Avaliação da instalação face aos brefs aplicáveis com identificação das MTD implementadas/a implementar na instalação, definidas nos seguintes BREF´s:

- ***BREF TXT – Reference Documento n Best Available Techniques for the Textiles Industry (July 2003);***
- **BREF ENE –** ***Reference Document on Best Available Techniques for Energy Efficiency (Frebruary 2009);***
- **BREF ROM –** ***Reference Document on Best Available Techniques Monitoring of emissions from IED – Installations (Formal draft June 2017);***
- **BREF ICS –** ***Reference Document on Best Available Tecnhiques to Industrial Cooling Systems;***
- **BREF EFS –** ***Reference Document Best Available Tecnhiques on Emissions from Storage (July 2006);***

METODOLOGIA DE TRABALHO UTILIZADA

Cada BREF foi analisado e avaliadas as BAT de referência, neles constantes, passíveis de serem aplicadas e implementadas na instalação, uma vez que o projecto ainda não está concluído.

Para cada registo foi utilizado o ficheiro referenciado pela entidade competente, bem como os *Executive Summary* que existem sobre cada BREF acima mencionados.

Nos pontos que se seguem são apresentados os resumos sobre o ponto de situação das BAT e as tabelas da análise realizada BREF a BREF.

Sempre que em cada BREF as BAT não são claramente identificadas, foi analisado o documento, de acordo com melhor julgamento profissional possível e identificadas as questões relevantes que poderiam conter uma BAT.

RESUMO

1. **BREF –** ***Reference Document on Best Available Techniques for Textiles Industry (July 2003)***

A instalação destina-se ao branqueamento e tingimento de fio, que pode ser de vários tipos de fibras. O BREF TXT (2003) aborda as questões transversais a cada sub-sector do sector têxtil, dando especial enfoque à quantidade de água consumida, descarregada e à carga química que transporta. Outras questões importantes são o consumo de energia, as emissões para a atmosfera e os resíduos sólidos gerados.

Neste caso concreto, as máquinas de tingimento são novas, possuindo uma eficiência elevada, permitindo uma optimização do processo, em relação aos seus consumos e consequentes rejeições.

2. **BREF ENE – *Reference Document on Best Available Techniques for Energy Efficiency;***

A instalação produz energia térmica através do gerador de vapor (GV), e produzirá energia eléctrica para autoconsumo, através da cogeração. Será ainda produzida energia eléctrica através da instalação de painéis fotovoltaicos, pelo que existem considerações a efectuar sobre a caldeira que possui, bem como a que irá possuir.

BAT	**Descrição da BAT**	**Medida implementada no gerador de vapor existente e a implementar aquando da aquisição da cogeração**
BAT 18 Table 4.2	Minimise boiler blowdown by improving water treatment. Install automatic total dissolved solids control	- Medir condutividade Do Condensado recuperado - Uso de água desmineralizada - Instalar controle automático da purga em função decondutividade para a caldeira
BAT 19	Bat is to maintain the efficiency of heat exchangers by both: a. Monitoring the efficiency periodically and, b. Preventing or removing fouling	- Inspecção visual dos permutadores - Incrustação nos permutadores prevenida com recurso a adequado tratamento químico da água/vapor - Criar rotina de manutenção preventiva para inspecção periódica dos permutadores

3. **BREF ROM – *Reference Document on Best Available Techniques Monitoring of emissions from IED – Installations;***

A nova versão do BREF – ROM (06.2017), baseia-se na revisão do documento de referência sobre os Princípios Gerais de Acompanhamento (MON REF [3, COM 2003]), que foi adoptado pela Comissão em Julho de 2003. Nos termos da Directiva IPPC 96/61/CE (posteriormente

revogada e substituída pela Directiva 2008/1/CE). A ROM substitui o MON REF, embora não cubra todos os seus tópicos, em particular a avaliação da conformidade. A ROM resume as informações gerais comummente disponíveis recolhidas pela *European IPCC Bureau* de várias fontes, tais como normas internacionais e nacionais, bem como publicações científicas.

Dado que este BREF não especifica claramente quais são as BAT, foram retiradas do texto as questões consideradas relevantes sobre o que se considerou serem os requisitos para uma correcta monitorização a aplicar pelo operador.

Foram consideradas as questões relativas às emissões do efluente para atmosfera, bem como a monitorização às águas residuais.

4. **BREF ICS – *Reference Document on Best Available Tecnhiques to Industrial Cooling Systems;***

Este BREF não especifica claramente quais são as BAT, pelo que foram retirados do texto as questões consideradas relevantes sobre o que se considerou serem os requisitos para uma correcta monitorização a aplicar pelo operador, tendo em conta que, cada MTD associada a este BREF tem de ser específica do local, uma vez que o BREF não entra em pormenores sobre os processos de produção a refrigerar. Desta forma o documento é apresentado de forma muito genérica, tendo incidido sobre o capítulo 4, referente às melhores técnicas disponíveis para sistemas de refrigeração industrial.

5. **BREF EFS – *Reference Document Best Available Tecnhiques on Emissions from Storage;***

Este BREF apresenta importância reduzida para a instalação.

A armazenagem de combustíveis existente é apenas referente à armazenagem de pellets de alimentação ao gerador de vapor. Não há consumo de gás natural, nem outros combustíveis, pelo que não são considerados os BREF relativos ao armazenamento de combustíveis líquidos, uma vez que grande parte das BAT descritas neste BREF são dedicadas à armazenagem e depósitos típicos realizada em parque de combustíveis, ou outros de dimensões elevadas, pelo que nem sequer foram consideradas. As BAT passíveis de serem aplicadas, é dada a indicação e registada a forma como será aplicada.

Aquando da implementação da cogeração, o gás natural será, fornecido através da rede. Não se verificando essa condição, e forem necessários depósitos de Gasóleo, ou outro tipo de combustível, serão tidas em linha de conta, os BREF relativos aos tanques de armazenamento.

Análise BREF a BREF

1. Avaliação da instalação face ao *Reference Document On Best Avaialable Techniques for the Textiles Industry*

As respostas são dadas de acordo com a melhor interpretação do BREF e o preenchimento das colunas da tabela, foi realizado de acordo com a forma possível ao tipo de BREF e questões consideradas.

1	2	3	4	5	6	7	8
MTD		**Está implementada**	**Descrição do modo de implementação**	**VEA/VCA**	**Proposta de valor a atingir dentro da gama de VEA/VCA**	**Descrição da técnica alternativa implementada**	**Motivo da não aplicabilidade**
BREF()							
N.º atribuído de acordo com o BREF ou documento de conclusões MTD	Descrição de acordo com o BREF	S/N/n.a	Se preencheu "S" na coluna 3.			Se preencheu "N" na coluna 3.	Se preencheu "n.a." na coluna 3.

			Incluir descrição sobre o sistema de gestão que assegurará o bom desempenho da técnica.	Indicar a gama de VEA e/ou VCA associados ao uso da MTD, se existentes.	Deverá ser indicado(s) valore(s) dentro da gama de VCA e/ou VEA que irá ser atingido, caso exista VCA e/ou VEA.	Se se trata de uma instalação existente terá de apresentar em anexo documentos de adjudicação dos equipamentos e trabalhos necessários para a implementação da MTD ou de técnica alternativa e sua respectiva calendarização.	Descrição dos motivos técnicos que levam a que a MTD não seja aplicável ao processo produtivo da instalação.
						Incluir na coluna 3 a descrição sobre o sistema de gestão que assegurará o bom desempenho da técnica.	

