizzo di valvole automatiche si controlla l'utilizzo di acqua nei processi.	Applicata	
21	<b>21</b> - Select raw materials and auxiliary materials which minimise the generation of solid waste and harmful emissions to air and water.	Gli standard di qualità richiesti ai fornitori garantiscono minor rifiuti e/o emissioni dannose.	Applicata	
22	<b>22</b> - Landspreading is an option for the outlet of materials from the FDM sector, subject to local legislation.	Applicata per i fanghi di depurazione.	Applicata	
<b>N.</b>	<b>5.1.1 Environmental management</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
23	<ul style="list-style-type: none"> <li>• Definition of an environmental policy for the installation by top management (commitment of the top management is regarded as a precondition for a successful application of other features of the EMS);</li> <li>• Planning and establishing the necessary procedures;</li> <li>• Implementation of the procedures, paying particular attention to: <ul style="list-style-type: none"> <li>- structure and responsibility</li> <li>- training, awareness and competence</li> <li>- communication</li> <li>- employee involvement</li> <li>- documentation</li> <li>- efficient process control</li> <li>- maintenance programmes</li> <li>- emergency preparedness and response</li> <li>- safeguarding compliance with environmental legislation</li> </ul> </li> <li>• Checking performance and taking corrective action <ul style="list-style-type: none"> <li>- monitoring and measurement</li> <li>- corrective and preventive action</li> <li>- maintenance of records</li> <li>- independent (where practicable) internal auditing to determine whether or not the environmental management system conforms to planned arrangements and has been properly implemented and maintained</li> </ul> </li> <li>• review by top management;</li> <li>• having the management system and audit procedure examined and validated by an accredited certification body or an external EMS verifier;</li> <li>• preparation and publication (and possibly external validation) of a regular environmental statement describing all the significant environmental aspects of the installation, allowing for year-by-year comparison against environmental objectives and targets as well as with sector benchmarks as appropriate;</li> <li>• Implementation and adherence to an internationally accepted voluntary system such as EMAS and EN ISO 14001:1996. This voluntary step could give higher</li> </ul>	L'installazione è certificata secondo la UNI EN ISO 14001/04 dal 2009.	Applicata	

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	<p>credibility to the EMS. In particular EMAS, which embodies all the above-mentioned features, gives higher credibility. However, non-standardised systems can in principle be equally effective provided that they are properly designed and implemented;</p> <ul style="list-style-type: none"> <li>• giving consideration to the environmental impact from the eventual decommissioning of the unit at the stage of designing a new plant;</li> <li>• giving consideration to the development of cleaner technologies;</li> <li>• where practicable, sectoral benchmarking on a regular basis, including energy efficiency and energy conservation activities, choice of input materials, emissions to air, discharges to water, consumption of water and generation of waste.</li> </ul>			
N.	5.1.2 Collaboration with upstream and downstream activities	Misure adottate	Applicazione Bref o BAT conclusion *	Note
24	<p>The operations of those involved in the supply of raw materials and other ingredients to FDM processing installations, including the farmers and the hauliers, can have environmental consequences in those FDM installations. The suppliers of raw, partly processed and processed materials to FDM installations can influence the environmental impact of those installations.</p> <p>Likewise, the FDM installation can affect the environmental impact of those downstream installations they supply, including other FDM installations. The environmental impact can be affected by the properties of those materials, e.g. the freshness, degree of separation of different materials and the specification. Collaboration with upstream and downstream activities.</p> <p>BAT is to seek collaboration with upstream and downstream partners, to create a chain of environmental responsibility, to minimise pollution and to protect the environment as a whole.</p>	<p>La pianificazione integrata organizza piani di consegna delle materie prime secondo i programmi di produzione e la deperibilità delle stesse. Dove possibile le materie prime sono fornite alla rinfusa o in contenitori riutilizzabili.</p>	Applicata	
N.	5.1.3 Equipment and installation cleaning	Misure adottate	Applicazione Bref o BAT conclusion *	Note
25	<p><b>1</b> - Remove raw material residues as soon as possible after processing and clean materials storage areas frequently .</p>	<p>Sono definiti, attuati e verificati specifici programmi di pulizia e sanificazione in tutte le aree dello stabilimento.</p>	Applicata	
26	<p><b>2</b> - Provide and use catch pots over floor drains and ensure they are inspected and cleaned frequently, to prevent entrainment of materials into waste water.</p>	<p>Gran parte delle caditoie è munita di griglie e di trappole per residui solidi di piccole dimensioni.</p>	Applicata	
27	<p><b>3</b> - Optimise the use of dry cleaning (including vacuum systems) of equipment and installations, including after spillages.</p>	<p>Applicata relativamente alla pulizia dei pavimenti con motoscope.</p>	Applicata	
28	<p><b>4</b> - Pre-soak floors and open equipment to loosen hardened or burnt-on dirt before wet cleaning.</p>	<p>È applicata per la pulizia dei reparti con motoscope.</p>	Applicata	
29	<p><b>5</b> - Manage and minimise the use of</p>	<p>Il programma di pulizia è stato</p>	Applicata	

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	water, energy and detergents used.	ottimizzato in modo da ridurre il consumo di acqua, energia e detergenti senza perdere di efficacia.		
30	<b>6</b> - Fit cleaning hoses used for manual cleaning with hand operated triggers.	La grande parte delle manichette è dotata di comandi a pistola.	Applicata	
31	<b>7</b> - Supply pressure-controlled water and do this via nozzles.	Le pulizie sono effettuate con idropulitrice a pressione.	Applicata	
32	<b>8</b> - Optimise the application of the re-use of warm open-circuit cooling water, e.g. for cleaning.	I possibili recuperi termici sono già utilizzati per alcune applicazioni. In altri casi le caratteristiche dell'acqua proveniente dai processi di raffreddamento non sono tali da consentirne un utilizzo.	Applicata	
33	<b>9</b> - Select and use cleaning and disinfection agents which cause minimum harm to the environment and provide effective hygiene control.	La scelta dei prodotti chimici è effettuata scegliendo prodotti di minor impatto ambientale ove possibile.	Applicata	
34	<b>10</b> - Operate a cleaning-in-place (CIP) of closed equipment and ensure that it is used in an optimal way by, e.g. measuring turbidity, conductivity or pH and automatically dosing chemicals at the correct concentrations.	Sono presenti impianti automatizzati nel dosaggio dei prodotti chimici per i CIP. Dove non presenti il dosaggio è effettuato controllando la conducibilità.	Applicata	
35	<b>11</b> - Use single-use systems for small or rarely used plants or where the cleaning solution becomes highly polluted, such as UHT plants, membrane separation plants, and the preliminary cleaning of evaporators and spray driers.		Non Applicabile	Non sono utilizzati sistemi monouso.
36	<b>12</b> - Where there are suitable variations in the pHs of the waste water streams from CIP and other sources, apply self-neutralisation of alkaline and acidic waste water streams in a neutralisation tank.	La ridotta quantità di refluo generato dai CIP non è tale da creare alterazione del pH al depuratore.	Applicata	
37	<b>13</b> - Minimise the use of EDTA, by only using it where it is required, with the frequency required and by minimising the quantity used, e.g. by recycling cleaning solutions.	Al momento è in uso un unico prodotto contenente EDTA, tutti gli altri ne sono privi. In caso di scelta di nuovi prodotti, ove possibile, sono adottati quelli senza EDTA.	Applicata	
38	<b>14</b> - Avoid the use of halogenated oxidising biocides, except where the alternatives are not effective.		Non Applicabile	Nel trattamento termico nella fase di raffreddamento sono necessari alogenati.
<b>N.</b>	<b>5.1.4 Additional BAT for some processes and unit operations applied in a number of FDM sectors</b> <b>5.1.4.1 Material reception / despatch</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
39	When vehicles are parked and during loading and unloading, switch off the vehicle engine and the refrigerator unit, if there is one and provide an alternative power supply.	In fase di ricevimento delle materie prime e in fase di carico prodotti finiti è fatto divieto di tenere accesi i motori degli automezzi. Inoltre il personale addetto allo scarico è addestrato e sensibilizzato circa la corretta gestione delle operazioni di scarico e movimentazione delle materie prime e dei prodotti.	Applicata	
<b>N.</b>	<b>5.1.4.2 Centrifugation / Separation</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
40	Operate centrifuges to minimise the	Esistono soluzioni impiantistiche	Applicata	

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	discharge of product in the waste stream	per la separazione spinta dei prodotti non idonei, ottimizzando lo scarto di prodotto.		
<b>N.</b>	<b>5.1.4.3 Smoking</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
41	Achieve a TOC air emission level of <50 mg/Nm3.	Le emissioni atmosferiche non contengono tali inquinanti.	Applicata	
<b>N.</b>	<b>5.1.4.4 Frying</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
42	Recirculate and burn exhaust gases.		Non Applicabile	Nel sito non sono effettuate frittture.
<b>N.</b>	<b>5.1.4.5 Preservation in cans, bottles and jars</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
43	<b>1</b> - Apply automated can, bottle and jar seasoning filling systems incorporating closed circuit recycling of spilled liquids.	In fase di riempimento eventuale materiale in eccesso è recuperate in un circuito chiuso.	Applicata	
44	<b>2</b> - Use can, bottle and jar cleaning tanks with floating oil recovery when preserving oil, foods canned in vegetable oils or oily foods.	Non è ritenuto necessario il lavaggio di contenitori da eventuali perdite in fase di riempimento.	Applicata	
<b>N.</b>	<b>5.1.4.6 Evaporation</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
45	Use multi-effect evaporators optimising vapour recompression related to heat and power availability in the installation, to concentrate liquids.	Applicata per la preparazione del liquido di governo per la polpa in scatola. Non applicabile per gli altri impianti.	Applicata	
<b>N.</b>	<b>5.1.4.7 Freezing and refrigeration</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
46	<b>1</b> - Prevent emissions of substances that deplete the ozone layer by, e.g. not using halogenated substances as refrigerants.		Non Applicabile	Non sono presenti processi di congelamento e surgelamento.
47	<b>2</b> - Avoid keeping air conditioned and refrigerated areas colder than necessary.		Non Applicabile	Non sono presenti processi di congelamento e surgelamento.
48	<b>3</b> - Optimise the condensation pressure.		Non Applicabile	Non sono presenti processi di congelamento e surgelamento.
49	<b>4</b> - Regularly defrost the entire system.		Non Applicabile	Non sono presenti processi di congelamento e surgelamento.
50	<b>5</b> - Keep the condensers clean.		Non Applicabile	Non sono presenti processi di congelamento e surgelamento.
51	<b>6</b> - Make sure that the air entering the condensers is as cold as possible.		Non Applicabile	Non sono presenti



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				processi di congelamento e surgelamento.
52	7 - Optimise the condensation temperature.		Non Applicabile	Non sono presenti processi di congelamento e surgelamento.
53	8 -Use automatic defrosting of cooling evaporators.		Non Applicabile	Non sono presenti processi di congelamento e surgelamento.
54	9 - Operate without automatic defrosting during short production stops.		Non Applicabile	Non sono presenti processi di congelamento e surgelamento.
55	10 - Minimise transmission and ventilation losses from cooled rooms and cold stores.		Non Applicabile	Non sono presenti processi di congelamento e surgelamento.
<b>N.</b>	<b>5.1.4.8 Cooling</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
56	1 - Optimise the operation of cooling water systems to avoid excessive blowdown of the cooling tower.	Sono presenti torri di raffreddamento a ciclo chiuso.	Applicata	
57	2 - Install a plate heat-exchanger for precooling ice-water with ammonia, prior to final cooling in an accumulating ice-water tank with a coil evaporator.		Non Applicabile	Non sono presenti impianti ad ammoniacca.
58	3 - Recover heat from cooling equipment. Water temperatures of 50 – 60 °C can be achieved.		Non Applicata	Non è possibile recuperare calore dai circuiti delle torri di raffreddamento viste le bassi temperature. Sono comunque presenti altri recuperi di calore.
<b>N.</b>	<b>5.1.4.9 Packing</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
59	1 - Optimise the design of packaging, including the weight and volume of material and the recycled content, to reduce the quantity used and to minimise waste.	In fase di progettazione degli imballaggi si mira alla identificazione di un packaging che garantisca ottime prestazioni, attenzione al soddisfacimento delle richieste del cliente senza trascurare la cura del rispetto dell'ambiente.	Applicata	
60	2 - Purchase materials in bulk.	Dove possibile le materie prime sono consegnate in cisterne o contenitori riutilizzabili.	Applicata	
61	3 - Collect packaging material separately.	I materiali sono raccolti in modo	Applicata	

