Textile Services Association Code of Practice Document

Safe Operation of Continuous Tunnel Washers

Originally Produced in consultation with the Health & Safety Executive

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FOREWORD

Every organisation requires a 'driving manual' and for the laundry industry, the complementary use of this Code of Practice along with Health and Safety Executive's publication HSG65 ensures a basis for the exact science of safe, common sense operational management.

The CTW Code of Practice covers general requirements in detail for manufacturers, contractors and operators to comply with the legislative and common-sense requirements for safeguarding the staff working in a laundry environment. Section D refers to 'Laundering – Machine Safety' and specifically CBWs, now referred to as CTWs.

The HSE publication HSG65 represents the most relevant generic model for managing Health and Safety in any workplace identifying the concept of successful management. When addressing CTW entry, it is essential to correctly manage the staff concerned giving primary consideration to their behavioural safety and well-being by acknowledging the human factors.

Human factors refer to environmental, organisational and job factors human and individual characteristics, cyclical or random changes in behaviour, mood and performance due to physiological and psychological impacts both in and out of work.

Implicit within the construction of the CTW COP is the understanding that the information, procedures and principles referred to above will obtain primarily and form the basis upon which the COP will be practiced as a specific methodology.

Version History

VERSION	DATE	REVISION
Version 1.0	April 2009	Original Code of Practice Document (HSE/SLEAT)
Version 2.0	March 2014	Content structure and introduction of new sessions
Version 3.0	October 2017	Revision of Section 12 Emergency Procedures
Version 4.0	March 2021	General review, overall update, new design
Version 5.0	February 2026	General review, additional annex (L)

CONTENTS

INTRODUCTION

This introduction traces the development of the continuous tunnel washer (CTW) and highlights the dependence of the textile rental (laundry) industry on the CTW, the essential processing system for all classifications of work.

The industry has come a long way from beating linen with rocks at the riverbank. Washers with separate centrifuges gave way to washer-centrifuges, soon developing into automated lines (carousels) from which grew the first transfer batch washer of the 1970s. 35 years has realised the 'near-perfect' state of the art CTW, which, with its associated components for selection and sorting, loading, multi-flex programming/control, water extraction, drying and discharging, provides the high-volume laundry processing industry with the most sophisticated and capable tool in its history.

In the UK alone, some 150 commercial laundry sites operate over 300 CTWs and projecting globally this amounts to upwards of 3,500 processing systems. A major capital investment, these systems can exceed £750k in purchase and installation value, of which the CTW itself can cost up to £350k. This requires a careful and deliberate decision to purchase and the commitment to respectfully and responsibly utilise thereafter.

Like any other hi-tech equipment investment, the CTW must be designed for the selected task application, with the correct supply of utilities, well-designed and supported maintenance and breakdown scheme and full condition monitoring all considered. Whilst the recent massive improvements in automation, accuracy, operator health and safety, quality, productivity, the focus on energy and utilities consumption and above all the reliability are all now proven and without doubt, we can still create a problem.

Occasionally something goes wrong with this advanced operating system and human intervention is needed to put it right. Whether this is to enter the mono-rail compound, the CTW loading hopper, the press or centrifuge section, the shuttle conveyor compound, the tumble dryer(s), the final discharge conveyor or the CTW itself, extreme caution must be exercised and well-planned procedures are an essential requirement.

The industry worldwide recognises the issues in question and the manufacturers' design systems are such to enable the safe, controlled procedures for entry and correction of fault conditions. The personnel who undertake the activities involved, must be properly educated, trained and have approved competency for the tasks. The safe, controlled procedures must be documented, proven, practiced and kept under reviewed.

OBJECTIVE OF THE CODE OF PRACTICE

The Code of Practice challenges the presumption of CTW entry which currently exists, even as a 'last resort' option for clearance of a work blockage and provides a detailed approach based on:

a. CTW entry ought not to be as frequent as previously practiced by some operators. The review of CTWs in operation in the industry over the past three years has proven this to be the case.
b. Following the best practice procedures stated in this Code of Practice will continue to reduce the need for entry and strive to eliminate it.
c. If entry becomes necessary in spite of all precautions, it must be done to a high standard and follow the procedures as per the Safe Systems of Work (SSOWs)

The industry is faced with CTW systems of widely varying age, size, design and application, but has recognised that proper management of operating conditions, together with a generic scheme to manage work blockage events is required and is proving beneficial.

The Code of Practice and this amendment sets out how to restrict the number of hazards, to set out a hierarchy of risks and to reduce the risks to individuals engaged in blockage clearance. This is achieved through a requirement to educate, train and certificate staff at all levels and ensure their continued competency in:

a. The correct (for washing) and safe (for avoidance of blockages) operation of the CTW – including planned preventative maintenance.
b. The correct and safe procedures for clearing blockages:

i) Methods and Safe Systems of Work (SSoWs) NOT involving entry

ii) Methods and SSoWs involving entry, incorporating the precise demands of 'confined space entry'.

c. The development of SSoWs which depend on identification and control of risks associated with hazards such as:

i) Heat, temperature

ii) Air quality

iii) Chemicals

iv) Slips, trips and falls

d. The correct use of PPE as defined within the Code of Practice

CONTINUOUS TUNNEL WASHER - PRINCIPLES OF OPERATION

Continuous Batch Washers are designed to provide continuous processing of laundry items on an individual batch basis. The CTW is sized to accommodate batches which can vary from 25 to 100 kg and are processed through an inline configuration of compartments during which they receive the normal prewash, main wash and rinsing required by that laundry process. After a pre-set time at each stage the linen is transferred by rotation of the drum through 360º, transferring the batch into the next compartment. The cycle time and number of compartments of each machine vary to suit the wash process requirement and production requirements of the laundry.