Legenda:	
S	Sim
N	Não
NA	Não aplicável

BREF TXT – Best Available Techniques for the Textiles Industry							
N.º atribuído de acordo com o BREF ou documento de conclusões MTD	**Descrição de MTD de acordo com o BREF**	**S/N/ n.a.**	**Se preencheu "S" na coluna 3.** **Descrição do modo de implementação**	**VEA/ VCA**	**Proposta de valor a atingir dentro da gama de VEA/VCA**	**Se preencheu "N" na coluna 3.**	**Se preencheu "n.a." na coluna 3.**
5.1 Generic BAT Management	BAT is to: - implement environmental awareness and include it in training programmes - apply good practices for maintenance and cleaning (see 4.1.1) -store each chemical according to the instructions given by the manufacturer in the Material Safety Data Sheets and follow the indications given in the horizontal BREF on Storage (in preparation at the time of writing) -put in place measures to avoid spillage of chemicals and process liquors. If spillage does occur, containment procedures must be available as well as a means of cleaning up and disposing of the spillage safely. It should be impossible for spillage to enter surface waters or sewer - implement a monitoring system for process inputs and outputs (both on-site and on-process level), including	S	São realizadas acções de sensibilização na gestão de resíduos e no manuseamento de produtos químicos, tipos de equipamentos de protecção a utilizar, de acordo com o indicado nas fichas de dados de segurança. No armazenamento de produtos químicos, o operador tem acesso a um dossier com o resumo de todas as fichas de dados de segurança, com todas as indicações do correcto manuseamento. O local de armazenamento dos produtos está dotado de grelhas de drenagem directamente para a EPTAR, em caso de derrame, bem como o local de produção (autoclaves).	-	-	-	-

	inputs of textile raw material, chemicals, heat, power and water, and outputs of product, waste water, air emissions, sludges, solid wastes and by-products. A good knowledge of the process inputs and outputs is a prerequisite for identifying priority areas and options for improving environmental performance.		Existem ainda kits de contenção de derrame e em caso de contactos oculares, existem lava-olhos.				
5.1 Generic BAT Dosing and dispensing of chemicals (excluding dyes)	BAT is to install automated dosing and dispensing systems which meter the exact amounts of chemicals and auxiliaries required and deliver them directly to the various machines through pipework without human contact.	S	Estão instalados dispensadores e doseadores automáticos, tornando o contacto humano com os produtos químicos residual.	-	-	-	-
5.1 Generic BAT Selection & use of chemicals	**1.** BAT is to follow certain general principles in selecting chemicals and managing their use: -where it is possible to achieve the desired process result without the use of chemicals, then avoid their use altogether - where this is not possible,	S	Para cada cliente existe um caderno de encargos, onde são exigidos os produtos químicos a utilizar, garantido assim, que a instalação não utiliza produtos químicos proibidos.	-	-	-	-

	adopt a risk-based approach to selecting chemicals and their utilisation mode in order to ensure the lowest overall environmental risk. **2. For surfactants BAT is to** substitute alkylphenol ethoxylates and other hazardous surfactants with susbtitutes that are readily biodegradable or bioeliminable in the waste water treatment plant and do not form toxic metabolites (as described in Section 4.3.3) **3.For complexing agents BAT is to:** - avoid or reduce the use of complexing agent in pretreatment and dyeing processes by a combination of: a)softening of fresh water to remove the iron and the hardening alkaline-earth cations from the process water b) using a dry process to remove coarse iron particles from the fabric before bleaching (magnetic detectors are installed on continuous pretreatment lines as described in Section 4.5.6). This treatment is convenient when the process starts with		São ainda adoptadas as medidas de precaução existentes nas fichas de dados correspondentes. O caderno de encargos determina quais os produtos químicos que podem ser utilizados.				

	an oxidative/desizing step, otherwise a huge amount of chemicals would be required to dissolve the coarse iron particles in a wet process. However, this step is not necessary when an alkaline scouring treatment is carried out as a first step before bleaching c) removing the iron that is inside the fibre using acid demineralisation, or better, nonhazardous reductive agents (see Section 4.5.6), before bleaching heavily contaminated fabrics applying hydrogen peroxide under optimal controlled conditions as described in Section 4.5.6 - select biodegradable or bioeliminable complexing agents (as described in Section 4.3.4).		São utilizados produtos biodegradáveis sempre que possível.				
	3.For antifoaming agents BAT is to: minimise or avoid their use by: -using bath-less air-jets, where the liquor is not agitated by fabric rotation - re-using treated bath - select anti-foaming agents that are free from mineral oils and that are characterised by high bioelimination rates, as described in Section 4.3.5.	S	O caderno de encargos especifica quais os produtos químicos que podem ser utilizados.	-	-	-	-

5.1 Generic BAT Selection of incoming fibre raw material	BAT is to seek collaboration with upstream partners in the textile chain in order to create a chain of environmental responsibility for textiles.	N	-	-	-	Não existe rastreabilidade da fibra em termos de produto químicos utilizados.	-
	• **Man-made fibres** BAT is to select material treated with low-emission and biodegradable/ bioeliminable preparation agents (see 4.2.1)	S	O caderno de encargos especifica quais os produtos químicos que podem ser utilizados. Sempre que é possível são utilizados produtos químicos biodegradáveis.	-	-	-	-
	• **Cotton** BAT is to select material sized with low add-on techniques (pre-wetting of the warp yarn, see 4.2.5) and high-efficiency bioeliminable sizing agents (see 4.2.4) use the available information to avoid processing fibre material contaminated with the most hazardous chemicals such as PCP use organically grown cotton when market conditions allow	S	Sempre que é possível, a instalação trabalha com algodão orgânico. A instalação possui certificação GOTS – *Global Organic Textile Standard – Ecology & Social Responsability,* tendo sido pioneira a nível nacional nesta certificação.	-	-	-	-
5.1 Generic BAT Water & energy management	**BAT is to:** - monitor water & energy consumption in the various processes, as mentioned earlier and described in Section 4.1.2 - install flow control devices and automatic stop valves on continuous machinery (Sections 4.1.4 and 4.9.2)	S	BAT parcialmente aplicável. Todas as captações possuem contador individual, permitindo à instalação saber a proveniência e a quantidade da água de abastecimento ao processo.	-	-	-	-

	- install automatic controllers for control of fill volume and liquor temperature in batch machines (Sections 4.1.1 and 4.6.19) -establish well-documented production procedures in order to avoid wastage of resources from inappropriate work practices (Section 4.1.4) - optimise scheduling in production and adjust processes in pretreatment to quality requirements in downstream processes (Section 4.1.1) - investigate the possibility of combining different treatments in one single step (Sections 4.1.1 and 4.1.4) - install low- and ultra-low liquor ratio machinery in batch processes (Sections 4.6.19 to 4.6.21) - introduce low add-on application techniques in continuous processes (Section 4.1.4) - improve washing efficiency in both batch and continuous processing, as described in Sections 4.9.1 and 4.9.2 - re-use cooling water as process water (also allowing heat recovery) (Section 4.1.1) - investigate possibilities for water re-use and recycling by		As máquinas de tingir (autoclaves) possuem contadores automáticos. A empresa é certificada de acordo com a norma NP ISO 9001:2008, encontrando-se actualmente a proceder à transição de acordo com a norma NP ISO 9001:2015. Desta forma, existem registos, instruções de trabalho e procedimentos que permitem a existência de uma dinâmica da melhoria contínua, assegurar a competitividade e o desenvolvimento sustentável e, consequentemente, aumentar os níveis de confiança nos processos internos. Existem aproveitamentos térmicos no processo, nomeadamente: 1.Aproveitamento térmico dos gases quentes da combustão da biomassa no Gerador de Vapor (GV):				