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		differenziato per garantire un efficiente recupero.		
62	4 - Minimise overflowing during packing.	Sono presenti in ogni linea controlli del peso.	Applicata	
<b>N.</b>	<b>5.1.4.10 Energy generation and use</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
63	1 - For installations where there is a use for the heat and power produced, e.g. in sugar manufacturing, milk powder production, whey drying, instant coffee production, brewing and distilling, use combined heat and power generation in new or substantially altered installations or those renewing their energy systems.	È presente un impianto di cogenerazione.	Applicata	
64	2 - Use heat pumps for heat recovery from various sources.		Non Applicabile	Non sono presenti pompe di calore
65	3 - Switch equipment off when it is not needed.	Tramite la definizione di piani di produzione e attività di monitoraggio si garantisce lo spegnimento degli impianti non utilizzati.	Applicata	
66	4 - Minimise the loads on motors.	La scelta dei motori tiene sempre conto del carico.	Applicata	
67	5 - Minimise motor losses.	I motori di vecchia generazione sono sostituiti con motori ad alta efficienza IE3.	Applicata	
68	6 - Use variable speed drives to reduce the load on fans and pumps.	Una discreta percentuale dei motori presenti è dotata di inverter e/o softstart. In caso di sostituzione si ha cura di installare preferibilmente solo motori ad alta efficienza.	Applicata	
69	7 - Apply thermal insulation, e.g. of pipes, vessels and equipment used to carry, store or treat substances above or below ambient temperature and to equipment used for processes involving heating and cooling.	Le tubazioni del vapore sono coibentate, le temperature dei processi di raffreddamento sono tali da non richiedere la coibentazione.	Applicata	
70	8 - Apply frequency controllers on motors.	Il programma di Manutenzione prevede controlli all'ammontare di ore di funzionamento.	Applicata	
<b>N.</b>	<b>5.1.4.11 Water use</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
71	Only pump up the quantities of water that are actually required.	È presente un indicatore di livello nel serbatoio che aziona gli inverter delle pompe di emungimento.	Applicata	
<b>N.</b>	<b>5.1.4.12 Compressed air systems</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
72	1 - Review the pressure level and reduce it if possible.	I compressori sono dimensionati in funzione delle utenze. In prossimità di alcune utenze sono presenti dei regolatori di pressione.	Applicata	
73	2 - Optimise the air inlet temperature.	I compressori aspirano aria dall'ambiente esterno.	Applicata	
74	3 - Fit silencers at air inlets and exhausts, to reduce noise levels.	I compressori sono posizionati in locali dedicati e chiusi che consentono di abbattere i livelli di rumorosità.	Applicata	

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N.	5.1.4.13 Steam systems	Misure adottate	Applicazione Bref o BAT conclusion *	Note
75	1 - Maximise condensate return.	Le condense sono recuperate e inviate al degasatore e quindi riutilizzate.	Applicata	
76	2 - Avoid losses of flash steam from condensate return.	Vista la pressione delle condense non è significativo il flash steam.	Applicata	
77	3 - Isolate unused pipework.	Il reparto pomodoro ha una rete vapore sezionabile.	Applicata	
78	4 - Improve steam trapping.	La manutenzione delle valvole di regolazione in temperature e il monitoraggio dei processi fa si che le perdite di vapore siano minime.	Applicata	
79	5 - Repair steam leaks minimise boiler blowdown.	Il programma di Manutenzione garantisce il buon funzionamento della rete vapore.	Applicata	
80	6 - Minimise boiler blowdown.	L'utilizzo di acqua osmotizzata permette la riduzione degli spurghi.	Applicata	
N.	5.1.5 Minimisation of air emissions	Misure adottate	Applicazione Bref o BAT conclusion *	Note
81	1 - Apply and maintain an air emissions control strategy incorporating: <ul style="list-style-type: none"> <li>• definition of the problem</li> <li>• an inventory of site emissions, including, e.g. abnormal operation</li> <li>• measuring the major emissions</li> </ul> assessing and selecting the air emission control techniques.	È definito un elenco dei punti di emissioni e sono eseguiti monitoraggi secondo il PMeC.	Applicata	
82	2 - Collect waste gases, odours and dusts at source and duct them to the treatment or abatement equipment.	È presente sufficiente areazione nei luoghi di lavoro. Le emissioni in atmosfera sono inviate ai relativi camini. Sono presenti cicloni per la captazione delle polveri per la semola. In corrispondenza dei silos per lo zucchero e dell'elevatore dei legumi sono presenti filtri in tessuto per la captazione delle polveri.	Applicata	
83	3 - Optimise the start-up and shut-down procedures for the air emission abatement equipment to ensure that it is always operating effectively at all of the times when abatement is required.		Non Applicabile	È presente una prassi per la gestione dell'emissioni in atmosfera. I filtri non possono essere scollegati dagli operatori.
84	4 - Unless specified otherwise, where process-integrated BAT which minimise air emissions by the selection and use of substances and the application of techniques do not achieve emission levels of 5 – 20 mg/Nm3 for dry dust, 35 – 60 mg/Nm3 for wet/sticky dust and <50 mg/Nm3 TOC, to achieve these levels by applying abatement techniques. This document does not specifically consider emissions from combustion power plants in FDM installations and these levels are, therefore, not intended to represent BAT associated emission levels from those		Non Applicabile	Le emissioni atmosferiche esistenti non contengono tali inquinanti.

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	combustion plants.			
85	<b>5</b> - Where process-integrated BAT do not eliminate odour nuisance, apply abatement techniques.		Non Applicabile	Le emissioni sono tali che non richiedono ulteriori tecniche di abbattimento.
<b>N.</b>	<b>5.1.6 Waste water treatment</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
86	<b>1</b> - Apply an initial screening of solids at the FDM installation.	Sono installati sgrigliatori all'ingresso e all'uscita del depuratore. Gran parte delle caditoie è munita di griglie.	Applicata	
87	<b>2</b> - Remove fat using a fat trap at the FDM installation, if the waste water contains animal or vegetable FOG.		Non Applicata	Le acque reflue non contengono grassi e oli.
88	<b>3</b> - Apply flow and load equalization.	Esiste una sezione di aerazione costituita da una vasca in cemento dalla capacità di 6.000 mc nella quale si ottiene la mescolanza tra i reflui ed i microrganismi deputati alla depurazione (fanghi attivi). L'ossidazione è realizzata mediante una rete di ossigenazione a bolle fini presente sul fondo della vasca.	Applicata	
89	<b>4</b> - Apply neutralisation to strongly acid or alkaline waste water.	Esiste una sezione di aerazione costituita da una vasca in cemento dalla capacità di 6.000 mc nella quale si ottiene la mescolanza tra i reflui ed i microrganismi deputati alla depurazione (fanghi attivi). L'ossidazione è realizzata mediante una rete di ossigenazione a bolle fini presente sul fondo della vasca.	Applicata	
90	<b>5</b> - Apply sedimentation to waste water containing SS.	L'impianto di depurazione è dotato di sedimentatori.	Applicata	
91	<b>6</b> - Apply dissolved air flotation.		Non Applicabile	Non si rende necessaria la flottazione.
92	<b>7</b> - Apply biological treatment.	Il depuratore è di tipo biologico a fanghi attivi.	Applicata	
93	<b>8</b> - Use CH <sub>4</sub> gas produced during anaerobic treatment for the production of heat and/or power.		Non Applicabile	Non sono presenti processi anaerobici.
94	<b>9</b> - Remove nitrogen biologically.		Non Applicabile	BAT non pertinente.
95	<b>10</b> - Apply precipitation to remove phosphorus , simultaneously with the activated sludge treatment, where applied.		Non Applicabile	BAT non pertinente.
96	<b>11</b> - Use filtration for waste water polishing.		Non Applicabile	BAT non pertinente.
97	<b>12</b> - Remove dangerous and priority hazardous substances.		Non Applicabile	BAT non pertinente.
98	<b>13</b> - Apply membrane filtration.		Non Applicabile	BAT non pertinente.
99	When the quality of the waste water is suitable for re-use in FDM processing,	L'acqua in uscita dal depuratore è utilizzata per pulire i piazzali	Applicata	

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	BAT is to do: <ul style="list-style-type: none"> <li>re-use water after it has been sterilised and disinfected, avoiding the use of active chlorine (see Sections 4.5.4.8, 4.5.4.8.1 and 4.5.4.8.2) and which meets the standard of Council Directive 98/83/EC.</li> </ul>	antistanti l'impianto di depurazione. Al momento dell'installazione dell'impianto di trattamento conserve non conformi verrà inoltre utilizzata per la pulizia dello stesso.		
100	BAT is to treat waste water sludge using one or a combination of the following techniques: <ul style="list-style-type: none"> <li>stabilization</li> <li>thickening</li> <li>dewatering</li> <li>drying if natural heat or heat recovered from processes in the installation can be used.</li> </ul>	I fanghi di supero sono inviati alla filtropressa e disidratati.	Applicata	
<b>N.</b>	<b>5.1.7 Accidental releases</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
101	<b>1</b> - Identify potential sources of incidents/accidental releases that could harm the environment	Sono indentificati le potenziali rilasci accidentali.	Applicata	
102	<b>2</b> - Assess the probability of the identified potential incidents/accidental releases occurring and their severity if they do occur, i.e. to carry out a risk assessment.	È stato effettuato in risk assessment e è stato definito un piano di emergenza ambientale.	Applicata	
103	<b>3</b> -Identify those potential incidents/accidental releases for which additional controls are required to prevent them from occurring.	Sono definite procedure che prevedono attività specifica di prevenzione.	Applicata	
104	<b>4</b> - Identify and implement the control measures needed to prevent accidents and minimize their harm to the environment.	Sono definite procedure che prevedono attività specifica di controllo periodico.	Applicata	
105	<b>5</b> - Develop, implement and regularly test an emergency plan.	Durante la prova annuale di emergenza ed evacuazione è simulato anche il piano di emergenza ambientale relativamente ai rilasci.	Applicata	
106	<b>6</b> - Investigate all accidents and near misses and keep records.	Esiste un piano di emergenza ambientale.	Applicata	

### ADDITIONAL BAT FOR THE FRUIT AND VEGETABLES SECTOR

<b>N.</b>	<b>5.2.3 Additional BAT for the fruit and vegetables sector</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
107	<b>1</b> - Where storage cannot be avoided, minimise storage times and where weather conditions do not increase the speed of degradation and/or harm the quality, avoid refrigeration by storing fruit and vegetables and their by-products which are intended for use as animal feed, outdoors in a clean covered area or in containers.	Per ciò che riguarda il pomodoro, la materia prima è in parte già selezionata sul campo durante la fase di raccolta; inoltre nella fase di accettazione del carico sono attivate tutte le procedure di controllo sulla conformità dei prodotti rispetto ai limiti di accettazione definiti contrattualmente con i fornitori di materie prime, al fine di ridurre la presenza di corpi estranei, di pomodoro verde e marcio. Tramite l'organizzazione della logistica di approvvigionamento, il dimensionamento del batch di produzione e l'ottimizzazione dei tempi di produzione si garantisce la minimizzazione degli scarti di produzione.	Applicata	
108	<b>2</b> - Apply dry separation of rejected raw	Per evitare inutili perdite di	Applicata	

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	material from the sorting step and solid residues (e.g. in sorting, trimming, extraction, filtration steps).	prodotto la trasformazione di prodotti vegetali è organizzata in batch con sistemi di recupero del prodotto.		
109	<b>3</b> - Collect soil in sedimentation and/or filtration steps instead of washing into the WWTP.	Il terriccio di lavaggio del pomodoro non è inviato al depuratore.	Applicata	
110	<b>4</b> - Peel fruit and vegetables using a batch steam process or a continuous steam process not using cold water to condense the steam and, if for technological reasons steam peeling cannot be applied, use dry caustic peeling, unless the recipe requirements cannot be met if either of these techniques is used.	La fase in depressione per ottenere il distacco della buccia del pomodoro dalla bacca è realizzata a mezzo di pompe da vuoto, invece di sistemi ad acqua.	Applicata	
111	<b>5</b> - After blanching, cool fruit and vegetables before freezing them by passing them through cold water.		Non Applicabile	Non è presente il processo di blanching.
112	<b>6</b> - Optimise the re-use of water with or without treatment, depending on the unit operations which require water and the quality of water these require, ensuring that adequate hygiene and food quality standards are maintained.	Le acque di raffreddamento del pomodoro sono riutilizzate, dopo opportuno trattamento, per le fasi di lavaggio del pomodoro. Le acque provenienti dalle torri barometriche sono riutilizzate a ciclo chiuso.	Applicata	