The construction of the machine allows injections of water, steam and chemicals at the appropriate stages of the prewash, main wash and rinsing in order to perform the required process results for the type of work being processed. The continuous washing process is computer controlled. Continuous Tunnel Washers can be provided in a number of different designs, including single skin, double skin, top or bottom transfer machines with a drum construction of either a one piece or modular design.

CONTINUOUS TUNNEL WASHER - OPERATIONAL AND PROCESS SEQUENCE

The operation of Continuous Tunnel Washers can be carried out by most laundry operatives who have received specific training in accordance with the manufacturer's recommendations. Most CTWs conform to the EN ISO 10.472-3 European Standard and the manuals for the machine contain health and safety information relating to the use and operation of the machine in a safe manner.

Operation of these machines has to be carried out by competent, fully trained personnel. The general operation of the machine can be split up into the following categories.

Loading

The automatic loading of a pre-weighed batch of linen into the hopper feeding the first stage compartment of the batch washer. At the commencement of the cycle a signal is given to trigger the conveyor, or bag system, to discharge the load which is then flushed in with a mixture of water and chemicals into the first compartment commonly known as the wetting out compartment. Many CTWs have a larger volume first stage compartment in order to accommodate and aid faster wetting out of the dry, soiled linen.

Washing

Oscillatory or complete rotational action provides agitation of the load during the process cycle.

Transfer

After the pre-set time at each stage the machine's transfer sequence commences. This can only be triggered after the machine has sensed that the correct parameters inside the machine are met for water levels and temperature as well as receipt of the 'extraction equipment ready' signal.

Once these factors have been confirmed the machine control rotates the drum to transport the linen into the next compartment. When the machine is operating normally, a batch of work is transported to the extraction unit at the end of each cycle time, followed immediately thereafter by a fresh load of soiled linen into the hopper/first compartment, thus providing the continuous batch washing process.

Process sections

The CTW is nominally divided into 3 processing areas: - the prewash section, the main wash section and the rinsing section. Whilst there are many alternative scenarios for specialist classification processing, most continuous batch washers have this basic construction.

The number of compartments allocated to each of these washing sections depends upon the cycle time and production required by the operator.

Processing

Chemical and steam injections are added to the various compartments automatically by the washer process control system in conjunction with an automatic chemical dosing system. The CTW also controls the flow of rinse water and main wash liquor to the various compartments during the operation of the machine, either by computer controlled, or manually adjustable valves combining signals from dip level sensors and flow meters.

Dip levels in the various zones are controlled by adjustable dip level overflows in conjunction with level sensors to ensure that the correct levels are maintained during the process.

Often machines processing heavy soiled work, hospital work, or industrial work have additional bath exchange facilities that allow individual compartments to be drained and filled during the normal washing cycle of the machine.

CONTINUOUS TUNNEL WASHER - SAFE OPERATION TO MINIMISE BLOCKAGES

Correct Loading Load weights

Accurate weighing of each load prior to loading is critical and weighing scales/load sensors must be calibrated regularly.

Precise reference to the manufacturer's instruction manual, the posting of the key load factors at the weighing station and operator training are imperative.

To prevent overloading, it is essential that the correct weight is calculated for each classification of work, taking due account of fabric type and the bulking or ballooning impact of item construction. For example, a machine with a designated load capacity as stated by the manufacturer, would be loaded at 100% for cotton sheets or cotton terry towels, but for mixed blend blankets, poly-cotton and 100% polyester items the load may have to be reduced by up to 50%. This is referred to as achieving the correct degree of loading (DOL) and applies also with respect to washer extractors, ensuring that the correct mechanical action and chemical activity take place during the process, as well as reducing the possibility of blocking in the CTW.

The weighing device(s) needs regular checking/calibration and test weights should be kept for this very process.

It is possible for double loads to enter the CTW load chute if a fault occurs at the loading stage (step conveyor/monorail) or if a double call load signal is requested by the CTW.

Monitoring of this area, both electro-mechanically and by operators is essential with immediate alarming of any abnormality and the shutting down of the CTW until the fault is corrected.

The following DOL factors may be considered for guidance, but it should ultimately be the responsibility of the CTW operational management, in conjunction with reference to the manufacturer, to specify the required DOL.

For example:

- 100% cotton Terry Towels 100%
- 100% cotton bed linen 100%
- 50/50 poly/cotton bed linen 60-80%
- 60/40 poly/cotton 60-80%
- 100% polyester blankets 50-60%

Folded items, brand new or returned for re-wash can cause blockages.

Operators must be correctly trained to ensure that work being reprocessed as 'Rewash' and new items, both of which are generally folded, must be shaken out and loosely loaded into the bag or step conveyor in the same manner as soiled work.

Loading systems

There are two common systems for loading a CTW.

a. Step Conveyor
b. Monorail System

This stage of the CTW Line must be strictly controlled to ensure that the correct size of load is always discharged into the CTW from the conveyor or monorail.

Errors or faults at this stage are the most common cause of CTW blockage.

Step Conveyor

A step conveyor consists of a belt conveyor normally inclined and often with compartments, to feed the classified work from the low level loading point into the CTW chute. The conveyor is floor mounted and accurate weighing of each load is commonly a design feature. If not, then a remote weighing station should be used or a strict item count regime practised. The operator must receive precise training in how to correctly operate the system and be critically aware of the weighing or counting procedure.