	systematic characterisation of quality and volume of the various process streams in order to identify processes for which the substances contained in the various waste streams are still valuable and/or do not interfere with the quality of the product. For recycling purposes in batch processes it is convenient to install machinery with built-in features that facilitate recovery and re-use of waste streams. Examples of options for water re-use are reported in Sections 4.5.8 and 4.6.22 - fit hoods and covers ensuring full closure of machinery that could give rise to vapour losses (Sections 4.1.1 and 4.6.19) -insulate pipes, valves, tanks, machines to minimise heat losses (Section 4.1.5) -optimise boiler houses by applying re-use of condensed water, preheating of air supply, heat recovery from combustion gases (Sections 4.1.1, 4.4.3 and 4.8.1) - segregate hot and cold waste water streams prior to heat recovery and recover heat from the hot stream (Sections 4.1.1 and 4.6.22) - install heat recovery		- A energia térmica é aproveitada através de um economizador de calor, onde se realiza a permuta de calor dos gases quentes libertados com a água que é introduzida no gerador de vapor. Esta permuta permite o aquecimento da água, reduzindo a necessidade de combustível. - Aproveitamento dos condensados São aproveitados o máximo de condensados de retorno (cerca de 80%), que são reintroduzidos no GV para o processo. Uma parte significativa do vapor, gerado no GV, é reutilizado, dado que funciona em circuito fechado. As máquinas possuem tecnologia que permite que o vapor utilizado seja de forma indirecta, não havendo assim desperdício. 2.Aproveitamento térmico através das máquinas de tingir (autoclaves) 2.1Aproveitamento térmico das águas de arrefecimento - As máquinas de tingimento possuem sistemas de controlo				

	systems for off-gases (Sections 4.1.1, 4.4.3 and 4.8.1) - install frequency-controlled electric motors (Section 4.1.1).		dos parâmetros, que automaticamente identifica a água quente limpa (T>50º), encaminhando-a para um tanque de água quente limpa, para utilização no processo de tingimento, reduzindo a necessidade de aquecimento dos banhos. 2.2.Saída da água suja quente do processo de tingimento - As máquinas devido aos sistemas de controlo que possuem, permitem encaminhar o efluente quente (T>50º) para um tanque de águas quentes sujas , passando por um permutador de calor, aquecendo a água fria limpa, que posteriormente é encaminhada para o tanque de água quente limpa.				
5.1 Generic BAT Management of waste streams	BAT is to: -collect separately unavoidable solid waste - use bulk or returnable containers.	S	Existem na fábrica vários contentores para a correcta separação de resíduos. No parque de resíduos da instalação é efectuado o armazenamento temporário dos mesmos, nunca por um período superior a um ano, sendo recolhidos,	-	-	-	-

			posteriormente por agentes autorizados. Os vasilhames dos produtos químicos são retomados ao fornecedor.				
5.2.2 Textile finishing and carpet industry PRETREATMENT Bleaching	BAT is to: - use hydrogen peroxide bleaching as preferred bleaching agent combined with techniques for minimising the use of hydrogen peroxide stabilisers, as described in Section 4.5.6, or using biodegradable/bioeliminable complexing agents described in Section 4.3.4 - use sodium chlorite for flax and bast fibres that cannot be bleached with hydrogen peroxide alone. A two-step hydrogen peroxide-chlorine dioxide bleaching is the preferred option. It must be ensured that elemental chlorine-free chlorine dioxide is used. Chlorine-free chlorine dioxide is produced using hydrogen peroxide as the reducing agent of sodium chlorate (see Section 4.5.5) - limit the use of sodium hypochlorite only to cases in which high whiteness has to be achieved and to fabrics that are fragile and would	S	É utilizado apenas o peróxido de hidrogénio, sempre que possível biodegradável, para o processo de branqueamento. Não utilizados quaisquer produtos de hipoclorito ou clorito de sódio ou dióxido de cloro.	-	-	-	-

	suffer depolymerisation. In these special cases, to reduce the formation of hazardous AOX, sodium hypochlorite bleaching is carried out in a two-step process in which peroxide is used in the first step and hypochlorite in the second. Effluent from hypochlorite bleaching is kept separate from the other streams and mixed effluents in order to reduce formation of hazardous AOX.						
5.2.2 Textile finishing and carpet industry DYEING Dosage and dispensing of dye formulations	BAT is to do all the following: - reduce the number of dyes (one way to reduce the number of dyes is by using trichromatic systems) - use automated systems for dosage and dispensing of dyes, only considering manual operation for dyes that are used infrequently - in long continuous lines where the dead volume of the distribution line is comparable with the volume in the padder, give preference to decentralised automated stations that do not premix the different chemicals with the dyes before the process and that are fully automatically cleaned.	S	São utilizados sistemas automatizados para a dosagem e distribuição de corantes, considerando apenas a operação manual para corantes que são usados com pouca frequência ou que não podem ser utilizados no sistema automatizado.	-	-	-	-
5.2.2 Textile finishing and	BAT is to: -minimise residual liquor by:	S	O processo de secagem é realizado em secadores de	-	-	-	-

carpet industry FINISHING Process in general	using minimal application techniques (e.g. foam application, spraying) or reducing volume of padding devices -re-using padding liquors if quality is not affected - minimise energy consumption in stenter frames by (see Section 4.8.1): -using mechanical dewatering equipment to reduce water content of the incoming fabric - optimising exhaust airflow through the oven, automatically maintaining exhaust humidity between 0.1 and 0.15 kg water/kg dry air, considering the time taken to reach equilibrium conditions installing heat recovery systems -fitting insulating systems ensuring optimal maintenance of the burners in directly heated stenters -use low air emission optimised recipes. An example for classification/ selection of finishing recipes is the "Emission factor concept" described in Section 4.3.2		radiofrequência/estufas. A temperatura é optimizada consoante o tipo de fibra.				
5.2.2 Textile finishing and carpet industry	BAT is to: -substitute overflow washing/rinsing with drain/fill methods or " smart rinsing"	S	O processo de lavagem do fio é realizado de acordo com o tipo de fibra, sendo optimizado de acordo com a	-	-	-	-

WASHING	techniques as described in Section 4.9.1 -reduce water & energy consumption in continuous processes by: -installing high-efficiency washing machinery according to the principle described in Section 4.9.2. The associated values for high-efficiency continuous washing of cellulosic and synthetic fabric in open-width are reported in Table 4.38 introducing heat recovery equipment -when halogenated organic solvent cannot be avoided (e.g. with fabrics that are heavily loaded with preparations such as silicone oils that are difficult to remove with water), use fully closed-loop equipment. It is essential that the equipment fulfil the requirements described in Section 4.9.3 and provisions be taken for in-loop destruction (e.g. by advanced oxidation processes) of the persistent pollutants in order to avoid any possible contamination of groundwater arising from diffuse pollution and accidents.		cor e o tipo de fibra, de forma a exisitirem o menor número de lavagens possível. Em cores claras, e dado a alta eficiência das máquinas, pode ser realizada apenas uma lavagem.				
5.3 Effluent treatment and waste disposal	Waste water treatment follows at least three different strategies:	S	O estabelecimento tem uma EPTAR que procede à homogeneização e	-	-	-	-

WASTE WATER TREATMENT	-central treatment in a biological waste water treatment plant on site - central treatment off site in a municipal waste water treatment plant - decentralised treatment on site (or off site) of selected, segregated single waste water streams		arrefecimento do efluente, que posteriormente é encaminhada para a ETAR municipal para tratamento químico e biológico.				