**SCHEDA<< D>>:VALUTAZIONE INTEGRATA AMBIENTALE<sup>1</sup>****TECHNIQUES TO CONSIDER IN THE DETERMINATION OF BAT FOR THE COMBUSTION OF GASEOUS FUELS – IPPC1.1**

<b>N.</b>	<b>7.5 - Best available techniques (BAT) for the combustion of gaseous fuels 7.5.1 Supply and handling of gaseous fuels and additives</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
113	Using fuel gas leak detection systems and alarms.	E' presente in sala Caldaie un sistema di controllo e allarme in caso di perdite di gas.	Applicata	
114	Using expansion turbines to recover the energy content of the pressurized fuel gases		Non Applicabile	Vista la pressione di fornitura del gas metano non è possibile ricavare energia dal processo di depressurizzazione del gas.
115	Preheating the fuel gas by using waste heat from the boiler or gas turbine.		Non Applicabile	Viste le caratteristiche di fornitura del gas metano non è necessario preriscaldare.
<b>N.</b>	<b>7.5.2 Thermal efficiency of gas-fired combustion plants</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
116	For gas-fired combustion plants, the application of gas turbine combined cycles and the cogeneration of heat and power (CHP) are technically the most efficient means of increasing the energy efficiency (fuel utilization) of an energy supply system. A combined cycle operation and co-generation of heat and power is, therefore, to be considered as the first BAT option, i.e. whenever the local heat demand is great enough to warrant the construction of such a system. The use of an advanced computerized control system in order to achieve a high boiler performance with increased combustion conditions that support the reduction of emissions are also considered as BAT. Improvement of the efficiency can also be obtained by preheating the natural gas, before its supply to the combustion chambers or burners. The heat can be obtained from low temperature sources, such as the exhaust gases from cooling from other regenerative processes. Gas engine driven power plants are suited for both decentralized heat and power production (CHP) as well as for bigger base load applications. The BAT associated total efficiencies are up to 60 – 70 % in low pressure steam generation. With supplementary firing (i.e. when the oxygen content of the engine flue-gas acts as the main	È presente un impianto di cogenerazione ad alta efficienza con un rendimento globale superiore a 75%, calcolato secondo quanto definite dal DM 05/09/2011.	Applicata	

'combustion air' in the burner) a large amount of low pressure or high pressure steam can be generated in an efficient way. In hot water production (with outlet temperatures typically in range of 80 – 120 °C), a total efficiency (fuel utilization) of up to 90 % in gas fuel mode can be seen as BAT, although highly depending on the portion of the engine cooling water energy recovered in the application. Hot water of up to 200 °C can, of course, be produced by utilizing the energy in the flue-gas and part of the engine cooling energy. Another advantage is the high thermal efficiency (i.e. low fuel consumption, and consequently low specific CO<sub>2</sub> emissions) of the engines. The BAT electrical efficiency (at alternator terminals) ranges from about 40 to 45 % (depending on the engine size) and is calculated on the lower heating value of the fuel.

calculated on the lower heating value of the fuel.

For existing plants, a number of retrofit and repowering techniques can be applied to improve the thermal efficiency. The technical measures described in Section 2.7.8 should be taken into account as part of BAT options to improve the efficiency of existing plants. By applying the techniques and the measures listed in Section 7.4.2

to improve the thermal efficiency such as double reheat, and using the most advanced high temperature materials for gas turbines and boilers, energy efficiencies associated with the use of BAT can be achieved as summarized in Table 7.35.

In addition, the following measures also needs to be taken into consideration to increase the efficiency:

- combustion: minimizing the heat loss due to unburned gases
- the highest possible pressure and temperature of the working medium gas or steam
- the highest possible pressure drop in the low pressure end of the steam turbine through the lowest possible temperature of the cooling water (fresh water cooling) for boilers and CCGT plants
- minimizing the heat loss through the flue-gas (utilization of residual heat or district heating)
- minimizing the heat loss through conduction and radiation with isolation
- minimizing the internal energy consumption by taking appropriate measures, e.g. scorification of the evaporator, greater efficiency of the feed water pump, etc.)
- preheating the fuel gas and or the boiler feed water with steam
- improved blade geometry of the turbines.

There was a split view from industry about the efficiency measures applied to



CCGT plants, because the proposed measures will only have a marginal improvement of the total combined cycle efficiency. It should be noted that improvements of the gas turbine efficiency may result in a decrease of efficiency of the steam cycle. Therefore, the improvement of efficiency of the total cycle will be less than the improvement of the efficiency of the gas turbine only. Based on the above given rationale, industry is of the opinion that the proposed measures shall not be incorporated in the final draft of the BREF LCP. Improvement of the efficiency of the gas turbine only. Based on the above given rationale, industry is of the opinion that the proposed measures shall not be incorporated in the final draft of the BREF LCP.

Plant type	Electrical efficiency (%)		Fuel utilisation (%)	Remarks
	New plants	Existing plants	New and existing plants	
Gas turbine				
Gas turbine	36 – 40	32 – 35	-	
Gas engine				
Gas engine	38 – 45		-	
Gas engine with HRSG in CHP mode	>38	>35	75 – 85	The wide range of energy efficiency in CHP plants is very much dependent upon the specific situation and the local demand of electricity and heat
Gas-fired boiler				
Gas-fired boiler	40 – 42	38 – 40		
CCGT				
Combined cycle with or without supplementary firing (HRSG) for electricity generation only	54 – 58	50 – 54	-	
Combined cycle without supplementary firing (HRSG) in CHP mode	<38	<35	75 – 85	The wide range of the electrical and energy efficiency of CHP plants very much depends on the specific local demand for electricity and heat. By operating the CCGT in the CHP mode, the energy efficiency includes the amount of the electrical efficiency and should always be seen together to achieve the best overall exergetic efficiency.
Combined cycle with supplementary firing in CHP mode	<40	<35	75 – 85	

Table 7.35: Efficiency of gas-fired combustion plants associated to the use of BAT (based on ISO conditions)

N.	7.5.3 Dust and SO <sub>2</sub> emissions from gas fired combustion plants	Misure adottate	Applicazione Bref o BAT conclusion *	Note
117	For gas-fired combustion plants using natural gas as a fuel, emissions of dust and SO <sub>2</sub> are very low.	Si utilizza gas naturale.	Applicata	
N.	7.5.4 NO <sub>x</sub> and CO emission from gas fired combustion plants	Misure adottate	Applicazione Bref o BAT conclusion *	Note
118	For new gas turbines, dry low NO <sub>x</sub> premix burners (DLN) are BAT. Most existing gas turbines can be converted to the dry low NO <sub>x</sub> premix burner (DLN) technique, but sometimes the use of water and steam injection can be a better solution. This needs to be decided case by case.  Several gas turbine and gas engines operating in Europe, Japan and the US have also applied SCR to reduce the emissions of NO <sub>x</sub> . Beside the dry low NO <sub>x</sub> premix burner technique (DLN) and the injection of water and steam, SCR is also considered to be part of the BAT conclusion.  For new gas turbines, the DLN burners can be seen as the standard technique so that the application of an additional SCR system is, in general, not		Non applicata	Non sono presenti turbine a gas.  Si utilizza gas naturale e la CO è abbattuta tramite catalizzatore. Si è preferito investire nella cogenerazione per gli elevati rendimenti e ridotti costi rispetto alle turbine a gas. Non è presente un impianto SCR per l'abbattimento

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<p>necessary. For further reduction of NOX, SCR can be considered where local air quality standards request a further reduction of NOX emissions compared to the levels given in Table 7.37 (e.g. operation in densely populated urban areas). In Table 7.37 emergency machinery has not be taken into account.</p> <p>For existing gas turbines, water and steam injection or conversion to the DLN technique is BAT. Gas turbines of unchanged combustion design, but with higher inlet temperatures, have higher efficiencies and higher NOX values. In this context, it should be noted that with a higher efficiency the specific NOX emission per kWh are still lower.</p> <p>SCR retrofitting is technically feasible, but not economical for existing CCGT plants if the required space in the HRSG was not foreseen in the project and is therefore not available.</p> <p>A split view was declared by industry saying that in the case of combined cycles, the HRSG has to be modified, which means dismantled and retrofitted to enable the incorporation of an SCR. This will increase the already high investments of SCR. Furthermore, the operation and maintenance costs of an SCR are relatively high; therefore, SCR is not cost effective for existing combined cycles. Industry also declared that, in the case of simple cycle gas turbines, SCR is not cost effective, because a) the gases have to be cooled down. This requires an additional cooler to reduce the gas temperature to a level to enable the SCR to operate. This cooler will increase the already high investments and operational costs, and b) simple cycle gas turbines in Europe are peak load plants, which run in emergency cases only. The high investment, operation and maintenance costs make the implementation of an SCR in a gas turbine economically unviable.</p> <p>For gas-fired stationary engine plants, the lean-burn approach is BAT analogous to the dry low NOX technique used in gas turbines. This is an inbuilt method and no extra reagents or water need to be supplied to the site for NOX reduction. Because gas engines are sometimes equipped with an SCR, these techniques can also be considered as part of BAT. To reduce the CO emissions, the application of oxidation catalysts is BAT with the associated emission levels for natural gas firing mentioned in Table 7.36. In the case of burning other gaseous fuels such as biogas or landfill gases, the CO emission can be higher due to the specific fuel used.</p>			<p>degli NO<sub>x</sub>, viste le caratteristiche delle fumi.</p>

The NMVOC emissions from spark ignited lean burn gas (SG) engines and dual fuel (DF) engines in gas mode depend on the composition of natural gas. NMVOC secondary emission reduction techniques might, in some cases, be needed and an oxidation catalyst for simultaneous CO and NMVOC reduction can be applied. CO values kept below 100 mg/Nm<sup>3</sup> (15 % O<sub>2</sub>) and formaldehyde values below 23 mg/Nm<sup>3</sup> (15 % O<sub>2</sub>) are considered as BAT for a gas-fired engine equipped with an oxidation catalyst.

BAT for the minimisation of CO emissions is complete combustion, which goes along with good furnace design, the use of high performance monitoring and process control techniques and maintenance of the combustion system. Besides the combustion conditions, a well optimised system to reduce emissions of NO<sub>x</sub> will also keep the CO levels below 100 mg/Nm<sup>3</sup>. In addition, the application of an oxidation catalyst for CO can be seen as BAT when it is operated in densely populated urban areas.

The BAT conclusion for the prevention and control of NO<sub>x</sub> and CO emissions and the associated emission levels are summarized in Table 7.36 and Table 7.37. Flue-gases from gas turbines and gas engines typically contain about 11 – 16 vol-% O<sub>2</sub> and, therefore, the emission levels associated with the use of BAT for turbines and engines have been based on an O<sub>2</sub> level of 15 vol-%, and standard conditions as the reference point. For gas-fired boilers, 3 vol-% O<sub>2</sub> is usually used as a reference level. The BAT associated emission levels are based on a daily average, standard conditions and represents a typical load situation. For peak load, start up and shut down periods as well as for operational problems of the flue-gas cleaning systems, short-term peak values, which could be higher have to be regarded.