The operator loads the conveyor or its first compartment to the correct weight for that particular classification and then selects the wash classification code.

Precise training and written instruction must be posted to define the correct load weights for the soil and fabric type to ensure the correct degree of loading for each batch to be charged.

The CTW automatically calls the step conveyor to progress, discharging the load into the CTW and simultaneously encrypting the weight and wash code to the CTW. The conveyor or next compartment being empty is then ready for loading and the cycle is repeated, dictated by the CTW programme.

To ensure accurate weighing of loads the following routine checks should be made:

a. Test weights should be loaded onto the conveyor or loading compartment to check the accuracy of the load cells. This should be done at monthly intervals and logged.
b. Sensors should be checked to ensure that the conveyor only ever moves forward by the correct distance or one compartment at a time.

The operator must ensure the correct weight for each classification as shown on the classification/load weight table. There must be no tendency for an operator to overfill occasionally to finish off a classification load.

Item counting for the loading of conveyors is not advised and it is always recommended that conveyors are fitted with an integral weighing device.

Monorail System

A monorail system consists of a number of fabric bags, each held on a steel former (often circular and of approximately 80 cm diameter) suspended from a trolley which runs on a steel/aluminium rail. The rail is often inclined, allowing the bag to gravitate and the rail network is interspersed with vertical lift conveyors, switching points, junctions and stops. The bags store and transport individually weighed loads automatically around the monorail system to feed a CTW which is so programmed and inter-linked with the monorail control to call for the correct bag from its storage rail on demand.

a. Loading a Bag

Depending on the complexity of the monorail system there are various methods of loading a bag.

i. Manually by operator

ii. Automatically by a load chute

iii. Automatically by a belt conveyor

In all these methods an electronic or mechanical weighing mechanism is used with visual and/or electronic data link to ensure regulation of the load.

The following are critical to the correct operation of the CTW line:

i. Calibration of the weighing station(s) should be carried out monthly and logged.

ii. The load weight used is correct for the particular classification, i.e. fabric type and soil level.

iii. The Operator strictly follows the loading procedure and does not ignore display nor over fill bag.

b. Discharging a Load into a CTW

When fed by monorail, the CTW signals the monorail when it is ready to receive a load and the intelligent system will control the automatic transfer of the selected bag in the storage system to discharge its load into the CTW chute as and when called.

There is always a risk that due to a mechanical or control fault more than one bag could be discharged into the CTW which can potentially lead to a blockage if not detected.

To eliminate this risk the bag release mechanism and the ‘D’ rings at the base of the bags and the bag cords should be checked regularly. it is recommended that the following are installed on the monorail system.

a) A secondary weighing position that checks the weight of each load to ensure that it is in the parameters for each classification. Should an oversized bag be detected an alarm is raised.

b) A video camera system or a convex mirror can be installed to enable monitoring of the discharge of the load from the bag into the CTW, however this does require the ability of the operator to observe the load drop on every occasion. Other sensing devices to detect multiple or in-correct bag drops could be considered.

INTERLOCKING OF STEP CONVEYORS AND MONORAILS IS RECOMMENDED VIA OVERWEIGHT PROTECTION DEVICES SO THAT OVERWEIGHT BATCHES CANNOT BE LOADED INTO THE CTW. THE INTERLOCKING SHOULD ALSO INCLUDE A SIGNAL FOR LOADING FROM THE LOAD DETECTOR IN THE HOPPER.

Water Supply

The programme control must provide sufficient water for each type of classification to ensure that the work is loaded cleanly into the hopper/first stage compartment and that there is still an amount of free liquor after wetting out is completed.

Water is the main agent used in transferring loads between compartments in a CTW.

It is therefore essential that when transfer takes place or the “wetting out” process in the first compartment is complete, that the water levels are correct. Lack of water will cause a blockage on transfer because it tends to cause the work to stick due to its inability to ‘float’ and ‘swim’ through.

Although most machines will not transfer if the water level criteria are not met, it is still essential that the various dip levels of the machine should be checked regularly to ensure a clean transfer.

OPERATORS MUST BE MADE AWARE OF THE WATER RATIOS FOR WETTING OUT THE VARIOUS CLASSIFICATIONS.

- Towelling requires more water than sheets
- High volume/low density products like acrylic blankets
- Heavily starched linens which need more water for flushing in within the cycle time

Transferring

When transferring work from one compartment to the next, it is important to ensure that the correct levels of water are available to provide sufficient lubrication to transfer the load cleanly as a complete batch. Monitoring the dip levels and bath level sensor faults that will be displayed on the computer diagnostics is important; most machines will not transfer if these levels are not achieved.

Transfer

The transfer sequence is controlled by the drive system and a combination of encoders or proximity sensors that control the rotation of the drum during transfer. These sensors should be regularly checked for correct operation and any faults from the computer diagnostics checked to ensure that any reversing fault issues are diagnosed and corrected immediately.

The optimum arc of rotation for each machine is monitored by positional sensors that control the angle of oscillation and full rotation of the CTW drum. If these sensors fail and the drum angle of rotation is exceeded, incorrect transfer will take place, usually causing loads to get mixed together, nominal weights/loads exceeded and ultimately a blockage

Incorrect operation of the machine during transfer can cause reversing faults which may lead to double load transfers, either in a forward direction towards the centrifuge, or in a reversing direction towards the loading chute, resulting in serious machine blockages.