1. **Avaliação da instalação face ao Reference Document on Best Available Techniques for Energy Efficiency;**

BREF ENE – ENERGY EFFICIENCY							
N.º atribuído de acordo com o BREF ou documento de conclusões MTD	**Descrição de MTD de acordo com o BREF**	**S/N/ n.a.**	**Se preencheu "S" na coluna 3.** **Descrição do modo de implementação**	**VEA/ VCA**	**Proposta de valor a atingir dentro da gama de VEA/VCA**	**Se preencheu "N" na coluna 3.**	**Se preencheu "n.a." na coluna 3.**
4.2.2.2 Identification of energy efficiency aspects of an installation and opportunities for energy savings **BAT 3**	BAT is to identify the aspects of an installation that influence energy efficiency by carrying out an audit. It is important that an audit is coherent with a systems approach (see BAT 7).	S	Existirão auditorias energéticas, a partir de Janeiro de 2018, uma vez que a empresa é consumidora intensiva de energia.	**-**	**-**	**-**	**-**
BAT 4	When carrying out an audit, BAT is to ensure that the audit identifies the following aspects (see Section 2.11)	S	As Auditorias Energéticas seguirão as melhores MTD`s.	**-**	**-**	**-**	**-**

BAT 5	BAT is to use appropriate tools or methodologies to assist with identifying and quantifying energy optimisation	S	As Auditorias Energéticas seguirão as melhores MTD`s.	**-**	**-**	**-**	**-**
BAT 6	BAT is to identify opportunities to optimise energy recovery within the installation, between systems within the installation (see BAT 7) and/or with a third party (or parties), such as those described in Sections 3.2, 3.3 and 3.4.	S	Ver BAT 5.1 Generic BAT Water & energy management do BREF Textiles Industry.	**-**	**-**	**-**	
4.2.2.4 Establishing and reviewing energy efficiency objectives and indicators **BAT 8**	BAT is to establish energy efficiency indicators by carrying out all of the following (..)	N	-	**-**	**-**	Serão realizadas as auditorias energéticas de forma a dar cumprimento à legislação em vigor. Após a auditoria serão definidos objectivos para a instalação.	-
4.2.3 Energy efficient design (EED) **BAT 10**	BAT is to optimise energy efficiency when planning a new installation, unit or system or a significant upgrade (see Section 2.3) by considering all of the following (..)	S	Ver BAT 5.1 Generic BAT Water & energy management do BREF Textiles Industry. Aquando da execução da cogeração serão tidas em linha de conta as melhores técnicas disponíveis na execução do projecto.	**-**	**-**	-	-

4.2.4 Increased process integration **BAT 11**	BAT is to seek to optimise the use of energy between more than one process or system (see Section 2.4), within the installation or with a third party.	S	O mesmo que em BAT 6 e 10.	**-**	**-**	-	-
4.2.6 Maintaining expertise **BAT 13**	BAT is to maintain expertise in energy efficiency and energy-using systems by using techniques	N	-	**-**	**-**	Auditorias internas e externas realizadas no âmbito da Gestão dos Consumidores Intensivos de Energia (SGCIE), as quais promoverão a manutenção na instalação das MTDs disponíveis no mercado.	-
4.2.8 Maintenance **BAT 15**	BAT is to carry out maintenance at installations to optimise energy efficiency by applying all of the following (…)	N	-	**-**	**-**	Serão aplicadas as MTDs no mercado para a realização do programa de manutenção preventiva e correctiva que promova a optimização da eficiência operacional e energética da instalação.	-
BAT 18 **Table 4.2**	Energy efficient design and installation of steam distribution pipework	S	A execução do projecto de engenharia das redes de distribuição de vapor tiveram em linha de conta as melhores técnicas disponíveis, aquando da execução do projecto.	**-**	**-**	-	-

			Aquando da instalação da cogeração, o projecto de engenharia contemplará as melhores técnicas disponíveis para a execução dos equipamentos e será realizada a gestão dos equipamentos em funcionamento, pelo que o gerador de vapor a biomassa só estará em funcionamento quando a cogeração não for suficiente na alimentação do processo.				
BAT 18 **Table 4.2**	Preheat feed-water by using: • waste heat, e.g. from a process	S	Ver BAT 5.1 Generic BAT Water & energy management do BREF Textiles Industry.	**-**	**-**	-	-
BAT 18 **Table 4.2**	Prevention and removal of scale deposits on heat transfer surfaces. (Clean boiler heat transfer surfaces)	S	Na caldeira é realizado o tratamento químico da água/vapor e utilizada água desmineralizada.	**-**	**-**	-	-
BAT 18 **Table 4.2**	Minimise boiler blowdown by improving water treatment. Install automatic total dissolved solids control	S	Será realizado o controloautomático da purga por condutividade. É usada água desmineralizada.	**-**	**-**	-	-

BAT 18 **Table 4.2**	Add/restore boiler refractory	S	Será realizado nas paragens anuais de manutenção, como parte do programa de manutenção preventiva e correctiva.	**-**	**-**	-	-
BAT 18 **Table 4.2**	Carrying out boiler maintenance	S	Será realizada a manutenção correctiva e estão implementados planos de manutenção preventiva.	**-**	**-**	-	-
BAT 18 **Table 4.2**	Optimise steam distribution systems (especially to cover the issues below)	S	Será realizada a manutenção correctiva e estão implementados planos de manutenção preventiva.	**-**	**-**	-	-
BAT 18 **Table 4.2**	Insulation on steam pipes and condensate return pipes. (Ensure that steam system piping, valves, fittings and vessels are well insulated)	S	As tubagens serão isoladas e será efectuada a sua adequada manutenção. Ver BAT 10.	**-**	**-**	-	-
BAT 18 **Table 4.2**	Implement a control and repair programme for steam traps	S	Será realizada a manutenção correctiva e estão implementados planos de manutenção preventiva.	**-**	**-**	-	-

BAT 18 **Table 4.2**	Collect and return condensate to the boiler for re-use. (Optimise condensate recovery)	S	O vapor condensado em retorna ao gerador de vapor.	**-**	**-**	-	
BAT 18 **Table 4.2**	Recover energy from boiler blowdown	S	Ver BAT 10.	**-**	**-**	-	-
4.3.3 Heat recover **BAT 19**	BAT is to maintain the efficiency of heat exchangers by both: a. monitoring the efficiency periodically, and b. preventing or removing fouling	S	-Os permutadores são inspeccionados visualmente e as temperaturas de permuta analisadas em continuo. -A incrustação nos permutadores é prevenida com recurso a adequado tratamento químico da água/vapor.	**-**	**-**	-	-
4.3.5 Electrical power supply **BAT21**	BAT is to increase the power factor according to the requirements of the local electricity distributor by using techniques such as those in Table 4.3, according to applicability (see Section 3.5.1).	NA	-	**-**	**-**	A instalação não venderá a energia eléctrica à rede, sendo apenas para autoconsumo.	-

4.3.6 Electric motor driven sub-systems34 **BAT 24**	BAT is to optimise electric motors in the following order (see Section 3.6)	N	-	**-**	**-**	Serão usadas as MTD disponíveis no mercado aplicáveis à instalação da cogeração.	-
4.3.7 Compressed air systems (CAS) **BAT 25**	BAT is to optimise compressed air systems (CAS) using the techniques such as those in Table 4.6, according to applicability	N	-	**-**	**-**	Serão usadas as MTD disponíveis no mercado aplicáveis à instalação.	-

2. Avaliação da instalação face ao Reference Document on Best Available Techniques Monitoring of emissions from IED – Installations;

Na análise do presente BREF foram tidas em linha de conta a monitorização das emissões gasosas e ainda das águas residuais do processo.