Plant type	Emission level associated with BAT (mg/Nm <sup>3</sup> )		O <sub>2</sub> level (%)	BAT options to reach these levels	Monitoring
	NO <sub>x</sub>	CO			
<b>Gas turbines</b>					
New gas turbines	30 - 50	5 - 100	15	Dry low-NO <sub>x</sub> premix burners (standard equipment for new gas turbines) or SCR	Continuous
DLN for existing gas turbines	30 - 75	5 - 100	15	Dry low-NO <sub>x</sub> premix burners as retrofitting packages if available	Continuous
Existing gas turbines	50 - 90 <sup>(1)</sup>	30 - 100	15	Water and steam injection or SCR	Continuous
<b>Gas engines</b>					
New gas engines	20 - 75 <sup>(2)</sup>	30 - 100 <sup>(3)</sup>	15	Lean burn concept low-NO <sub>x</sub> , mixed and oxidation catalyst for CO or SCR and oxidation catalyst for CO	Continuous
New gas engine with H <sub>2</sub> O <sub>2</sub> in CIP mode	20 - 75 <sup>(2)</sup>	30 - 100 <sup>(3)</sup>	15	Lean burn concept low-NO <sub>x</sub> , mixed and oxidation catalyst for CO or SCR and oxidation catalyst for CO	Continuous
Existing gas engines	20 - 100 <sup>(2)</sup>	30 - 100 <sup>(3)</sup>	15	Low-NO <sub>x</sub> mixed	Continuous
1	Industry and one Member State claimed that the amount of water or steam that can be injected in an existing gas turbine is limited. Excessive high amounts of water or steam may lead to damage of gas turbine components. Therefore, they claimed that the range needs to be substituted by 80 - 120 mg/Nm <sup>3</sup> .				
2	Industry claimed that these ranges are not according to the BAT approach. The reason given was that the range given as BAT is the same as the one given by the American LAER approach (lowest achievable emissions rate). Industry proposed an environmental quality driven approach taking the surrounding (urban/other areas) into account. Their reason that small plants situated in rural areas shall have lower BAT levels than large plants in city areas. Industry claimed that levels of 150 mg/Nm <sup>3</sup> (15 % O <sub>2</sub> ) in gas mode represented the overall emission optimum considering the lowest possible fuel consumption and sulphur dioxide emissions of CO, VOC and for spark-ignited (SG) and dual fuel engines (DF) in gas mode.				
3	Industry mentioned that due to technical reasons (fuel composition impact), CO should be at a level of 110 - 380 mg/Nm <sup>3</sup> (15 % O <sub>2</sub> ) in order to represent BAT. Another industry representative claimed that the ranges should be changed to: 2 90 - 150 mg/Nm <sup>3</sup> 3 150 mg/Nm <sup>3</sup> because the emission levels associated with BAT for gas engines are only applicable for burning natural gas and not for renewable gases like landfill gas, biogas or purification gas. Moreover, they claimed that such levels would cause disadvantages for competitiveness in the market for such gases.				
4	One industry representative proposed changing to discontinuous monitoring because continuous engine emission monitoring is not common practice for stationary internal combustion engines.				

Table 7.36: BAT for the reduction of NO<sub>x</sub> and CO emissions from some gas-fired combustion plants

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N.	7.5.4.1 Water pollution	Misure adottate	Applicazione BREF o BAT conclusion *	Note
119	<p>Different waste water streams (see Chapter 1) are generated by gas-fired combustion plants. To reduce emissions to water and to avoid water contamination, all measures that have been presented in Section 7.4.4 are considered to be BAT.</p> <p>Small amounts of oil contaminated (washing) water cannot be prevented from occurring occasionally at a power plant. Oil separation wells are, in general, sufficient to avoid any environmental damage.</p> <p>The other techniques described for waste water treatment in Chapter 3 can, in general, also be considered as BAT for this sector.</p>		Non Applicabile	Per ottimizzare gli spurghi delle Caldaie è utilizzata acqua osmotizzata. Non sono presenti situazioni tali da contaminare le acque reflue provenienti dalle caldaie.
N.	7.5.4.Combustion residues	Misure adottate	Applicazione BREF o BAT conclusion *	Note
120	A lot of attention has already been paid by industry to the utilisation of combustion residues and by-products instead of depositing them in landfills. Utilisation and re-use is, therefore, the best available option.		Non Applicabile	Non sono presenti residui della combustione.

**SCHEDA<< D>>:VALUTAZIONE INTEGRATA AMBIENTALE<sup>1</sup>**
**TECHNIQUES TO CONSIDER IN THE DETERMINATION OF BAT APPLICABLE IN ALL INDUSTRIES – IPPC 6.7**

N.	<b>21 - Best available techniques (BAT) for surface treatment using organic solvents</b> <b>21.1 Best available techniques (BAT) in all industries in the sector</b> <b>BAT for environmental management</b>	Misure adottate	Applicazione Bref o BAT conclusion *	Note
121	<p>BAT is to implement and adhere to an Environmental Management System (EMS) that incorporates, as appropriate to individual circumstances, the following features (see Section 20.1.1):</p> <ul style="list-style-type: none"> <li>• definition of an environmental policy for the installation by senior management (commitment of the senior management is regarded as a precondition for a successful application of other features of the EMS)</li> <li>• planning and establishing the necessary procedures</li> <li>• implementation of the procedures, paying particular attention to:               <ul style="list-style-type: none"> <li>- structure and responsibility</li> <li>- training, awareness and competence</li> <li>- communication</li> <li>- employee involvement</li> <li>- documentation</li> <li>- efficient process control</li> <li>- maintenance programme</li> <li>- emergency preparedness and response</li> <li>- safeguarding compliance with environmental legislation.</li> </ul> </li> <li>• checking performance and taking corrective action, paying particular attention to:               <ul style="list-style-type: none"> <li>- monitoring and measurement (see also the Reference document on Monitoring of Emissions)</li> <li>- corrective and preventive action</li> <li>- maintenance of records</li> <li>- independent (where practicable) internal auditing in order to determine whether or not the environmental management system conforms to planned arrangements and has been properly implemented and maintained.</li> </ul> </li> <li>• review by top management</li> </ul> <p>Three further features, which can complement the above stepwise, are considered as supporting measures. However, their absence is generally not inconsistent with BAT. These three additional steps are:</p> <ul style="list-style-type: none"> <li>• having the management system and audit procedure examined and validated by an accredited certification body or an external EMS verifier</li> <li>• preparation and publication (and possibly external validation) of a</li> </ul>	L'installazione è certificata secondo la UNI EN ISO 14001/04 dal 2009.	Applicata	

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	<p>regular environmental statement describing all the significant environmental aspects of the installation, allowing for year-by-year comparison against environmental objectives and targets as well as with sector benchmarks as appropriate</p> <ul style="list-style-type: none"> <li>• implementation and adherence to an internationally accepted voluntary system such as EMAS and EN ISO 14001:2004. This voluntary step could give higher credibility to the EMS. In particular EMAS, which embodies all the above-mentioned features, gives higher credibility. However, non-standardized systems can in principle be equally effective provided that they are properly designed and implemented</li> </ul>			
122	<p>Specifically for this industry sector, it is also important to consider the following potential features of the EMS:</p> <ul style="list-style-type: none"> <li>• planning to reduce the environmental footprint of an installation (see BAT 14, below)</li> <li>• internal industry and installation benchmarking on a regular basis, including: <ul style="list-style-type: none"> <li>- consumptions of raw materials, energy and water, including efficient use of these inputs</li> <li>- emissions to air and to water and generation of waste</li> </ul> </li> <li>• choice of input materials</li> <li>• giving consideration to the environmental impact from the eventual decommissioning of a</li> <li>• unit at the stage of designing a new plant or modification to an existing plant</li> <li>• giving consideration to the development of cleaner technologies</li> <li>• internally monitoring and benchmarking the consumptions and emissions</li> <li>• implementing a solvent management plan, see Section 20.3.1</li> <li>• understanding the interrelation of these consumptions and emissions in the process(es)</li> <li>• identifying areas for improvement and meeting BAT</li> <li>• assigning priorities to actions and investments identified</li> <li>• developing an implementation timetable</li> </ul>	<p>Il Sistema di Gestione Ambientale garantisce il miglioramento continuo della prestazione ambientale del sito.</p>	Applicata	
123	<p>BAT is to minimise the environmental footprint of the installation by planning actions and investments in the short, medium and long-term to achieve ongoing improvements, considering the cost-benefits and cross-media effects (see Section 20.1.2), supported by all of the following:</p> <ul style="list-style-type: none"> <li>• internally monitoring and benchmarking the consumptions and emissions, see Section 20.1.3</li> <li>• implementing a solvent management plan, see Section 20.3.1</li> </ul>	<p>Annualmente è elaborato il Piano di Gestione Solventi. Tutte le attività produttive sono registrate e monitorate costantemente in modo da identificare eventuali sprechi e inefficienze. Inoltre è continuo il confronto con le case costruttrici per garantire la migliore prestazione possibile.</p>	Applicata	

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	<ul style="list-style-type: none"> <li>• understanding the interrelation of these consumptions and emissions in the process(es)</li> <li>• identifying areas for improvement and meeting BAT</li> <li>• assigning priorities to actions and investments identified</li> <li>• developing an implementation timetable.</li> </ul>			
N.	21.1 Best available technique applicable in all industries in the sector – Installation design, construction and operation	Misure adottate	Applicazione Bref o BAT conclusion *	Note
124	<p><i>Prevention of unplanned releases/emissions</i></p> <p>BAT is to design, construct and operate an installation to prevent pollution from unplanned emissions by the identification of hazards and pathways, simple ranking of hazard potential and implementing a three-step plan of actions for pollution prevention (see Section 20.2.1). This is particularly useful to prevent the contamination of groundwaters and soils, and to assist in site decontamination on cessation of activities. The complexity of the approach will vary according to the size and complexity of the installation and the hazard potential identified. To minimise unplanned releases, the steps should include measures to address all the bullet points below:</p> <p>Step 1:</p> <ul style="list-style-type: none"> <li>• allow sufficient plant dimensions</li> <li>• contain areas identified as being at risk from any chemical spillage by using appropriate materials to provide impervious barriers, including identifying any possible access to sewers, such as drains and inspection hatches, and sealing them appropriately</li> <li>• ensure the stability of the process</li> </ul> <p>Step 2:</p> <ul style="list-style-type: none"> <li>• ensure storage tanks used for risk materials are protected by using construction techniques such as double skinned tanks or by situating them within contained areas</li> <li>• ensure operating tanks in process lines are within a contained area</li> <li>• where liquids are pumped between tanks, ensure the receiving tanks are of sufficient size for the quantity to be pumped or a fail safe level control system is installed</li> <li>• ensure there is either a leak identification system or contained areas are regularly checked as part of the maintenance programme.</li> </ul> <p>Step 3:</p> <ul style="list-style-type: none"> <li>• carry out regular inspection and test programs</li> <li>• have emergency plans in place for potential accidents, which will include: <ul style="list-style-type: none"> <li>- site major incident plans (appropriate to size and location of the site)</li> <li>- emergency procedures for chemical</li> </ul> </li> </ul>	La gestione delle sostanze pericolose, le misure di prevenzione adottate, la formazione svolta al personale rendono la probabilità di rilasci accidentali praticamente nulla.	Applicata	

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	<p>and oil spillages</p> <ul style="list-style-type: none"> <li>- containment facility inspections</li> <li>- waste management guidelines for dealing with waste arising from spillage control</li> <li>- identification of suitable equipment and regularly ensuring it is available and in good working order</li> <li>- ensure staff are environmentally aware and trained to deal with spillages and accidents</li> </ul> <ul style="list-style-type: none"> <li>• identification of the roles and responsibilities of persons involved</li> </ul>			
125	<p><i>Storage of chemicals and wastes</i> BAT is to reduce fire and environmental risk in the storage and handling of hazardous materials, especially::</p> <ul style="list-style-type: none"> <li>• solvents</li> <li>• solvent-based raw materials</li> <li>• waste solvents and contaminated cleaning materials</li> </ul> <p>by using techniques:</p> <ul style="list-style-type: none"> <li>• storing only small amounts of hazardous raw materials necessary for production at the point of application</li> <li>• storing larger quantities separately</li> <li>• back-venting bulk storage tanks when filling where this is appropriate (see Section 20.2.2)</li> <li>• having high level alarms on all fixed storage tanks</li> <li>• having unique filling points for bulk materials</li> <li>• storing solvents, waste solvents and waste cleaning materials (where fire safety practice allows) in sealed containers</li> </ul>	<p>Le sostanze pericolose sono stoccate in depositi dedicati dotati di bacini di contenimento. Presso le linee è presente esclusivamente la quantità di vernici / solventi necessaria alla produzione.</p>	Applicata	
126	<p><i>Plant construction and operation</i> BAT is to minimise consumptions and emissions, such as by:</p> <ul style="list-style-type: none"> <li>• automating surface treatment techniques as applicable to the activity and industry</li> <li>• ensuring all staff are trained for their tasks in operating, cleaning and maintenance activities</li> <li>• maintaining written up-to-date operational procedures and process manuals</li> <li>• optimising the activities, operating a planned maintenance system, as described in Section 20.2.6. This is important to reduce unplanned emissions and is part of an EMS</li> </ul>	<p>Il processo di verniciatura dei fogli metallici tramite i rulli verniciatori garantisce di rivestire i fogli di un sottile strato di vernice, minimizzando gli sprechi. L'applicazione a rullo garantisce un'efficienza superiore al 90%.</p>	Applicata	
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Monitoring</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
127	<p>BAT is to monitor VOC emissions in order to be able to minimise them (see Section 20.3). A solvent management plan is the key technique to understand the consumption, use and emission of solvents, especially fugitive VOC emissions, see Section 20.3.1. Additional techniques and information can be found in the Monitoring REF.</p>	<p>Sono previsti monitoraggi periodici del consumo, uso ed emissione di solventi.</p>	Applicata	