Work is discharged into the centrifuge at the end of each cycle during normal operation. This action requires a certain amount of free water to transport the linen cleanly between the batch washer and the centrifuge or press. The incorrect ratio of linen to liquor will cause problems during transfer and could ultimately cause a blockage at the discharge end of the machine.

Constant monitoring

Blockages are caused by overloading, lack of water flow, or a combination of both. Monitoring provides the key to successful and continuous operation. Fault alarms and diagnostics integral within the batch washer provide vital information that can act as an early warning system preventing potential blockages. Faults such as linen blocking loading chute, low batch level, reversing fault, no loading programme or water pressure faults must be investigated immediately.

CCTV cameras or observation portholes, strategically placed to give visual access to the loading chute, are recommended to give early indication of a blockage in the loading hopper/first stage or compartment.

A safe working platform may be provided at the loading end of the CTW, access to which must be locked off and controlled. A purpose designed removable ladder, should be available for fitting inside the loading hopper, to afford safe access.

The overriding or resetting of the machine following a fault or observation of any abnormality must be controlled by a competent person (usually an engineer or a supervisor who by their training and competency are in charge of the CTW operation). Repeated machine faults can indicate a blockage which can be exacerbated if not investigated at the first indication by that competent person.

Overriding these faults or failure signals without investigation via the controls is a recipe for disaster.

Planned preventative maintenance

A robust PPM system should be in place. This must ensure that manufacturer's guidelines are followed in order that checks and maintenance procedures are carried out at the required times according to a pre-planned schedule.

Blockage reporting

The management should have in place a preventative strategy to formally report any incident which has the potential to cause a CTW blockage. These incidents should be investigated and corrective action taken to rectify any faults or situations from reoccurring.

A post incident investigation should be undertaken after every blockage to determine the cause. This procedure should be formally documented and corrective action taken to rectify any faults and minimise the potential for recurrence.

CONTINUOUS TUNNEL WASHER TRAINING

Comprehensive training must be given to all persons involved in the operation and maintenance of Continuous Tunnel Washers and particular attention should be given to the following:-

- Competency levels – managers, supervisors, engineers, operatives.
- Safe operation of machine, specifically towards preventing blockages and recognition of fault indicators and signs of blocking.
- CTW specific risk assessments.
- Training Certification documents, follow-up training and record keeping.

There are many variations in competency throughout the industry; however there is a distinct and positive view that all companies are willing to help each other in the cause. If any operating company wishes to learn from another, the TSA acts as a focal communication point and can assist in requesting training from a number of manufacturer and operator sources.

It is not recommended that the training of staff should actually be carried out under simulated blockage conditions, nor should training be undertaken within the CTW, other than to gain familiarity with the entry procedures and brief awareness of the environment within the CTW. Such training will itself present the known hazards and every care must be taken in controlling this exercise.

Supplier training

The CTW supplier shall undertake training on all operational aspects of the equipment and provide certification of operators' personnel to ensure competency following commissioning of a CTW or at any time thereafter. For the provision of specific CTW entry training, contact your supplier.

Outline syllabus by job function

Operatives - safe start up and shutdown, general operation and control, fault and diagnostic training, process flow, loading and unloading.

- Key aspects of blockage prevention and identification of first signs of blockage.
- Risk assessment procedures and good HSE practice.
- Housekeeping and daily checks

NOTE: Annex G provides information on staff training and safety for loading CTWs

Management, supervisor (and trainers) - all of the above plus safe system of work for blockage clearance and CTW entry.

- Staff safety awareness training.
- Engineers - all of the above plus control operation and maintenance, fault rectification, PPM, daily records and utility usages.
- A combination of classroom education and hands on training provides the best results.

Employer training

Fully documented syllabus for CTW specific training, including:

- Permit to Work,
- SSOW awareness
- Competency
- CTW risk assessments.

Training must be certificated and signed off with certificates and syllabus data held on staff records. Refresher training should be given on a regular basis.

Management should train staff in the required skills to ensure competency in carrying out the SSOW. Staff should be carefully selected to ensure their suitability to undertake all aspects of each SSOW (specifically entry into a confined space and other related activities). This subject is clearly defined in the Foreword to this CoP.

Specialist Confined Space Regulations (1997) training is not mandatory provided the SSOW is trained in by a competent person able to demonstrate fully the key points of the Confined Space Regulations 1997 (namely entry/designing SSOW, competency of employees to enter, air quality, rescue plan). This training must realise certification of each person who is then deemed competent to enter and work in a CTW.

CTW ENTRY – SAFE SYSTEM OF WORK FOR UNBLOCKING

Introduction:

This section has been written primarily to ensure that any CTW entry or other activities are controlled in a manner that minimises the associated risks.

For the purposes of this document the management hierarchy within a laundry has been assumed to be:

- General Manager – for the purposes of this CoP the description used for the appointed senior person with overall responsibility for all the functions on site
- Plant Manager – with responsibility for production/processing on the site
- Supervisor – with responsibility for the CTW operation
- Engineer – specific responsibilities for all equipment, services and systems

Procedural documentation:

The procedural documents that govern the CTW entry or other activity are:

a) TSA industry Code of Practice for the safe operation of Continuous Tunnel Washers

b) Specific Company H & S policy manual stating the requirements for the management of Health and Safety on site.

Scope:

The scope of this document covers:

a) The safe operation of a CTW (emphasising the avoidance of blockages)

b) Unblocking a CTW without any person/s entering the machine

c) Unblocking not requiring CTW entry

d) CTW entry and clearing a blockage

e) CTW entry for maintenance

NB This document does not relate to the procedures and practices undertaken by the manufacturers of the CTW either at their factory or on any other site.