BREF Monitoring of emissions from IED – Installations							
n.º atribuído de acordo com o BREF ou documento de conclusões MTD	**Descrição de MTD de acordo com o BREF**	**S/N/n.a.**	**Se preencheu "S" na coluna 3.** **Descrição do modo de implementação**	**VEA/VCA**	**Proposta de valor a atingir dentro da gama de VEA/VCA**	**Se preencheu "N" na coluna 3.**	**Se preencheu "n.a." na coluna 3.**
Emissions to air							
3.2 Possible objectives of monitoring	The objectives of monitoring are many and diverse. For example, monitoring can be applied to: - assess compliance with permit requirements; - find the optimal balance between process yield, energy efficiency, resourcee input and	S	É realizada a monitorização de forma a dar cumprimento à legislação em vigor.	-	-	-	-

	emission levels; - analyse the causes of certain types of emission behaviour (e.g. to detect reasons for variations in emissions under normal operating conditions or other than normal operating conditions); - predict the emission behaviour of an installation, e.g. after operational conversions,operational breakdowns or an increase in capacity; - check the performance of abatement systems; - determine the relative contribution of different sources to the overall emissions; - provide measurements						

	for safety checks; - report emissions for specific inventories (e.g. local, national and international, such as the E-PRTR); - provide data for assessing environmental impacts (e.g. for input to models, pollutant load maps, assessment of complaints); - set or levy environmental charges and/or taxes.						
3.3 General approaches to decide on an appropriate monitoring regime **3.2.1 Overview**	In principle there are various approaches that can be taken to monitor a specific parameter, although some of them may not be appropriate for particular applications. In general, these approaches can be classified into three main groups: direct measurements, indirect measurements or other indirect monitoring	S	É realizada a monitorização de forma a dar cumprimento à legislação em vigor. A monitorização é realizada por empresas e laboratórios externos acreditados e as metodologias	-	-	-	-

	estimation methods.		seguem as normas europeias e legislação em vigor aplicável				
3.3.3 Direct measurements and indirect methods **3.3.3.1 Overview**	Several approaches can be taken to monitor a specific parameter, including [2, IMPEL 2001]: <u>Direct measurements</u> (see Section 3.3.3.2); - continuous measurements (see Section 3.3.3.2.1.1); - periodic measurements (see Section 3.3.3.2.1.2); - campaign measurements (see Section 3.3.3.2.2); <u>Indirect methods</u> (see Section 3.3.3.3): - surrogate parameters (see Section 3.3.3.3.1); o mass balances (see Section 3.3.3.3.2); - emission factors (see Section 3.3.3.3.3); - other calculations (see Section 3.3.3.3.4).	S	O mesmo que em 3.2.1	-	-	-	-
3.3.3.2.1.2	The following types of periodic measurement	S	Serão realizadas 2 monitorizações				

Periodic measurement	techniques are generally considered (for more details see Section 4.3.3 and 5.3.5) [3, COM 2003]: -Portable instruments used for series of measurements. These instruments are carried to and set up at the measurement site. Normally a probe is introduced at an appropriate measurement port to measure in situ or to sample the stream and analyse it on-line. These instruments are appropriate for checking emission concentrations and also for calibrating other monitoring equipment. Laboratory analysis of samples taken by fixed on-line samplers. These samplers withdrawthe sample continuously and collect it in a container. From this container, a portion is then		durante o primeiro ano de laboração, por forma a cumprir o disposto legalmente vigente e mediante os resultados, será analisada a periocidade de medição. A monitorização é da responsabilidade da empresa e realizada com a participação de entidades contratadas (empresas de monitorização e ou laboratórios).				

	analysed in the laboratory, giving an average concentration over the total volume accumulated in the container. The amount of sample withdrawn can be proportional to time or to flow and has to be sufficient for the applied measurement technique. ---Laboratory analysis of spot samples. A spot sample is a sample taken from the sampling point at a certain time over a certain time period. The sample is then analysed in the laboratory, providing an average over the sampling period, which is representative of the time at which the sample was taken. The amount of sample taken has to be sufficient for the applied measurement technique.						
3.4Quality assurance **3.4.1 Overview**	Data quality is the most critical aspect of monitoring. Reliable data are needed for assessing	S	A monitorização é da responsabilidade da empresa e	-	-	-	-

	and comparing the performances of emission/consumption control techniques, for decision making concerning allowable levels of emissions/consumptions, and for the prevention of accidents, etc. Thus, quality assurance is essential for the whole data production chain and for any type ofmonitoring.		realizada com a participação de entidades contratadas (empresas de monitorização e ou laboratórios).				
3.4.2 Personnel and laboratory qualification	EN ISO/IEC 17025:2005 specifies general requirements for the competence of testing and calibration laboratories using standard methods, non-standard methods and laboratorydeveloped methods. Laboratories adhering to the standard have to establish a management system to	S	O laboratório seleccionado é acreditado de acordo com as normas vigentes e usará as normas standard para a determinação dos parâmetros	-	-	-	

	assure the quality of the measurement results. The standard also includes technical requirements on personnel, laboratory facilities and equipment, measurement and calibration methods and their validation in the case of laboratory-developed and non-standard methods, measurement traceability, sampling and reporting [1, CEN 2005].						
3.4.3 Use of standardised methods	According to Directive 98/34/EC, the European standardisation bodies are CEN (European Committee for Standardization), CENELEC (European Committee for Electrotechnical Standardisation), and ETSI (European Telecommunications Standards Institute) [25, EC 1998]. The preparation and amendment of European Standards (EN standards)	S	O mesmo que em 3.3.2	-	-	-	-

	involves the national standardisation bodies of 33 member countries including all EU Member States.						
3.4.4.3 Uncertainty of measurement	The various standards generally distinguish between three different types of uncertainties [11, JCGM 2008], [12, CEN 2007], [265, INERIS 2016], [269, Eurachem/CITAC 2012]: - The standard uncertainty is the uncertainty of the result of a measurement expressed as a standard deviation. - The combined standard uncertainty is the standard uncertainty of the result of a measurement when that result is obtained from the values of a number of other input quantities. It is equal to the positive	S	A incerteza é calculada pelos laboratórios que realizam a monitorização. A instalação terá no seu sistema de gestão uma listagem dos EMM, para os quais precisará de providenciar a calibração. No caso dos equipamentos de monitorização, para efeito de verificação dos requisitos legais ambientais aplicáveis, os equipamentos	-	-	-	-

	square root of a sum of terms, the terms being the variances or covariance of these other quantities weighted according to how the measurement result varies with changes in these quantities. - The expanded uncertainty, also referred to as the overall uncertainty, is the interval within which the value of the measurand is believed to lie with a higher level of confidence. The expanded uncertainty is obtained by multiplying the combined standard uncertainty with a coverage factor. In many cases, a coverage factor of k = 1.96 with a confidence level of 95 % is chosen.		pertencem às empresas e laboratórios contratados que são acreditados e ou apresentam nos relatórios os certificados de calibração (emissões e ruído).				
3.4.4.4 Limit of detection/limit of quantification	Laboratories adhering to EN ISO/IEC 17025:2005 are required to validate	S	Quando os valores estão abaixo do limite de detecção	-	-	-	-

	laboratory-developed and non-standard methods and to determine their performance characteristics [1, CEN 2005]. Validation usually includes the determination of the limit of detection (LoD) and of the limit of quantification (LoQ). In the field of water analysis, there was no generic EN standard or specification in 2016 defining LoD or LoQ. However, a definition is given in Directive 2009/90/EC laying down technical specifications for chemical analysis and monitoring of water status pursuant to the Water Framework Directive [40, EC 2009]: - Limit of detection means the output signal or concentration value above which it can beaffirmed with a stated level of confidence that a sample is different from a blank sample containing no determinand of interest. - Limit of quantification means a stated multiple of		tal é indicado no boletim. Os métodos de análise estão definidos na legislação aplicável caso a caso e na acreditação dos laboratórios.				