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	BAT is to use the relevant techniques referred to in Section 20.3.2 where direct measurements are used to determine emissions to air, such as emissions of VOC or particulates in waste gases, volumetric flow, etc.			
128	BAT is to calculate solvent balances regularly (depending on the size of the emission) although key parameters can be established and substituted for regular control purposes (see benchmarking, Sections 20.1.1. (j), 20.1.2 and 20.3.1).	Effettuato annualmente il Piano Gestione Solventi.	Applicata	
129	Certain equipment (e.g., fans, vents, waste gas treatment systems, etc.) has a large effect on the solvent balance. To ensure that emissions remain as estimated by the key parameters, it is BAT to ensure that such equipment is maintained regularly (see Sections 20.2.6 and 20.11.1.2). Where critical equipment (such as fan motors, drive pulleys or waste gas treatment) is changed, either the original specifications should be maintained (such as ensuring the motors have exactly the same specifications, drive pulleys are the same diameters, etc.), or the system should be recalibrated by direct measurement.	Definito e attuato il piano di manutenzione.	Applicata	
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Water Management</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
130	Water consumption in this sector is generally low, except where water-based techniques for substrate or workpiece pretreatment are used (see Paragraph 3). More information, as well as BAT and consumption and emission levels relating to these are discussed in detail in the STM BREF.		Non Applicabile	Non ci sono acque di processo.
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Reducing, re-using and recycling rinsing water and raw materials</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
131	BAT is to conserve raw materials and water for water-based treatment techniques, such as by: <ul style="list-style-type: none"> <li>• cascade (multiple) rinsing, see Section 20.4.1.3</li> <li>• recovering the raw materials and/or water by using techniques such as: <ul style="list-style-type: none"> <li>- ion exchange, see Section 20.4.1.1</li> <li>- membrane separation or other concentration techniques, see Section 20.7.5.3</li> </ul> </li> <li>• using control measures to minimise the use of rinsing water (see Section 20.4.1.4).</li> </ul>		Non Applicabile	La pulizia del tunnel di verniciatura, effettuata almeno una volta all'anno, prevede la produzione di soli rifiuti liquidi, inviati a smaltimento come da normativa vigente.
132	<i>Re-use/recycling of cooling water</i> Where water is used to cool equipment, process lines, etc., BAT is to reduce water consumption by using closed cooling systems and/or using heat exchangers, see Section 20.4.1.2.		Non Applicabile	La pulizia del tunnel di verniciatura, effettuata almeno una volta all'anno, prevede la produzione di soli rifiuti

				liquidi, inviati a smaltimento come da normativa vigente.
N.	21.1 Best available technique applicable in all industries in the sector – Energy Management	Misure adottate	Applicazione Bref o BAT conclusion *	Note
133	<p><b>11</b> - BAT is to maximise energy efficiency and minimise energy losses by applying the measures in Section 20.5. BAT for planning to reduce energy consumptions, gathering and using energy-specific data and maintenance techniques are given in BAT 12, 13 and 14.</p> <p>BAT 28 deals with the selection of the treatment systems that optimised energy usage including drying and curing. BAT 37 deals with optimising energy in solvent emissions to air and waste gas treatment.</p> <p>Key techniques to reduce energy consumption are:</p> <ul style="list-style-type: none"> <li>• maintenance and adjustment of equipment to the correct settings</li> <li>• minimising the volume of air being moved, maximising the amount of solvent captured with minimum air intake, etc.</li> <li>• minimising reactive energy losses by correcting the power factor (cos m) between the voltage and the current peaks to ensure it lies permanently above 0.95</li> <li>• avoiding or controlling high instantaneous demands during start up (e.g. by converting connections from star to delta for low loadings, using automatic delta to star converters, using soft-starters, etc.)</li> <li>• using motors with appropriate power and/or using variable speed motors</li> <li>• install energy efficient equipment, notably motors. Such equipment can be specified for new installations, refurbishments or for replacing defective equipment.</li> </ul>	<p>Per il reparto verniciature e scatolificio sono presenti monitoraggi che consentono di individuare sprechi e/o miglioramenti in modo da garantire un'elevata efficienza. È definito ed attuato un piano di manutenzione per mantenere performante l'impianto.</p>	Applicata	
N.	21.1 Best available technique applicable in all industries in the sector – Raw material management	Misure adottate	Applicazione Bref o BAT conclusion *	Note
134	<p><i>Controlling environmental and toxicological impacts</i></p> <p>BAT is to minimise the environmental impact of emissions by ensuring that the raw materials used have the lowest possible environmental impacts. This is especially important when substituting, or changing processes or suppliers (see Sections 20.6.2, 20.7, and 20.10).</p>	<p>Come da procedura aziendale ogni sostanza pericolosa, tramite la scheda di sicurezza, è verificata e ove possibile è sostituita con una sostanza di minor impatto ambientale.</p>	Applicata	
135	<p><i>Minimising raw material consumption (see Section 20.6.3)</i></p> <p>BAT is to minimise raw material consumption by one or more of the following techniques:</p> <ul style="list-style-type: none"> <li>• automated mixing systems, see Section 20.6.3.1</li> <li>• programmable scales, see Section 20.6.3.1</li> <li>• computerised Pantone matching</li> </ul>	<p>Non è prevista attività di miscelamento dei colori in quanto i prodotti sono forniti direttamente nel colore richiesto. Relativamente alla linea di verniciatura, la produzione è gestita a lotti, minimizzando la frequenza dei cambi colore. Il dosaggio del prodotto avviene in automatico.</p>	Applicata	

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	<p>systems, see Section 20.6.3.1</p> <ul style="list-style-type: none"> <li>• re-use of returned inks or coatings, see Section 20.6.3.2</li> <li>• re-use of recovered inks or coatings, see Section 20.6.3.3</li> <li>• direct piping of inks or coatings from storage, see Section 20.6.3.4</li> <li>• direct piping of solvents from storage, see Section 20.6.3.5</li> <li>• batch painting/color grouping, see Section 20.6.3.6</li> <li>• pig-clearing systems, see Section 20.6.3.7.</li> </ul>	<p>È presente il recupero delle vernici e il dosaggio diretto di solventi e vernici.</p> <p>Non è possibile l'impiego di tubazione diretta tra lo stoccaggio e l'utilizzo vista la distanza tra il deposito e il reparto produttivo</p>		
N.	21.1 Best available technique applicable in all industries in the sector – Coating processes and equipment	Misure adottate	Applicazione Bref o BAT conclusion *	Note
136	<p><i>Water-based pretreatments</i></p> <p>The BAT for water-based pretreatments including:</p> <ul style="list-style-type: none"> <li>• degreasing</li> <li>• bath maintenance</li> <li>• water and waste minimisation</li> <li>• waste water reduction</li> </ul>		Non Applicabile	Non sono presenti fasi di pretrattamento prima della verniciatura e della linea EO.
N.	21.1 Best available technique applicable in all industries in the sector – Drying/curing for all surface treatments	Misure adottate	Applicazione Bref o BAT conclusion *	Note
137	<p><i>Coating systems, application and drying/curing techniques</i></p> <p>When selecting a surface treatment process(es) (including drying/curing) either for a new plant or when upgrading an existing one, BAT is to select the system that:</p> <ul style="list-style-type: none"> <li>• minimises: <ul style="list-style-type: none"> <li>- solvents emissions</li> <li>- energy usage</li> </ul> </li> <li>• maximises raw material efficiency</li> </ul> <p>The choice of drying/curing technique will be limited by factors such as the type of surface treatment (e.g. specific paint or ink types are needed to react with UV or IR radiation) and other factors such as:</p> <ul style="list-style-type: none"> <li>• those mentioned in the introduction to this chapter especially Paragraph 8</li> <li>• substrate type, size and shape</li> <li>• quality and type of finish required, including thickness</li> <li>• the overall treatment system (i.e. previous and subsequent coats)</li> <li>• the application technique to be used</li> <li>• whether end-of-pipe waste gas abatement techniques are applied</li> </ul>	<p>La linea di verniciatura impiegata consente di utilizzare vernici ad alto solido ed in polvere, che presentano un minore contenuto di solventi.</p> <p>Come da uso comune nel coil coating, ovunque possibile vengono impiegate lacche e vernici a base di resine epossidiche e poliesteri, con riduzione significativa delle emissioni di solvente.</p> <p>Il rivestimento della saldatura delle scatole viene realizzato mediante resine poliesteri in polvere, di granulometria inferiore a 100 µm, polimerizzato mediante somministrazione di calore per convezione (aria calda). Confermando i dati di letteratura, si rileva che le emissioni di solvente con l'utilizzo di questa tecnica sono pressoché inesistenti.</p> <p>Lo spray-repair, utilizzato nella fase di finalizzazione dei coperchi EO è disponibile al momento soltanto a base solvente così come specificato a pag. 307 della BREF di settore.</p>	Applicata	
N.	21.1 Best available technique applicable in all industries in the sector – Cleaning	Misure adottate	Applicazione Bref o BAT conclusion *	Note
138	<p><i>Cleaning systems</i></p> <p>BAT is to conserve raw materials and reduce solvent emissions by minimising color changes and cleaning as described in BAT 26 (see Section 20.6.3).</p>	<p>Per le sole parti meccaniche relativa all'apposizione di vernice (rulli, vasca di raccolta) si effettua la pulizia con solventi convenzionali anche in corrispondenza del cambio colore.</p>	Applicata	