This document does not relate to any area or device incorporated in the total CTW system which falls outside of the confines of the CTW loading hopper and the press/centrifuge.

Equipment:

This means any CTW operated by the local company.

Definition of CTW entry

There are separate definitions of CTW entry and CTW activity not requiring entry:

CTW entry

This is defined as when any part of the human body crosses or reaches over the threshold of the first stage compartment and into the second compartment or similarly crossing over from the last compartment and into the penultimate compartment (i.e. 2nd from last pocket) of the CTW drum.

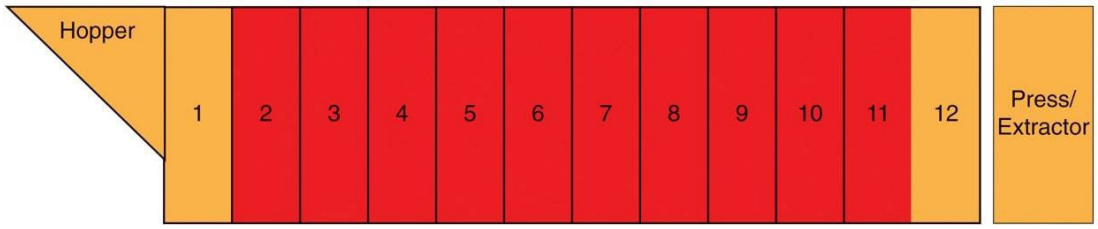
CTW activity not requiring entry

This is defined as any activity where an operative access and works in the loading hopper, the first compartment, the last compartment or the press/centrifuge area.

The diagram below shows an example of a 12 compartment CTW (with a hopper and press/centrifuge).

All areas shaded in “red” would be where the SSOW for “CTW entry” would apply.

All areas shaded in “orange” would be where the SSOW for “CTW non-entry activity” would apply.



The General Manager, see definition above (or a nominated deputy in their absence) will take responsibility for any CTW entry activity.

Operating a CTW

The management should have in place a preventative strategy to formally report any incident that has the potential to cause a CTW blockage. These incidents should be logged and investigated reporting and documenting the corrective action(s) taken to rectify any faults or situations to prevent their recurrence.

The facility to over-ride or reset machine faults must only be controlled by a competent person (usually an engineer or CTW supervisor, as defined above). Repeated machine faults can indicate a fault condition that can be exacerbated if not investigated at the first indication.

Factors which cause a CTW to block

Incorrect loading – (correct loading see 2.1.1)

Scales will be checked for accuracy on a monthly basis and a record maintained. Any faulty or broken scales will be immediately repaired or replaced, but no CTW will operate without verification of each load.

Care is required to ensure that the degree of loading is not exceeded for those classifications or fabric types which have a greater volume element rather than weight (i.e. blankets/poly cotton/100% polyester) compared to 100% cotton since these items can cause a blockage as their overall volume can be greater than the volume capacity of the CTW drum. Items loaded in the folded state (i.e. new items) can also cause blockages and all work should be opened out. (see 3.1 above)

Incorrect water levels or no water

Water levels are critical to the correct transfer of work in, through and out of the CTW. Most are fitted with sensing systems that identify when there is a low water condition and the CTW either shuts down automatically or alarms for immediate action to be taken. On sounding of these alarms, the CTW should be fully investigated to ensure that this is not the start of a blockage.

DO NOT OVER-RIDE ANY ALARM AND CONTINUE TO LOAD THE MACHINE WITHOUT COMPLETING AN APPROPRIATE INVESTIGATION.

Note: All aspects of the control of the water levels should be maintained on a monthly basis.

Planned preventative and break-down maintenance

Planned maintenance of the CTW must be in accordance with the manufacturer's instructions

Indications that a CTW blockage is forming:

i. Linen blocking the loading hopper

ii. Large load / blockage in first compartment

iii. Repeated water and / or rotation faults

iv. No load/s transferred/discharged to the press/centrifuge

v. Excess water in the loading hopper area

Note 1: It is best practice that sensors should be fitted at the point of discharge from the last compartment of the CTW into the press/centrifuge to ensure that a warning is given if a load fails to discharge.

Note 2: the loading operative must have the capability of seeing the activity of the loads in the hopper area. It is best practice to have a camera feeding pictures to a monitor situated in the work area where the operative loads the CTW (e.g. a vehicle reversing camera). As a minimum a mirror must be situated to give the operative this view of the hopper activity.

Suspected blockages

Any suspected blockages need to be investigated immediately by:

a) Switching off the loading system

b) Implementing, where necessary the SSOW sequence:

   i. CTW non entry activity

   ii. CTW entry

For all aspects of operating a CTW refer to the manufacturer's instruction manuals.

After remedial action and the re-start of processing it is important NOT to assume that the reason diagnosed for the suspected blockage was correct. The condition of the machine should be closely monitored for a period of time to establish that the blockage is not recurring.

UNBLOCKING A CTW, WITHOUT ENTRY

There are recognised procedures for unblocking a CTW, which should always be considered and attempted in a sequence as adjudged appropriate by a competent person, in order to render entry into the CTW the very last resort:

Mechanical rotation

The CTW drum can be rotated so as to move work either forward or backward dependent on where the blockage occurs. This allows free work to be moved to either the hopper or press/centrifuge areas where it can be removed (a SSOW will need to be operated for this activity). A CTW drum can be rocked clock wise and anticlockwise to try and break up the blockage.