	the limit of detection at a concentration of the determinand that can reasonably be determined with an acceptable level of accuracy and precision. The limit of quantification can be calculated using an appropriate standard or sample, and may be obtained from the lowest calibration point on the calibration curve, excluding the blank.						
3.4.4.5 Outliers	ISO 5725-1:1994 defines an outlier as a member of a set of values which is inconsistent with the other members of that set [271, ISO 1994]. CEN/TR 15983:2010 gave a similar definition for the measurement of emissions to air whereby an outlier, also referred to as an invalid data point, is an observation that lies at an abnormal distance from other values in a set of	S	Quando um valor de análise não é expectável numa gama muito diferente e se foi detectado ainda na instalação é geralmente analisado o processo de fabrico e a amostra e análises são repetidas. Caso seja detectado fora da instalação ou na recepção do relatório de	-	-	-	-

	data, and therefore has a low probability of being a valid data point. CEN/TR 15983:2010 has been withdrawn [272, CEN 2010].		monitorização é aberta uma situação de não conformidade, analisadas as causas e definidas as correcções e acções correctivas. É repetida a análise para verificar se o problema se mantém.				
Emissions to water							
5.3 Continuous/periodic measurements 5.3.1 Generic EN standards	Table 5.2 lists some generic EN standards and a technical specification relevant for the monitoring of emissions to water.	S	A análise periódica ao efluente é realizada de acordo com as normas em vigor.	-	-	-	-
5.3.2 Monitoring regimes Table 5.3	For periodic sampling, the samples are taken at different intervals, typically depending on time or waste water volume flow rate. One example is flow-proportional sampling, in which a predefined amount of sample is taken for each predefined	S	A amostragem é realizada de forma periódica de forma a dar cumprimento ao que está disposto na licença da entidade gestora.	-	-	-	-

	volume of waste water discharged.						
5.3.5.2 Measurement and sampling plan	The measurement plan includes, among others, a clear description of the following items: measurement objective including specification of the measurands; • collection of data to clearly describe the operating conditions; • sampling site and sampling point (see Section 5.3.5.3); •sampling method, including sampling equipment (see Sections 5.3.5.4 and 5.3.5.5); volume of waste water that the sampling intends to represent; • collection of data related to the waste water flow and other parameters, if relevant, such • as temperature, pH; time and frequency of sampling (see Section 5.3.5.6); • pretreatment and	S	A amostragem é realizada de forma periódica de forma a dar cumprimento ao que está disposto na licença da entidade gestora.	-	-	-	-

	preservation of samples (see Section 5.3.5.7); • handling and storage of samples (see Section 5.3.5.7); • laboratory measurement (see Section 5.3.5.8); • data treatment (see Section 5.3.6); • quality assurance measures; • documentation and reporting (see Section 5.3.7)						
5.3.5.3 Measurement/sampling site and point	The following recommendations might be helpful to select the sampling point [38, DK EPA 2012], [103, MCERTS 2015], [152, ISO 1992]: a sampling point in a pipe or channel must be sufficiently far downstream of the last • inflow in order to guarantee that mixing of the two streams is complete; the waste water at the sampling point should be well mixed	S	A amostragem é realizada em local próprio e por laboratório externo acreditado para a medição dos parâmetros.	-	-	-	-

	(turbulent flow), in order to • avoid stratification and sedimentation of particles; sampling points should be placed away from the sides and the bottom, to avoid • contamination of the sample with sediments or biofilms; the sampling point should not be affected by recirculating internal flows; • the sampling point should not be in front of a dam, because intermittent loads may occur; • for automated sampling devices, the water level at the sampling point should be higher • than 50 mm and the suction head placed at a depth of approximately one third of the water level during dry weather conditions.						
5.3.5.5 Sampling equipment	Other factors to be considered when selecting sample containers include	S	Os recipientes da amostragem são da responsabilidade	-	-	-	-

	the following [152, ISO 1992]: mechanical and thermal resistance; • sealing efficiency; • ease of reopening, cleaning, and reuse; • practicability of size, shape, and mass; • costs.		do laboratório acreditado para a realização do trabalho.				
5.3.5.8 Analysis **5.3.5.8.1 Overview**	General recommendations for water analysis include the following [103, MCERTS 2015]: instrument operating instructions, calibration procedures and performance checks need to • be fully documented and available to the personnel; instrument calibration procedures and performance checks need to be carried out at • appropriate intervals and corresponding records need to be kept showing that calibration is maintained; all instruments need to be	S	Os equipamentos de monitorização, para efeito de verificação dos requisitos legais ambientais aplicáveis, os equipamentos pertencem às empresas e laboratórios contratados que são acreditados e apresentam nos relatórios os certificados de certificação de calibração.	-	-	-	-

	correctly maintained and records of the maintenance need to be • kept, whether carried out by a third party, such as the instrument manufacturer, or not; traceability of the calibration of equipment, such as balances, thermometers, timers, autopipettes, • according to EN standards and, where not available, to ISO or national standards is a prerequisite, and any corresponding certificates or other records need to be available; calibrated equipment needs to be clearly labelled and identifiable by the personnel.						
5.3.8 Drawing up or review of BREFs	As already mentioned, BAT-AEPLs are generally based on 24-hour flow-proportional composite samples and often expressed as daily,	S	-	-	-	-	-

	weighted monthly or weighted yearly average concentrations or as daily, monthly or yearly average specific loads, e.g. per unit of product.						

3. Avaliação da instalação face ao Reference Document on Best Available Tecnhiques to Industrial Cooling Systems;

Este BREF não especifica claramente quais são as BAT, pelo que foram retiradas do texto as questões consideradas mais relevantes sobre o que se considerou serem os requisitos para uma correcta monitorização a aplicar pelo operador, tendo em conta que, cada MTD associada a este BREF tem de ser específica do local, uma vez que o BREF não entra em pormenores sobre os processos de produção a refrigerar. Desta forma o documento é apresentado de forma muito genérica, tendo incidido sobre o capítulo 4, referente às melhores técnicas disponíveis para sistemas de refrigeração industrial.

BREF Industrial Cooling Systems							
n.º atribuído de acordo com o BREF ou documento de conclusões MTD	**Descrição de MTD de acordo com o BREF**	**S/N /n.a**	**Se preencheu "S" na coluna 3.** **Descrição do modo de implementação**	**VEA/VCA**	**Proposta de valor a atingir dentro da gama de VEA/VCA**	**Se preencheu "N" na coluna 3.**	**Se preencheu "n.a." na coluna 3.**
4.2.1 Integrated heat management 4.2.1.2	Reduction of the level of heat discharge by optimization of internal/external heat reuse	S	Ver BREF Energy Eficiency aplicáveis à instalação.	-	-	-	-
4.2.1.3 Cooling system and process requirements	The selection of a cooling configuration should be based on a comparision between the different feasible alternatives within all requeriments of the process: chemical reactions, reliability of process performance and maintenance	S	Ver BREFs Energy Eficiency aplicáveis à instalação.	-	-	-	-

	of required safety levels						
4.2.1.4 Cooling system and site requirements Table 4.2	The site-imposed limits apply particularly to new installations, where a cooling system must still be selected. If the required heat discharge capacity is known it may influence the selection of an appropriate site. For temperature-sensitive processes it is BAT to select the site with the required availability of cooling water. To consider the follow examples: -Optimise level of heat reuse - Use recirculating systems - Site selection (new cooling system)	S	Ver BREFs Energy Eficiency aplicáveis à instalação. Localização e tecnologia dos sistemas de arrefecimento da instalação a definidas no projecto de engenharia para optimizar a eficiência da instalação.	-	-	-	-
4.2.2 Application of BAT in industrial cooling systems	The final BAT solution will be a site-specific solution. However, it is believed that, based on experience in industry, conclusions can be drawn on BAT, in quantified terms where possible. In Tables 4.3 to 4.12 techniques are presented that are considered BAT, following on from the primary BAT-approach for:	S	Ver anterior.	-	-	-	-