		La frequenza dei cambi colori è ottimizzata tendendo anche conto dei programmi di manutenzione e il consumo di solvente in quest'operazione è trascurabile rispetto ai volumi di produzione.	
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139	<p><b>Cleaning techniques</b> When cleaning spray guns, it is BAT is to minimise the release of solvent by collecting, storing and reclaiming for re-use the purge solvent used to clean coating spray guns and/or lines: 80 to 90 % can be re-used, see Section 20.9.3.</p>		Non Applicabile	Non sono utilizzate le pistole a spruzzo.
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140	<p>BAT is to minimise VOC emissions by using non-solvent or low solvent emission cleaning techniques such as one or more of those described in Section 20.9 (see Table 21.1 below):</p> <table border="1" style="width:100%; border-collapse: collapse; margin-bottom: 5px;"> <thead> <tr> <th colspan="2">Cleaning techniques</th> <th colspan="2">Process equipment</th> <th>Substrate</th> </tr> <tr> <th>Section</th> <th>Technique</th> <th>Non-persistent contamination</th> <th>Persistent contamination</th> <th></th> </tr> </thead> <tbody> <tr> <td>20.9.2</td> <td>Minimising cleaning</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>20.9.3</td> <td>Preparation prior to solvent or other types of cleaning</td> <td>Yes</td> <td></td> <td></td> </tr> <tr> <td>20.9.4</td> <td>Conventional solvent cleaning</td> <td>Yes*</td> <td>Yes*</td> <td></td> </tr> <tr> <td>20.9.5</td> <td>Solvents with lower evaporation speed</td> <td>Yes</td> <td></td> <td></td> </tr> <tr> <td>20.9.6</td> <td>Cleaning with powerful solvents</td> <td></td> <td>Yes</td> <td></td> </tr> <tr> <td>20.9.7</td> <td>Cleaning with solvents with lower ozone forming potential (OFP)**</td> <td>Yes</td> <td>Yes</td> <td></td> </tr> <tr> <td>20.9.8</td> <td>Water-based cleaning</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>20.9.9</td> <td>Cleaning by hand</td> <td>Yes</td> <td></td> <td>Yes</td> </tr> <tr> <td>20.9.10</td> <td>Washing machines using solvents</td> <td>Yes</td> <td>Yes</td> <td></td> </tr> <tr> <td>20.9.11</td> <td>Cleaning with solvent recovery</td> <td>Yes</td> <td></td> <td></td> </tr> <tr> <td>20.9.12</td> <td>Cleaning with high pressure water spray</td> <td></td> <td>Yes</td> <td></td> </tr> <tr> <td>20.9.13</td> <td>Ultrasonic cleaning</td> <td></td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>20.9.14</td> <td>Dry ice cleaning</td> <td></td> <td>Yes</td> <td>Yes</td> </tr> </tbody> </table> <p><small>* Conventional solvents should be used in conjunction with techniques to minimise emissions, such as in sealed washing machines; venting to waste gas treatment, etc., as described in Section 20.9. Exceptions are given in Section 20.9.9 ** See BAT 36</small></p> <p>Table 21.1: Cleaning: techniques to use to reduce VOC emissions</p>	Cleaning techniques		Process equipment		Substrate	Section	Technique	Non-persistent contamination	Persistent contamination		20.9.2	Minimising cleaning	Yes	Yes	Yes	20.9.3	Preparation prior to solvent or other types of cleaning	Yes			20.9.4	Conventional solvent cleaning	Yes*	Yes*		20.9.5	Solvents with lower evaporation speed	Yes			20.9.6	Cleaning with powerful solvents		Yes		20.9.7	Cleaning with solvents with lower ozone forming potential (OFP)**	Yes	Yes		20.9.8	Water-based cleaning	Yes	Yes	Yes	20.9.9	Cleaning by hand	Yes		Yes	20.9.10	Washing machines using solvents	Yes	Yes		20.9.11	Cleaning with solvent recovery	Yes			20.9.12	Cleaning with high pressure water spray		Yes		20.9.13	Ultrasonic cleaning		Yes	Yes	20.9.14	Dry ice cleaning		Yes	Yes	<p>L'operazione di lavaggio della linea di verniciatura è preceduta da una rimozione meccanica (raschiamento e martellamento pneumatico) dei residui di vernici secche e/o incrostate che consente di ridurre il successivo uso di acqua di lavaggio e sostanze pulenti. Relativamente al tunnel di verniciatura, le vernici utilizzate consentono di effettuare il lavaggio senza ricorrere all'uso di solventi, evitando in tal modo un aumento dei consumi di solvente stesso e di emissioni di COV. In generale, per le sole parti meccaniche relative all'apposizione di vernice (rulli, vasca di raccolta) si effettua la pulizia con solventi convenzionali in corrispondenza del cambio colore. Il consumo di solvente in quest'operazione è trascurabile rispetto ai volumi di produzione.</p>	Applicata	
Cleaning techniques		Process equipment		Substrate																																																																											
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N.	21.1 Best available technique applicable in all industries in the sector – Use of less hazardous substances (substitution)	Misure adottate	Applicazione Bref o BAT conclusion *	Note
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141	<p>BAT is to reduce solvent emissions by selecting non-solvent or low solvent techniques, as discussed in the generic sections such as for:</p> <ul style="list-style-type: none"> <li>• cleaning (see BAT 29, 30 and 31, and Section 20.10.1)</li> <li>• the individual industry (Sections 21.2 to 21.19)</li> <li>• coating (see Section 20.7)</li> <li>• inking techniques (see Section 2.4).</li> </ul>	Il lavaggio del tunnel di verniciatura viene effettuato con una soluzione acquosa anziché con solventi.	Applicata	
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142	<p>BAT is to reduce adverse physiological effects by replacing solvents which have any of the following the risk phrases: R45, R46, R49, R60 and R61 with less hazardous solvents. This is to be achieved in accordance with Article 5(6) of Council Directive 1999/13/EC. Sections 20.9 and 20.10 describe alternative solvents and cleaning techniques.</p>	Esiste ed è attuata una procedura di valutazione e approvazione di utilizzo di prodotti chimici già in uso o nuovi, valutando i rischi per i lavoratori, ambientali e di sicurezza alimentare.	Applicata	
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143	<p>BAT is to reduce the ecotoxic impacts of substances by using less hazardous substances in place of substances with</p>	Esiste ed è attuata una procedura di valutazione e approvazione di utilizzo di prodotti chimici già in	Applicata	
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	the risk phrases R58 and R50/53 (where alternatives exist, see Section 20.10).	uso o nuovi, valutando la pericolosità e l'eventuale sostituzione con un altro prodotto meno pericoloso.		
144	BAT is to reduce stratospheric (high level) ozone depletion by using less hazardous substances in place of substances with the risk phrases R59. In particular, all halogenated or partially halogenated solvents with the risk phrase R59 used in cleaning should be replaced or controlled using the options set out in BAT 31 and 32.	Non sono presenti prodotti con R59.	Applicata	
145	<p>BAT is to seek to minimise the formation of tropospheric (low level) ozone:</p> <ul style="list-style-type: none"> <li>• by using VOCs or mixtures with lower ozone formation reactivity where other measures to reduce fugitive or unabated solvent emissions to meet emission levels associated with BAT are not possible or not technically applicable, such as having unfavourable cross-media effects (see Section 20.10.2)</li> <li>• Where solvents are changed, by ensuring the substitution achieves a reduction in ozone formation reactivity (see Section 20.10.2). Note that the comparison should be made on the basis of the OPF load emitted to the troposphere (i.e. OPF x weight of solvent evaporated)</li> </ul> <p>However, this technique cannot be used for:</p> <ul style="list-style-type: none"> <li>• complex formulations such as automotive paints and inks</li> <li>• replacing solvent systems where no other technology currently exists, e.g. publication gravure</li> </ul> <p>Where the substitution can be shown not to increase the overall ozone-forming potential, substitution can be made by using solvents with a flashpoint of &gt;55 °C.</p>	<p>La scelta delle vernici e dei solventi è condizionata da esigenze produttive. La presenza del postcombustore garantisce l'abbattimento delle emissioni di COV con efficienza elevata.</p> <p>Non utilizzando solventi per il lavaggio della linea di verniciatura si evita a priori l'emissione di sostanze a media-alta reattività che contribuiscono alla formazione fotochimica di ozono. L'utilizzo di solventi per il lavaggio nelle restanti linee è residuale.</p>	Applicata	
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Emissions to air and waste gas treatment</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
146	<p>For solvents, it is BAT is to use one or a combination of:</p> <ul style="list-style-type: none"> <li>• minimising emissions at source (see industry specific sections)</li> <li>• recovering solvents from the emissions in waste gases (see Sections 20.11.5 and 20.11.6)</li> <li>• destruction of solvents in waste gases (see Sections 20.11.4 and 20.11.8)</li> <li>• recovering the heat generated where VOCs are destroyed (see Sections 20.11.4.3 to 20.11.4.6)</li> <li>• minimising the energy used in extraction and destruction of VOCs (see Section 20.11.1)</li> </ul> <p>Solvent recovery from waste gases uses more energy than incineration, it is not as effective in capturing solvents and often the recovered solvents cannot be re-used because of either contamination with</p>	<p>Le emissioni gassose dovute alla verniciatura sono inviate ad un combustore alimentato a metano. Tale apparecchiatura effettua la combustione dando luogo ad una corrente di aria calda che, anziché essere sfiatata in atmosfera, viene nuovamente inviata all'interno dell'essiccatore, così da sfruttarne il calore per l'essiccazione delle vernici apposte sui fogli in ingresso. Eventuale aria in eccesso rispetto al fabbisogno dell'essiccatore viene captata ed inviata ad una caldaia di recupero per la produzione di vapore. Le emissioni della linea EO sono ridotte grazie all'impianto a carboni attivi.</p>	Applicata	

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	water or other solvents. With solvent mixtures, the recovered mixture often does not retain the same balance of ingredients or, therefore, properties.			
147	Where solvent recovery is considered, BAT is to seek to ensure that most of the recovered material is re-used (it may not be possible in all cases to re-use the material on site). This re-use should not include burning as a fuel, as it is more effective to use auto thermal oxidation, which simultaneously achieves lower solvent emission levels. Solvent recovery for new installations or upgrading of existing installations without re-use of the solvent is not BAT.	Le emissioni gassose della verniciatura vengono inviate ad un combustore che realizza l'ossidazione dei COV. La combustione procede con un'elevata efficienza, com'è possibile evincere dalla bassissima concentrazione di COV residui rilevati nelle analisi delle emissioni in uscita.	Applicata	
148	BAT is to seek opportunities to use excess heat from thermal oxidation. These may be within or external to the installation which may assist in matching the energy type produced (e.g. steam generated) to the potential use. When recovering heat from the thermal oxidation of solvent emissions, all of the following apply: <ul style="list-style-type: none"> <li>• there must be excess energy to recover</li> <li>• it must be technically possible to recover the energy</li> <li>• the energy must be available in a usable form (e.g. high enough temperature, usable as steam, etc.)</li> <li>• there must be a use for the energy at the same time as the excess heat occurs</li> </ul>	Tramite una caldaia a recupero è utilizzato il calore residuo a valle del postcombustore della linea verniciatura.	Applicata	
149	BAT is to save energy in the extraction and treatment of waste gases by reducing the volume extracted. This can be achieved by measures described in Section 20.11.2. However, some techniques may be limited by the need to maintain safe working atmospheres in the installation, the amount of residual solvent that can remain in the coated product, the smell of the products, and other quality requirements.	Le portate delle emissioni in atmosfera sono tali da garantire il buon funzionamento del post combustore della linea verniciatura.	Applicata	
150	Where waste gases are extracted, BAT is to reduce solvent emissions and energy consumption while making the best use of high cost equipment by using the techniques given in Sections 20.11.1.3, 20.11.1.4, and 20.11.1.5.		Non Applicabile	Non sono presenti le tecniche di cui alla sezione 20.11.1.3, 20.11.1.4, and 20.11.1.5.
151	Where waste gas treatment is applied, BAT is to optimise the solvent concentration to the treatment, and in thermal oxidation treatments to maintain autothermic conditions by using one or more of the following: <ul style="list-style-type: none"> <li>• optimising the concentration in the gas flow using techniques described in Sections 20.11.1.3, 20.11.1.4, and 20.11.1.5.</li> <li>• minimising the amount of gas to be treated, see Sections 20.11.1 and 20.11.2, and bypassing peak flows (see Section 20.11.1.3)</li> <li>• pretreating the gas to protect the</li> </ul>		Non Applicabile	Non sono previste tecnologie di altra natura poiché per il trattamento dell'aria ricca in solventi si ricorre ad un sistema ossidativo per la linea di verniciatura e a carboni attivi per la linea

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	treatment system and optimise solvent concentration as described in Section 20.11.3. However, if the effluent air is hot, it cannot be pretreated by absorption, e.g. see BAT 82.			EO.
152	<p>Where particulate emissions are associated with paint spraying, BAT is to reduce emissions by applying either or both:</p> <ul style="list-style-type: none"> <li>• in-process techniques such as described in Sections 20.7.4.1, 20.7.4.2 and 20.7.4.3</li> <li>• end-of-pipe techniques described in Sections 20.11.3.5, 20.11.3.6, 20.11.3.7 and 20.11.3.8.</li> </ul> <p>The following levels can be achieved:</p> <ul style="list-style-type: none"> <li>• 5 mg/m<sup>3</sup> or less for existing installations (e.g. for automotive applications, using conventional lateral scrubbers in conjunction with Venturi particle separation)</li> <li>• 3 mg/m<sup>3</sup> or less for new installations (e.g. for automotive applications, using new scrubbers in conjunction with Venturi particle separation)</li> </ul>		Non Applicata	Non è presente un sistema di abbattimento come quelli descritti nelle BAT. L'impianto Post-op, tecnologicamente avanzato, comunque minimizza l'overspray
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Split view</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
153	<p>The industry for the coating of furniture and wood recorded a split view against these values.</p> <p>According to the information in Sections 17.4.7.1 and 17.4.7.4, the emission values considered to be associated with BAT are 10 mg/m<sup>3</sup> or less for all installations.</p> <p>This value is based on what they believe to be economically and technically viable in the industry.</p>		Non Applicabile	BAT non pertinente.
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Waste water treatment</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
154	<p>It is BAT to minimise emissions to water by (in this order):</p> <ul style="list-style-type: none"> <li>• minimising emissions into water using techniques referred to in BAT 21, 22 and 23</li> <li>• carrying out waste water treatment using pretreatment techniques described in Sections 20.12.1 to 20.12.4</li> <li>• carrying out biological treatment (see Section 20.12.5), generally in a separate municipal waste water treatment plant.</li> </ul> <p>Techniques for biological waste water treatment can be found in the CWW BREF. Other techniques and associated emission values are discussed in the STM BREF.</p> <p>For specific installations, concentration levels should be considered in conjunction with the loads emitted from the installation, the installation's technical specification, e.g. throughput, as well as other BAT, especially measures to reduce water consumption (see the STM BREF).</p>		Non Applicabile	Non si utilizza acqua nel processo e non sono presenti scarichi idrici.