Care needs to be given to any mechanical rotation activity as it could develop into a condensed knot at the core of the blockage. This can be extremely difficult to unblock and will need cutting activity to free the knot. This will potentially increase the length of time that operatives will require to enter and work in a CTW to clear the blockage.

During mechanical rotation, if work continues to become free for removal, continue with the activity, removing the work then from the end(s) of the CTW.

Flooding with water

Flooding the CTW by raising the water level if judged applicable, may further assist the clearance used in conjunction with mechanical rotation. Additional water may float and loosen the blockage thereby freeing items.

Note: This option will result in a greater amount of water being present in compartments than normally expected. This excess water must be fully drained to ensure safe entry into the CTW drum and this may take a long period of time.

Clearing a blockage

Blockages are cleared by a number of operatives working in a chain with a person at the face of the blockage passing back freed linen which enables it to be transferred through each compartment and then from the CTW. Care is required during this activity to ensure that the egress from each compartment and the CTW does not become restricted or blocked.

METHODS FOR FREEING A BLOCKAGE:

Pulling linen free

When the “pulling” method is used, care MUST be taken to ensure that no injury is caused by over-reaching or excessively straining (i.e. particularly neck and back) which could cause difficulty in getting out of the CTW. In addition care is required to ensure that the operative does not pull to such a degree as to slip or fall and cause injury

Cutting linen

When using the “cutting” method with a hack-saw, suitable hand/wrist protection to EN388 standard, cut resistant level 5 e.g. chain mail glove/wrist chain protectors MUST be worn. The cutting action MUST always be away from the body and limbs to prevent accidental contact. The cutting blade MUST be of a hack-saw type only and no other open type or retractable blades (Stanley knife, cutting knife, etc) may be used.

Sawing linen

Sawing linen (normally with a hacksaw blade in holder) must be undertaken slowly and deliberately with due care for the user and others in the confined space.

Techniques and precautions

a) Where possible the operative should concentrate on freeing the centre of knot of the blockage.

b) When this has been completed sufficiently it may allow for the remainder of the blockage to be cleared by mechanically turning the CTW drum, thus limiting the amount of the time the operatives need to spend inside the CTW.

c) Care needs to be taken when removing wet linen from the CTW drum, particularly in areas where there are electrical panels. During linen removal these areas are to be protected to ensure that there is no water ingress which may cause a further hazard when the CTW is reintroduced into operation.

d) The temperature can rise inside the CTW drum during the breakup and removal of linen from the blockage. It is imperative that the temperature is regularly checked to ensure that the operatives are not exposed to a temperature above 30°C. A record of these temperature checks should be recorded onto the SSOW CTW entry documentation.

e) At the end of the CTW blockage clearing, an indicator load needs to be processed through the entire length of the drum to ensure that there is no further blockage. This is normally a full, coloured laundry bag which replicates a full load and can be positively identified when transferred into the press/centrifuge area.

WORK AND REST PERIODS

Listed below are the times for work activity and rest periods between work activities applicable for the SSoWs - CTW Entry or CTW – non-entry activities.

SSOW	WORK PERIOD	REST PERIOD
CTW entry	30 mins	30 mins
CTW non-entry activities	2 hrs	30 mins

For CTW Entry, further assistance may be given to the operatives in:

a) Hot factory conditions

i. Availability of cold water drinks;

ii. Availability of cool area with fresh air.

b) Cold factory conditions

iii. Availability of blankets to provide warmth immediately after egress from CTW drum;

iv. Availability of hot drinks;

v. Availability of a warm area;

vi. Availability of a change of dry clothing.

Medical conditions

a) The HSE Employment Medical Advisory Service (EMAS) has advised that any operative who is trained to complete CTW entry should undergo a medical at a frequency of three years by the company doctor. The doctor (Company or external) should be briefed that this medical is intended to determine an individual's suitability for CTW entry and other medical conditions ought not to be reported to the Company. Annex H provides an example of a confined space medical assessment form

b) The operatives have a responsibility to inform the company of any changes to their personal medical condition or the taking of medicines.

c) Annex I provides a list of pertinent questions about the well-being of an operator immediately prior to entry and medicines or other substances which the operator may have taken. Completion of this enquiry should be part of the implementation of the SSOW for CTW entry.

EMERGENCY PROCEDURES FOR NEW AND EXISTING MACHINES

Preparing an emergency procedure

By following this guidance document, CTW operators will have complied with the Confined Spaces Regulations (CSR) and dealt with the operation of CTWs to reduce the incidence of blocking, freeing blockages without necessitating entry and managing the safety and reduction of risk to personnel in the event that entry becomes unavoidable as the only means to resolve a blockage. It now remains to consider the nature of an emergency which might occur during a CTW entry activity and the planning and documentation for its resolution.

Key principles

i. The overall objective during an emergency is to SUSTAIN LIFE.

ii. The primary objective during an emergency is effecting an evacuation, in conjunction with or by other emergency services.

iii. The Emergency Procedure will be based on

   a) A pre-incident risk assessment
   b) A dynamic risk assessment during an incident

iv. A CTW is a confined space and entry must comply with the CSR. It is a requirement under CSR to plan and execute an Emergency Procedure in the event of sudden incapacity of persons within a CTW.

v. The Site Manager who is present and responsible must be competent to assess the situation and decide upon the action to be taken. This may require the notification of the Emergency Services

Pre-emergency planning Emergency scenarios

i. Slips, trips and falls leading to physical injury. Given the dimensions of the confined space and the precautions already implemented, it is highly unlikely that these would result in life-threatening injury. Consultation with other industries and expert emergency services who provide specific CSR support has led to this conclusion. Examples include steam boiler entry, silo entry and working shafts or tunnels.

ii. Incapacity owing to exposure to chemicals, heat etc. These hazards have been dealt with during the proper preparation of the CTW for entry.

iii. Panic attack. The selection of personnel for entry and their training, including familiarization exercises will greatly reduce the risk of this occurring. Should such an attack occur, whilst distressing, it is highly unlikely to be life-threatening and would be able to be managed.

iv. Unexpected medical condition. In spite of the precautions described elsewhere, including the final check immediately prior to entry, there remains a very small chance of this occurring with the potential for it to be life-threatening.