	• increasing the overall energy efficiency, • reduction of use of water and of cooling water additives, • reduction of emissions to air and water, • reduction of noise, • reduction of entrainment of aquatic organisms and • reduction of biological risks						
4.3 Reduction of energy consumption 4.3.1 General	It is BAT in the design phase of a cooling system: • To reduce resistance to water and airflow • To apply high efficiency/low energy equipment • To reduce the amount of energy demanding equipment (Annex XI.8.1) • To apply optimised cooling water treatment in once-through systems and wet cooling towers to keep surfaces clean and avoid scaling, fouling	S	Ver BREFs Energy Eficiency aplicáveis à instalação.	-	-	-	-

	and corrosion.						
4.5.2 Identified reduction techniques within the BAT-approach **Table 4.5**	Appropriate position and design of intake and selection of protection technique Construction of intake channels	NA	NA	NA	NA	NA	Ver anterior.
4.6 Reduction of emissions to water **4.6.1 General BAT approach to reduce heat emissions**	Whether heat emissions into the surface water will have an environmental impact strongly depends on the local conditions. Such site conditions have been described, but do not lead to a conclusion on BAT in general terms. Where, in practice, limits to heat discharge were applicable, the solution was to change from once-through technology to open recirculating cooling (open wet cooling tower). From the Chapter 4 Industrial Cooling Systems 129 available information, and considering all possible aspects, care must be taken in concluding that this can be qualified as BAT.	NA	NA	NA	NA	NA	Não se prevê instalação de sistemas de arrefecimento com torre de arrefecimento em circuito fechado de potência elevada.

4.6.2 General BAT approach to reduce chemical emissions to water	Prevention and control of chemical emissions resulting from cooling systems have received the most attention in Member States' policies and industry. Next to heat discharge they are still considered to be the most important issue in cooling. Referring to the statement that 80% of the environmental impact is decided on the design table, measures should be taken in the design phase of wet cooling system using the following order of approach: • identify process conditions (pressure, T, corrosiveness of substance), • identify chemical characteristics of cooling water source, • select the appropriate material for heat exchanger combining both process conditions and cooling water characteristics, • select the appropriate material for other parts of the cooling system,	NA	NA	NA	NA	NA	Não se prevê instalação de sistemas de arrefecimento com torre de arrefecimento em circuito fechado de potência elevada.

	• identify operational requirements of the cooling system, • select feasible cooling water treatment (chemical composition) using less hazardous chemicals or chemicals that have lower potential for impact on the environment (Section 3.4.5, Annex VI and VIII) • apply the biocide selection scheme (Chapter 3, Figure 3.2) and • optimise dosage regime by monitoring of cooling water and systems conditions.						
4.6.3 Identified reduction techniques within the BAT-approach 4.6.3.1 Prevention by design and maintenance Table 4.6	• Apply less corrosion-sensitive material - Analysis of corrosiveness of process substance as well as of cooling water to select the right material •Reduction of fouling and corrosion - Design cooling system to avoid stagnant zones •Design to facilitate cleaning - Cooling water flow inside tube	NA	NA	NA	NA	NA	Ver anterior.

	and heavy fouling medium on tube side •Reduce corrosionsensitiveness - Application of Ti in condensers using seawater or brackish water •Reduce corrosionsensitiveness- Application of low corrosion alloys (Stainless Steel with high pitting index or Copper Nickel) •Mechanical cleaning - Use of automated cleaning systems with foam balls or brushes •Reduce deposition (fouling) in condensers - Water velocity > 1.8 m/s for new equipment and 1.5 m/s in case of tube bundle retrofit •Reduce deposition (fouling) in heat exchangers - Water velocity > 0.8 m/s •Avoid clogging - Use debris filters to protect the heat exchangers where clogging is a risk •Reduce corrosion sensitiveness - Apply carbon steel in cooling						

	water systems if corrosion allowance can be met •Reduce corrosion sensitiveness - Apply reinforced glass fibre plastics, coated reinforced concrete or coated carbon steel in case of underground conduits •Reduce corrosion sensitiveness - Apply Ti for tubes of shell&tube heat exchanger in highly corrosive environment orhigh quality stainless steel with similar performance •Reduce fouling in salt water condition - Apply fill that is open low fouling with high load support •Avoid hazardous substances due to anti-fouling treatment - CCA treatment of wooden parts or TBTO containing paints is not BAT • Reduce anti-fouling treatment - Apply fill under consideration of local water quality (e.g. high solid content, scale)						
4.6.3.2 Control by	•Reduce additive application - Monitoring and control of	S	Tratamento de água sequirá a MTDs,	-	-	-	-

optimised cooling water treatment **Table 4.7**	cooling water chemistry •Use of less hazardous chemicals - It is not BAT to use • chromium compounds • mercury compounds • organometallic compounds (e.g. organotin compounds) • mercaptobenzothiazole • shock treatment with biocidal substances other than chlorine, bromine, ozone and H2O2		sempre que aplicável.				
4.7 Reduction of emissions to air **4.7.1 General approach**	•Avoid plume reaching ground level - Plume emission at sufficient height and with a minimum discharge air velocity at the tower outlet •Avoid plume formation - Application of hybrid technique or other plume suppressing techniques such as reheating of air •Use of less hazardous material - Use of asbestos, or wood preserved with CCA (or similar) or TBTO is not BAT •Avoid affecting indoor air quality - Design and positioning	S	Serão seguidas as MTDs sempre que aplicável.	-	-	-	-

	of tower outlet to avoid risk of air intake by air conditioning systems •Reduction of drift loss - Apply drift eliminators with a loss						
4.8 Reduction of noise emissions **4.8.1 General**	Noise emissions have local impact. Noise emissions of cooling installations are part of the total noise emissions from the site.	S	A especificação dos equipamentos será de acordo a cumprir a regulamentação de ruído no site.	-	-	-	-
4.9 Reduction of risk of leakage 4.9.1 General approach	To reduce the risk of leakage, attention must be paid to the design of the heat exchanger, the hazardousness of the process substances and the cooling configuration. The following general measures to reduce the occurrence of leakages can be applied: • select material for equipment of wet cooling systems according to the applied water quality; • operate the system according to its design, • if cooling water treatment is needed, select the right cooling water treatment programme,	S	Serão seguidas as MTDs sempre que aplicável.	-	-	-	-

	• monitor leakage in cooling water discharge in recirculating wet cooling systems by analysing the blowdown.						
4.9.2 Identified reduction techniques within the BAT-approach **Table 4.10**	•Avoid small cracks - ΔT over heat exchanger of ≤ 50ºC •Operate within design limits - Monitor process operation •Strength of tube/tube plate construction - Apply welding technology •Reduce corrosion - T of metal on cooling water side < 60ºC •VCI score of 5-8 - Direct system Pcooling water > Pprocess and monitoring •VCI score of 5-8 - Direct system Pcooling water = Pprocess and automatic analytical monitoring •VCI score of ≥ 9 - Direct system Pcooling water > Pprocess and automatic analytical monitoring •VCI score of ≥ 9 - Direct system with heat exchanger of	S	Serão seguidas as MTDs sempre que aplicável.	-	-	-	-

	highly anticorrosive material/ automatic analytical monitoring •VCI score of ≥ 9 - Change technology - indirect cooling - recirculating cooling - air cooling •Cooling of dangerous substances - Always monitoring of cooling water •Apply preventive maintenance - Inspection by means of eddy current Cooling of dangerous substances - Constant monitoring of blowdown						
4.10 Reduction of biological risk 4.10.1 General approach	To reduce the biological risk due to cooling systems operation, it is important to control temperature, maintain the system on a regular basis and avoid scale and corrosion. All measures are more or less within the good maintenance practice that would apply to a recirculating wet cooling system in general. The more critical moments are start-up periods, where systems' operation is not optimal, and standstill for repair	NA	NA	NA	NA	NA	Não se prevê instalação de sistemas de arrefecimento com torre de arrefecimento em circuito fechado de potência elevada.

	or maintenance						
4.10.2 Identified reduction techniques within the BAT-approach **Table 4.11**	Reduce algae formation - Reduce light energy reaching the cooling water Reduce biological growth - Avoid stagnant zones (design) and apply optimized chemical treatment Cleaning after outbreak - A combination of mechanical and chemical cleaning Control of pathogens - Operators should wear nose and mouth protection (P3-mask) when entering a wet cooling tower	NA	NA	NA	NA	NA	Não se prevê instalação de sistemas de arrefecimento com torre de arrefecimento em circuito fechado de potência elevada.