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155	Where solvents may be in contact with water, BAT is to prevent a hazardous level of solvent (e.g. explosive or potentially harmful to workers) in the atmosphere of receiving sewers by preventing unplanned discharges (See Section 20.2.1) or by ensuring a safe discharge level. A suitable level can be calculated, see Section 20.3.3.1.		Non Applicabile	Non si utilizza acqua nel processo e non sono presenti scarichi idrici.
156	Where the BOD or COD load is significant to the subsequent treatment, it is BAT to control the amount of organic chemicals that are difficult to treat in WWTPs by monitoring the ratio of COD:BOD in waste waters, see Section 20.3.3.2.		Non Applicabile	Non si utilizza acqua nel processo e non sono presenti scarichi idrici.
157	BAT is to monitor raw materials and effluents to minimise the emissions of materials toxic to the aquatic environment (see Section 20.3.3.3). Where such materials are found in quantities that may have an impact on the environment, quantities of materials discharged can be reduced by one or more of the following techniques: <ul style="list-style-type: none"> <li>• using less hazardous materials (see Section 20.10)</li> <li>• reduction of material used and losses in production (see BAT 19 and 20)</li> <li>• treatment of the waste waters (see Section 20.12 or the CWW BREF, and the STM BREF if the activities are in conjunction with activities described in that BREF).</li> </ul> Where such materials are discharged, BAT is to monitor the discharge in a manner and frequency suitable to minimise the risk of breach of permit conditions (see the Monitoring REF).		Non Applicabile	Non si utilizza acqua nel processo e non sono presenti scarichi idrici.
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Paint shops</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
158	For paint shops where water is used in the process, treatment may be required prior to discharge. BAT is to use one or a combination of techniques described in Sections 20.7.5 and 20.12 for process water pretreatment. For direct discharge to surface waters the following ranges can be met: <ul style="list-style-type: none"> <li>• COD 100 - 500 mg/l</li> <li>• suspended solids 5 - 30 mg/l</li> </ul>		Non Applicabile	BAT non pertinente.
159	For wet scrubber systems capturing paint overspray, BAT is to reduce water consumption and effluent treatment and discharges by reducing the frequency of tank emptying by both: <ul style="list-style-type: none"> <li>• optimising transfer efficiency (see Section 20.7.3)</li> <li>• minimising the build-up of paint sludge (see Sections 20.7.5.6, 20.7.5.7 and 20.7.5.8)</li> </ul>		Non Applicabile	BAT non pertinente.
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Materials recovery and waste management</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
160	BAT is to reduce material usage, as	Relativamente alla linea di	Applicata	



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	described in BAT 26. BAT is also to prevent material losses, and recover, re-use and recycle materials. Of these, prevention and reduction of material losses are the priority. These can be achieved by applying a selection of the techniques described in Sections 20.1.2, 20.3.1, 20.6, 20.7 (especially Sections 20.7.3 and 20.7.5). BAT 14, 17, 18 and 25 are also relevant.	verniciatura, la produzione è gestita a lotti, minimizzando la frequenza dei cambi colore. Il dosaggio del prodotto avviene in automatico. È presente il recupero delle vernici e il dosaggio diretto di solventi e vernici.		
161	<i>Recovery of used solvents</i> BAT is to recover and re-use solvents, either internally or using external contractors, as described in Sections 20.13.1, 20.13.2 and 20.13.5, see BAT 38 and 39 above.	Non si utilizzano solventi per le operazioni di pulizia del tunnel di verniciatura. I solventi e diluenti utilizzati nelle operazioni di marcatura e di pulizia delle parti meccaniche in occasione dei cambi colore costituiscono invece una percentuale talmente irrisoria del consumo finale che il loro recupero per filtrazione o distillazione sarebbe economicamente insostenibile.	Applicata	
162	BAT is to either reduce the number of containers disposed of by employing re-usable containers, re-use the containers for other purposes, or recycle the container material, see Section 20.13.6.	I contenitori dei prodotti utilizzati per la linea di verniciatura sono conferiti presso idoneo impianto che provvede alla loro pulizia ed immissione sul mercato per il riutilizzo.	Applicata	
163	Where activated carbon or zeolite adsorption systems are used, BAT is to recover both the solvents and the absorption media, as described in Section 20.13.7.	È previsto l'incenerimento per i carboni attivi esauriti.	Applicata	
164	After applying BAT 50 to 53 and where wastes cannot be recovered on- or off-site, it is BAT to minimise the hazardous contents and manage as wastes, using a selection of techniques from Sections 20.10, 20.13, and 20.13.8.	Al momento non sono stati individuati prodotti chimici meno pericolosi, nonostante l'impegno dell'azienda.	Non applicata	
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Odour abatement</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
165	Where odour emissions cause nuisance at sensitive locations (usually due to the emission of VOCs), BAT is to reduce the odour using the techniques used to control VOC emissions, such as: <ul style="list-style-type: none"> <li>• changing the type of process (for example, see Sections 4 in Chapters 2 to 19 and Sections 20.7 and 20.10)</li> <li>• changing the materials used (for example, see Sections 20.7 and 20.10)</li> <li>• using waste gas treatment (see Section 20.11)</li> <li>• the installation of high stacks for waste gas emissions</li> </ul>	Non si sono rilevati problemi relativi all'emissione di odori.	Applicata	
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Noise</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
166	BAT is to identify significant noise sources and potential sensitive receptors in the vicinity of the installation (see Section 20.16).	È svolta periodicamente la valutazione del rumore esterno.	Applicata	
167	Where noise may have an impact, BAT is to reduce the noise by using appropriate control measures (see Section 20.16),	Le pareti interne sono costituite da muratura di tipo misto (tufo, lapillo, etc) e pannelli sandwich	Applicata	

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	<p>such as:</p> <ul style="list-style-type: none"> <li>• effective plant operation, for example: <ul style="list-style-type: none"> <li>- closure of bay doors</li> <li>- minimising deliveries and adjusting delivery times</li> </ul> </li> <li>• using engineered controls such as installation of silencers to large fans, use of acoustic enclosures, avoiding the installation of equipment with high or tonal noise levels, etc.</li> </ul>	coibentati autoportanti Oltre alle compartimentazioni già esistenti, in fase di sostituzione di macchinari in particolare la scelta si orienterà sempre, come si è già nel passato orientata, su quelle attrezzature che la tecnica avrà man mano reso meno rumorose.		
<b>N.</b>	<b>21.1 Best available technique applicable in all industries in the sector – Groundwater and soil protection and site decommissioning</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>
168	BAT is to prevent emissions to groundwater and soil, and thereby aiding site decommissioning by applying the techniques described in BAT 15 and 16.	La gestione delle sostanze pericolose, le misure di prevenzione adottate, la formazione svolta al personale rendono la probabilità di rilasci accidentali praticamente nulla.	Applicata	

## BEST AVAILABLE TECHNIQUES FOR THE COATING AND PRINTING OF METAL PACKAGING – IPPC 6.7

<b>N.</b>	<b>21.2 Best available technique for printing 21.14 Best available technique for coil coating 21.15 Best available technique for coating and printing of metal packaging</b>	<b>Misure adottate</b>	<b>Applicazione Bref o BAT conclusion *</b>	<b>Note</b>															
169	<p><i>Energy consumption</i> BAT is to reduce energy consumption using a selection of the techniques in Section 20.5 and energy recovery from thermal waste gas treatment, see Section 20.11. Consumption values associated with BAT are shown in Table 21.11 (see Section 14.3.2.3):</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Energy used/1000 m<sup>2</sup> of substrate</th> <th>Minimum</th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td>Electricity used as kWh/1000 m<sup>2</sup> of aluminium</td> <td>270</td> <td>375</td> </tr> <tr> <td>Electricity used as kWh/1000 m<sup>2</sup> of steel</td> <td>250</td> <td>440</td> </tr> <tr> <td>Fossil fuels as MJ/1000 m<sup>2</sup> of aluminium</td> <td>4000</td> <td>9000</td> </tr> <tr> <td>Fossil fuels as MJ/1000 m<sup>2</sup> of steel</td> <td>3000</td> <td>10200</td> </tr> </tbody> </table> <p><small>Table 21.11: Coil coating: energy consumption for coating of aluminium and steel substrates</small></p>	Energy used/1000 m <sup>2</sup> of substrate	Minimum	Maximum	Electricity used as kWh/1000 m <sup>2</sup> of aluminium	270	375	Electricity used as kWh/1000 m <sup>2</sup> of steel	250	440	Fossil fuels as MJ/1000 m <sup>2</sup> of aluminium	4000	9000	Fossil fuels as MJ/1000 m <sup>2</sup> of steel	3000	10200		Non Applicabile	Non si vernicia acciaio o alluminio ma banda stagnata e/o cromata.
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170	<p><i>Solvent emissions to air</i> BAT is to reduce solvent emissions by a combination of techniques such as from Table 21.12 as well as the generic BAT described in Section 21.1. The emission values of VOC associated with these techniques are (see Section 14.3):</p> <ul style="list-style-type: none"> <li>• for new plants: 0.73 - 0.84 g/m<sup>2</sup> for waste gases, and 3 – 5 % for fugitive emissions</li> <li>• for existing plants: 0.73 - 0.84 g/m<sup>2</sup> for waste gases, and 3 – 10 % fugitive emissions.</li> </ul> <p>See Section 14.3.3.1. Existing plants will only achieve the lower values of the range when they are significantly upgraded.</p>	Le emissioni gassose dovute alla verniciatura sono inviate ad un combustore alimentato a metano. Tale apparecchiatura effettua la combustione dando luogo ad una corrente di aria calda che, anziché essere sfiatata in atmosfera, viene nuovamente inviata all'interno dell'essiccatore, così da sfruttare il calore per l'essiccazione delle vernici apposte sui fogli in ingresso. Eventuale aria in eccesso rispetto al fabbisogno dell'essiccatore viene captata ed inviata ad una caldaia di recupero per la produzione di vapore.	Applicata																