Risk assessment planning and documentation

i. Emergency services - Local emergency services - clarification of the level of support available is essential and this should be researched and adequately prepared. Specific training with local services should be considered. This may not be achievable if, for example, local Fire Services cannot commit time and resources to help plan an Emergency Procedure, at least as a paper exercise. However, some successful engagement has been achieved by inviting them to attend training sessions, especially where familiarization exercises are carried out. In this environment a useful dialogue can assist in determining the level of expertise available locally and help identify any shortfall of specialist equipment and competency.

ii. Identification of an emergency, assessing the environment and gauging the status of the injured person (IP). It is a requirement from the risk assessment that entry is carried out in pairs. Each should have basic training in First Aid and be able to assess and accurately report the condition of the IP.

iii. Evacuation options.

iv. To facilitate the decision making process for the Site Manager, a list of evacuation options should be documented in advance. Particular machine design and operation will need to be taken into consideration and advice must be sought from the CTW manufacturer/supplier and their recommendations agreed for inclusion in the RA to enable implementation.

a) How far is the nearest point for evacuation?

b) How convenient is it to reach it? Is it at a convenient and safely accessible height?

c) Can the IP be evacuated with minimum assistance?

d) Does the IP require a significant amount of assistance to be evacuated?

e) Is the IP in considerable pain which must be managed before assisted evacuation?

f) Is the IP unconscious? What was the likely cause? Can the IP be revived?

g) Is there a threat to life a) if the IP is moved b) left at the incident point?

h) Can the IP be evacuated by mechanical or other means?

i) Is it necessary to cut into the machine to effect an evacuation if the IP must be evacuated as quickly as possible?

j) Is there a requirement for specialist medical attention/evacuation procedures?

DECLARE AN EMERGENCY

The point at which an Emergency should be declared, and the Emergency Services called, should be made clear. (Calling the Emergency Services see 12.2 below)

a) Cutting Activities

Cutting into the machine is for many reasons hazardous, it may not be possible and cannot be considered a universal solution. As well as potentially endangering those in the machine, it could also lead to destruction of part or all of the CTW. Therefore, such action must only be undertaken with the correct knowledge of the machine as specified by the manufacturer. The following steps will highlight the practicalities and likely success of this activity.

i. Risk assessment and recommended equipment associated with cutting (see Section 14 and Annex K)

ii. For NEW BUILD MACHINES (as from January 2018) the purchaser should specify that where possible, the manufacturer should indicate on a detailed machine drawing, areas of least resistance where the fabric of the machine may be cut into without encountering structural or other such obstacles (services lines, support rings, etc) which are unable to be cut. Where access or inspection hatches already exist, these may be extended / enlarged or it may be possible to cut a new aperture by copying an existing hatch. Necessary prescribed guidance must qualify the procedure for cutting, which will identify all dangers and state the requirement to set and lock the machine in the correct rotational position as well as the removal of hatches, positioning of support frames, etc. The manufacturer is totally absolved from all potential culpability for personal injury and liability for irreparable or partial machine damage, which may result from the action of cutting, but is required to provide such guidance which at the very last resort and with the ultimate authority of the commanding officer (Chief Fire Officer) in charge of the emergency situation, may be required to sustain life.

iii. For ALL EXISTING MACHINES currently in operation (at the time of publication of this amended CoP, November 2020) the following shall apply.

iv. It is entirely the responsibility of the user/owner of the machine to decide if the age, size, design, etc. of his machine enable the safe entry of the machine in accordance with this Code of Practice and whether suitable detailed information exists to provide detailed advice and thus define the areas of least resistance which may facilitate necessary cutting of the fabric of the machine.

v. The machine will be surveyed by the manufacturer or other competent expert in order that the necessary prescribed guidance for preparation of the machine for entry is documented and a procedure for subsequent cutting (if possible) of areas of least resistance is defined by schematic drawing where machine drawings do not exist. In the normal course of compliance with the CTW CoP, it is the user's responsibility to produce the Risk Assessment and Method Statement (RAMS) for the total entry procedure and the potential cutting procedure before any action is undertaken. If a third party is sub-contracted to undertake such aforementioned procedures on behalf of the user all aspects of the statutory requirements and responsibilities for the management of contractors on site must be addressed.

   All possible available experience and knowledge of undertaking such cutting exercises should be shared within the industry and where possible, cutting trials may be initiated on redundant machines to develop the knowledge.

   The laundry management should seek detailed procedures for cutting into the machine in order to effect safe access to the IP. Training of local engineering staff should ensure competency (in line with abrasive wheel training).

vi. Post Incident reporting procedures.

   Detailed and documented reporting of the incident (procedures, equipment, process, RIDDOR) should be carried out to comply with H & S regulations.