4. Avaliação da instalação face ao Reference Document on Best Available Tecnhiques on Emissions from Storage;

Este BREF apresenta importância reduzida para a instalação.

A armazenagem de combustíveis existente é apenas referente à armazenagem de pellets.

Não existe gás natural na instalação, não existindo armazenamento de combustíveis líquidos na instalação, não sendo, portanto, considerados os BREF relativos ao armazenamento de combustíveis líquidos, uma vez que grande parte das BAT descritas neste BREF são dedicadas à armazenagem e depósitos típicos realizada em parque de combustíveis, ou outros de dimensões elevadas, pelo que nem sequer foram consideradas. As BAT passíveis de serem aplicadas, é dada a indicação e registada a forma como será aplicada.

BREF Emissions from Storage							
n.º atribuído de acordo com o BREF ou documento de conclusões MTD	**Descrição de MTD de acordo com o BREF**	**S/N/ n.a**	**Se preencheu "S" na coluna 3. Descrição do modo de implementação**	**VEA/ VCA**	**Proposta de valor a atingir dentro da gama de VEA/VCA**	**Se preencheu "N" na coluna 3.**	**Se preencheu "n.a." na coluna 3.**
5.1.2. Storage of packaged dangerous substances	**Safety and risk management** Operational losses do not occur in storing packaged dangerous materials. The only possible emissions are from incidents and (major) accidents. Companies that fall under the scope of the Seveso II Directive are required to take all measures necessary to prevent and limit the consequences of major accidents. They must, in	S	Risco e Segurança A armazenagem de produtos químicos é realizada de acordo com as regras definidas, em locais específicos, controlados e com equipamentos de actuação em situação de emergência disponíveis.	-	-	-	-

	any, case have a major accident prevention policy (MAPP) and a safety management system to implement the MAPP. Companies in the high risk category (Annex I of the Directive) must also draw up a safety report and an on-site emergency plan and maintain an up-to-date list of substances. However, companies storing dangerous substances not falling under the scope of the Seveso II Directive can also cause emissions from incidents and accidents. Applying a similar, maybe less detailed, safety management system is the first step in preventing and limiting these. BAT in preventing incidents and accidents is to apply a safety management system as described in Sections 4.1.6.1. The degree of detail of the system is clearly dependent on various factors such as: the quantities of substances stored, specific hazards of the substances and the location of the storage. However, the minimum level of BAT is to assess the risks of accidents and		O compartimentos existente para este tipo de armazenamento tem grelhas de escoamento directamente para a ETPTAR. A trasfega dos produtos químicos para as máquinas de tingir é realizada através do armazenamento em silos e posteriormente, encaminhado através de tubagens próprias, por meio de um sistema de doseamento de distribuição automático.				

	incidents on the site using the five steps described in Section 4.1.6.1 **Training and responsibility** BAT is to appoint a person or persons who is or are responsible for the operation of the store. BAT is to provide the responsible person(s) with specific training and retraining in emergency procedures as described in Section 4.1.7.1 and to inform other staff on the site of the risks of storing packaged dangerous substances and the precautions necessary to safely store substances that have different hazards. Storage area BAT is to apply a storage building and/or an outdoor storage area covered with a roof, as described in Section 4.1.7.2. For storing quantities of less than 2500 litres or kilograms dangerous substances, applying a storage cell as described in Section 4.1.7.2 is also BAT. **Separation and segregation** BAT is to separate						

	the storage area or building of packaged dangerous substances from other storage, from ignition sources and from other buildings on- and off-site by applying a sufficient distance, sometimes in combination with fire-resistant walls. MSs apply different distances between the (outdoor) storage of packaged dangerous substances and other objects on- and offsite; see Section 4.1.7.3 for some examples. BAT is to separate and/or segregate incompatible substances. For the compatible and incompatible combinations see Annex 8.3. MSs apply different distances and/or physical partitioning between the storage of incompatible substances; see Section 4.1.7.4 for some examples.						
5.1.1.3. Preventing incidents and (major) accidents	Safety and risk management The Seveso II Directive (Council Directive 96/82/EC of 9 December 1996 on the control of major	S	Embora o estabelecimento não esteja abrangido pela Directiva Seveso III, é verificada a sua aplicabilidade, de	-	-	-	-

	accident hazards involving dangerous substances) requires companies to take all measures necessary to prevent and limit the consequences of major accidents. They must, in any case, have a major accident prevention policy (MAPP) and a safety management system to implement the MAPP.		acordo com a legislação em vigor. É realizado um inventário com os produtos químicos perigosos e realizada a -sua gestão de acordo com o grau de perigosidade existente nas FDS.				
5.2.2.4. Pumps and compressors	Installation and maintenance of pumps and compressors The design, installation and operation of the pump or compressor heavily influence the life potential and reliability of the sealing system. The following are some of the main factors which constitute BAT: • proper fixing of the pump or compressor unit to its base-plate or frame • having connecting pipe forces within producers' recommendations • proper design of suction pipework to minimise hydraulic imbalance • alignment of shaft and casing within producers' recommendations	S	Serão seguidas as MTDs sempre que aplicável.	-	-	-	-

	• alignment of driver/pump or compressor coupling within producers' recommendations when fitted • correct level of balance of rotating parts • effective priming of pumps and compressors prior to start-up • operation of the pump and compressor within producers' recommended performance range (The optimum performance is achieved at its best efficiency point.) • the level of net positive suction head available should always be in excess of the pump or compressor • regular monitoring and maintenance of both rotating equipment and seal systems, combined with a repair or replacement programme						
5.3.2 Enclosed storage	BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers. Where silos are not applicable, storage in sheds can be an alternative. This is, e.g. the case if	S	O armazenamento da biomassa (pellets) é realizado num silo de abastecimento ao gerador de vapor.	-	-	-	-

	apart from storage, the mixing of batches is needed. BAT for silos is to apply a proper design to provide stability and prevent the silo from collapsing. See Sections 4.3.4.1 and 4.3.4.5. Chapter 5 Emissions from Storage 275 BAT for sheds is to apply proper designed ventilation and filtering systems and to keep the doors closed. See Section 4.3.4.2. BAT is to apply dust abatement and a BAT associated emission level of 1 – 10 mg/m3 , depending on the nature/type of substance stored. The type of abatement technique has to be decided on a case-by-case basis. See Section 4.3.7. For a silo containing organic solids, BAT is to apply an explosion resistant silo (see Section 4.3.8.3), equipped with a relief valve that closes rapidly after the explosion to prevent oxygen entering the silo, as described in Section 4.3.8.4.						