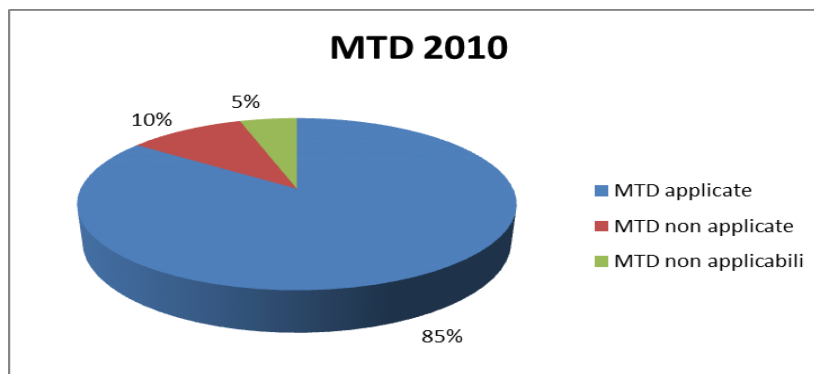
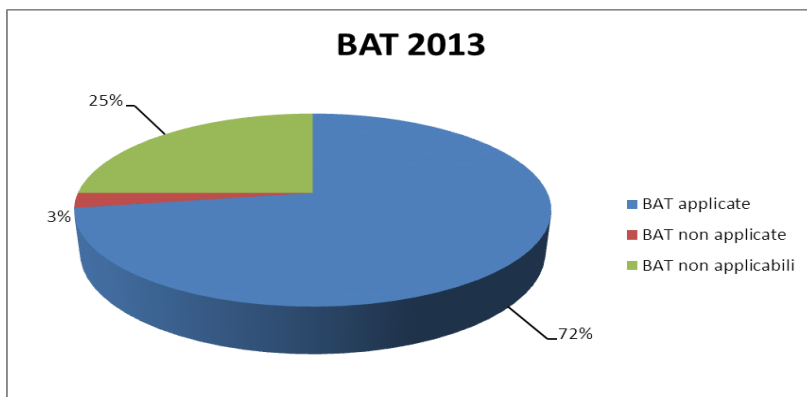
	<table border="1"> <thead> <tr> <th>Technique</th> <th>Cross-reference</th> <th>Applicability</th> </tr> </thead> <tbody> <tr> <td colspan="3"><b>Substitution</b></td> </tr> <tr> <td>High solids coatings</td> <td>14.4.3.1</td> <td>Not all applications</td> </tr> <tr> <td>Water-based coatings</td> <td>14.4.3.2</td> <td>Not all applications</td> </tr> <tr> <td>Powder coatings <sup>(1)</sup></td> <td>14.4.3.3</td> <td>Near zero VOC emissions, but odour problems</td> </tr> <tr> <td>Laminated film coatings</td> <td>14.4.3.4</td> <td>Not all applications</td> </tr> <tr> <td colspan="3"><b>Coating</b></td> </tr> <tr> <td>Roller coating</td> <td>14.4.4.1</td> <td><sup>(2)</sup>All</td> </tr> <tr> <td colspan="3"><b>Waste gas collection and treatment</b></td> </tr> <tr> <td>Air seals on entry and exit</td> <td>14.4.8.1</td> <td><sup>(2)</sup>All</td> </tr> <tr> <td>Negative pressure air in process areas</td> <td>14.4.8.2</td> <td><sup>(2)</sup>All</td> </tr> <tr> <td>Extraction and treating air from coating preparation area</td> <td>14.4.8.3</td> <td><sup>(2)</sup>All new plants: low VOC concentration</td> </tr> <tr> <td>Extraction and treating air from paint application</td> <td>14.4.8.4</td> <td><sup>(2)</sup>All: 8% of VOC source</td> </tr> <tr> <td>Extraction and treating air from drier/oven</td> <td>14.4.8.5</td> <td><sup>(2)</sup>All: 95% of processed VOCs</td> </tr> <tr> <td>Extraction and treating air from cooling zone</td> <td>14.4.8.6</td> <td>New plants: 1 – 2% VOCs</td> </tr> <tr> <td colspan="3"><b>Cleaning</b></td> </tr> <tr> <td>Cleaning</td> <td>14.4.4.2</td> <td></td> </tr> <tr> <td colspan="3"><b>Management of wastes containing solvent</b></td> </tr> <tr> <td>Management of wastes containing solvent</td> <td>20.2.2.1 and 20.13</td> <td></td> </tr> </tbody> </table> <p><sup>(1)</sup> Powder coating can achieve near zero VOC emissions, but cannot be used for all applications for technical reasons. It also frequently needs waste gas treatment for odour.  <sup>(2)</sup> All = non-powder coat processes, where these techniques may be used for other reasons, such as for odour control.</p> <p>Table 21.12: Coil coating: a selection of techniques to control solvent consumptions and emissions</p>	Technique	Cross-reference	Applicability	<b>Substitution</b>			High solids coatings	14.4.3.1	Not all applications	Water-based coatings	14.4.3.2	Not all applications	Powder coatings <sup>(1)</sup>	14.4.3.3	Near zero VOC emissions, but odour problems	Laminated film coatings	14.4.3.4	Not all applications	<b>Coating</b>			Roller coating	14.4.4.1	<sup>(2)</sup> All	<b>Waste gas collection and treatment</b>			Air seals on entry and exit	14.4.8.1	<sup>(2)</sup> All	Negative pressure air in process areas	14.4.8.2	<sup>(2)</sup> All	Extraction and treating air from coating preparation area	14.4.8.3	<sup>(2)</sup> All new plants: low VOC concentration	Extraction and treating air from paint application	14.4.8.4	<sup>(2)</sup> All: 8% of VOC source	Extraction and treating air from drier/oven	14.4.8.5	<sup>(2)</sup> All: 95% of processed VOCs	Extraction and treating air from cooling zone	14.4.8.6	New plants: 1 – 2% VOCs	<b>Cleaning</b>			Cleaning	14.4.4.2		<b>Management of wastes containing solvent</b>			Management of wastes containing solvent	20.2.2.1 and 20.13				
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Cleaning	14.4.4.2																																																												
<b>Management of wastes containing solvent</b>																																																													
Management of wastes containing solvent	20.2.2.1 and 20.13																																																												
171	<p><b>Waste</b>            BAT is to recycle the steel and aluminium from residual substrates, see Section 14.3.3.3.</p>		Non Applicabile	Non si vernicia acciaio o alluminio ma banda stagnata e/o cromata, i cui scarti sono inviati ad idonei impianti di recupero.																																																									
172	<p><b>Energy consumption</b>            BAT is to reduce energy using the techniques in Section 20.5 and energy recovery from thermal waste gas treatment, see Section 20.11. Consumption values associated with BAT for DWI cans (see Section 15.3.2) are:</p> <ul style="list-style-type: none"> <li>• natural gas 5 – 6.7 kWh/m<sup>2</sup></li> <li>• electricity 3.6 – 5.5 kWh/m<sup>2</sup></li> <li>• recovered energy (where energy can be recovered, but not possible where emission levels are met by substitution) 0.3 – 0.4 kWh/m<sup>2</sup>.</li> </ul>		Non Applicabile	La gestione dell'energia delle linee dello scatolificio garantisce quanto richiesto nella sezione 20.5 per conoscenza dei consumi specifici, gestione efficiente dell'energia, identificazione dei possibili miglioramenti, invito al risparmio energetico anche tra i dipendenti. Per le caratteristiche dell'impianto non è possibile recuperare energia dall'effluente																																																									

173	<p><b>Solvent emissions to air</b>                  BAT is to reduce solvent emissions. The emission values of VOC in Table 21.13 (see Section 15.3.3.1): are associated with using a selection of techniques referred to in Table 21.14 as well as the generic BAT described in Section 21.1.</p> <table border="1" style="width:100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">VOC emission level at application (g/m<sup>3</sup>)<sup>(1)</sup></th> </tr> <tr> <th>Solvent-based</th> <th>Water-based</th> </tr> </thead> <tbody> <tr> <td>Food contact</td> <td></td> <td></td> </tr> <tr> <td>• DWI drink cans</td> <td>6.7 – 10.5</td> <td>3.2 – 4.5</td> </tr> <tr> <td>• sheet for ends, cans and components</td> <td>4 – 93</td> <td>1 – 30</td> </tr> <tr> <td>• drums</td> <td>90 – 100</td> <td></td> </tr> <tr> <td>Non-food contact</td> <td></td> <td></td> </tr> <tr> <td>• sheet for ends, cans and components</td> <td>4 – 93</td> <td>1 – 30</td> </tr> <tr> <td>• drums</td> <td>60 – 70</td> <td>11 – 20</td> </tr> <tr> <td>Print paste</td> <td></td> <td></td> </tr> <tr> <td>• sheet for ends, cans and components<sup>(1)</sup></td> <td>2.5 – 13</td> <td>1 – 6</td> </tr> </tbody> </table> <p style="font-size: small; margin: 0;">Notes:  <sup>(1)</sup> UV ink and paste applications are limited to non-food and special applications but can achieve lower values than reported in this table  <sup>(2)</sup> Values also include fugitive emissions</p> <p style="font-size: x-small; margin: 0;">Table 21.13: Metal packaging emission values for solvents associated with BAT</p> <table border="1" style="width:100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th>Technique</th> <th>Cross-reference</th> <th>Applicability</th> </tr> </thead> <tbody> <tr> <td>Replacement of coating and inks (substitution)</td> <td>15.4.1, 15.4.2</td> <td></td> </tr> <tr> <td>Application techniques</td> <td>15.4.3</td> <td></td> </tr> <tr> <td>Priming</td> <td>15.4.4 (see also relevant sections and BAT for priming)</td> <td></td> </tr> <tr> <td>Waste gas collection and treatment</td> <td>15.4.5, 20.11</td> <td></td> </tr> <tr> <td>Minimisation and treatment of solvent containing wastes</td> <td>20.13</td> <td></td> </tr> </tbody> </table> <p style="font-size: x-small; margin: 0;">Table 21.14: Metal packaging techniques to reduce solvent emissions</p>		VOC emission level at application (g/m <sup>3</sup> ) <sup>(1)</sup>		Solvent-based	Water-based	Food contact			• DWI drink cans	6.7 – 10.5	3.2 – 4.5	• sheet for ends, cans and components	4 – 93	1 – 30	• drums	90 – 100		Non-food contact			• sheet for ends, cans and components	4 – 93	1 – 30	• drums	60 – 70	11 – 20	Print paste			• sheet for ends, cans and components <sup>(1)</sup>	2.5 – 13	1 – 6	Technique	Cross-reference	Applicability	Replacement of coating and inks (substitution)	15.4.1, 15.4.2		Application techniques	15.4.3		Priming	15.4.4 (see also relevant sections and BAT for priming)		Waste gas collection and treatment	15.4.5, 20.11		Minimisation and treatment of solvent containing wastes	20.13		Non Applicata	<p>gassoso.</p> <p>Non applicata in quanto, così come specificato a pag. 307 del documento originale BREF, lo spray-repair utilizzato nella fase di finalizzazione dei coperchi è disponibile soltanto a base solvente al momento. È previsto l'utilizzo di carboni attivi a strato sottile con riattivazione esterna.</p>
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174	<p><b>Emissions to water</b>                  BAT is to minimise emissions to water. The emission levels indicated in Table 21.15 can be met by using a suitable combination of techniques mentioned in Sections 15.4.6 and 20.12</p> <table border="1" style="width:100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th>Compound</th> <th>Concentration (mg/l)</th> </tr> </thead> <tbody> <tr> <td>COD</td> <td>350 or less</td> </tr> <tr> <td>AOX</td> <td>0.5 – 1</td> </tr> <tr> <td>HC</td> <td>20 or less</td> </tr> <tr> <td>Sa</td> <td>4 or less</td> </tr> </tbody> </table> <p style="font-size: x-small; margin: 0;">Table 21.15: Metal packaging: emission levels for waste water</p>	Compound	Concentration (mg/l)	COD	350 or less	AOX	0.5 – 1	HC	20 or less	Sa	4 or less	Non Applicabile	<p>Non si utilizza acqua nel processo e non sono presenti scarichi idrici.</p>																																								
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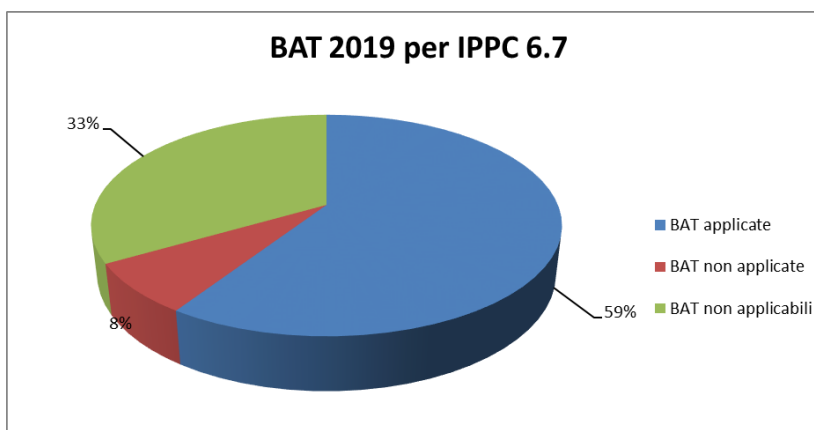
Allegati alla presente scheda <sup>1</sup>	
Valutazione Integrata Ambientale- BAT Angri	Y03
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**Eventuali commenti**

La valutazione effettuata per l'anno 2013, relativa all'impatto che la ditta LA DORIA S.p.A. di Anгри, per le attività IPPC 6.4b2 e 1.1, ha sulle singole matrici ambientali e in maniera integrale sull'ambiente, ha dato esito positivo in quanto dal confronto tra l'anno 2010 (anno riferimento dati precedente istanza) e l'anno 2013 (anno di riferimento dati presente istanza) si nota un discreto miglioramento nelle applicazioni delle BAT, denotando, così, il giusto approccio che l'azienda ha nei confronti della tutela ambientale e dei consumi energetici.



Si riporta il grafico relativo all'IPPC 6.7 oggetto della presente modifica non sostanziale.



<sup>i</sup> - La presente scheda deve riportare la valutazione della soluzione impiantistica da sottoporre all'esame dell'autorità competente. Tale (auto)valutazione deve essere effettuata dal gestore dell'impianto IPPC sulla base del principio dell'approccio integrato, delle migliori tecniche disponibili, delle condizioni ambientali locali, nonché sulla base dei seguenti criteri:

- a. dei documenti di riferimento per la individuazione delle MTD (Migliori Tecniche Disponibili): linee guida, emanate dal Ministero dell'Ambiente e della Tutela del Territorio, quelle pubblicate sul sito <http://www.dsa.minambiente.it/> o nei BREF pertinenti, disponibili sul sito <http://eippcb.jrc.es/pages/FActivities.htm>;

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- b. sulla base della individuazione delle BAT applicabili (evidenziare se le BAT sono applicabili al complesso delle attività IPPC, ad una singola fase di cui al diagramma C2 o a gruppi di esse oppure a specifici impatti ambientali);
  - c. discutere come si colloca il complesso IPPC in relazione agli aspetti significativi indicati nei BREF (tecnologie, tecniche di gestione, indicatori di efficienza ambientale, ecc.), confrontando i propri fattori di emissione o livelli emissivi, con quelli proposti nei BREF. Qualora le tecniche adottate, i propri fattori di emissione o livelli emissivi si discostino da quelli dei BREF, specificarne le ragioni e ove si ritenga necessario indicare proposte, tempi e costi di adeguamento;
  - d. qualora non siano disponibili BREF o altre eventuali linee guida di settore, l'azienda deve comunque valutare le proprie prestazioni ambientali alla luce delle disponibili, individuando gli indicatori che ritiene maggiormente applicabili alla propria realtà produttiva.