In the event of an incident

The 'inside' team or 'outside' team makes it known that an incident has occurred.

i. The manager will assume direct control and make contact with the 'inside' team, via open hatches, communication system, etc.

ii. First Aider will assess IP condition and stabilize IP if possible

iii. Manager will consider evacuation options from prepared list. Need to assess on an individual basis that additional risks may be introduced by the choice of particular options.

iv. Manager will declare an Emergency if this is indicated and calls Emergency Services

v. Where appropriate, any specialist equipment and trained operators required are prepared and made ready ahead of permitting entry.

vi. Manager will have a pre-prepared handover brief for the Emergency Services, updated to give current machine and IP status and be prepared to offer further assistance and advice.

Training requirements

i. First aiders

The presence of First Aiders (minimum two) in the entry team is a requirement: They must be

- Selected for suitability for CTW entry
- Trained for entry as for any other entrant
- Have updated CTW operational awareness
- Maintain their First Aider certification.

ii. Engineers

Engineering staff are to be educated, trained and competent with all primary and ancillary equipment, its detail and its function, including cutting equipment and be regularly appraised to demonstrate competency.

iii. PPE, additional requirements for the emergency procedure

Resources

Companies should ensure that competent resources are available to address all the stages of planning and implementation, either internally or with assistance from external third parties e.g. specialist CSR emergency rescue sub-contractors.

Calling the Emergency Services

If an emergency situation involving an operative inside a CTW requires the emergency services to be called. State clearly:

a) The company name and the address, including post code

b) Explanation of the nature of the emergency including that:

- the incident involves a person(s) trapped in a “confined space”
- there may need to be the use of specialist cutting equipment capable of cutting into a 3 - 4mm thick stainless-steel drum to be able to complete a rescue
- Under no circumstances should any other person be allowed to enter the CTW under an emergency situation, unless specifically authorized to do so by the Emergency Services" Incident Manager (senior person at the scene).

In the event of a fire alarm during an entry:

a) Operatives in the CTW must be informed of the alarm,

b) Operatives must immediately exit the CTW drum via the nearest available exit point (i.e. hopper, press/centrifuge area or hatch(es) if designed for access),

c) Provided it is safe to do so, all in attendance at the CTW Entry must exit the building together as a group, after completing the CTW Entry exit procedure and ensuring all persons are accounted for. This should be via the nearest fire exit and in accordance with the standard fire escape procedure for the site.

Review procedures

Review of each CTW entry

Every entry into a CTW should be reviewed in order to

a) Identify causes of blockage and take corrective actions

b) Make necessary corrections or improvements to the SSoWs. Annex J provides a form for carrying this out.

Risk assessments

A suitable and sufficient risk assessment and method statement should be completed annually for:

a) CTW non-entry activities.

b) CTW entry

Emergency procedure drills

It is good practice to hold an annual CTW entry training exercise. During this drill other emergency considerations need to reviewed, for example investigating:

a) The facility for turning the CTW drum mechanically to assist with effecting a rescue.

b) The ready availability of and competency to use a disc angle grinder (see Section 14)

c) The provision of a ready flow of clean air into the CTW by means of a fan blower.

d) Maintenance of communication links with the emergency services under any conditions.

e) Debriefing all operatives exiting the CTW drum and the sign-off documentation

f) A ban on any other emergency drill during a CTW Entry (so that any emergency alarms confirm a real emergency).

The HSE Confined Spaces Regs 1997 Plant and Equipment

Legal duties in respect of plant and equipment for use in confined spaces are set out in Appendix 1, which is part of this Code.

Size of openings to enable safe access to and egress from confined spaces.

Experience has shown that the minimum size of an opening to allow access with full rescue facilities including self-contained breathing apparatus is 575 mm diameter. This size should normally be used for new plant, although the openings for some confined spaces may need to be larger depending on the circumstances, for example, to take account of a fully equipped employee, or the nature of the opening.

94 Existing plant may have narrower openings. It will therefore be necessary to check that a person wearing suitable equipment can safely and readily pass through such openings. Choice of airline breathing apparatus in such cases offers a more compact alternative to bulkier self-contained apparatus. Examples of plant where there are narrower openings include rail tank wagons and tank containers where an opening of 500 mm diameter is common, and in road tankers where the recognised size is 410 mm. Even smaller openings can be found in the highly specialised nature of access to certain parts of aircraft, such as to fuel tanks in wings. Precautions need to take account of such special cases.

The size and number of access and egress points should be assessed individually dependent upon the activities being carried out and the number of people involved. Large-scale evacuations may need larger routes and openings to prevent them becoming bottlenecks. Top openings to vessels, tanks etc should be avoided due to difficulty of access and rescue. Bottom or low manholes are preferable and may need access platforms. There may be occasions when access and egress is so tortuous, for example, in the double bottom of a ship, that temporary openings may be needed.

SAFED PEC 02 2000

Extensive industry experience (gained over many years) demonstrates that where a suitable system of work is employed standard sizes of manhole can facilitate safe internal inspection of Boilers and Pressure

Vessels. e.g.:

- BS 470 Inspection, access and entry openings for pressure vessels (460mm x 410mm or 460 mm diameter)
- ASME VIII 11in x 15in or 10in x 16in or 15in diameter.
  (255mm x 380mm or 255mm x 406mm or 380mm diameter)
- ASME I 12in x 16in or 15in diameter.
- (305mm x 406mm or 380mm diameter)
- BS 2790 Shell Boilers/BS 1113 Watertube boilers
- (400mm x 300mm or 400mm diameter)

Rescue Equipment Recommendations

In order to specify the requirements for cutting into a typical CTW structure (the extreme emergency procedure as required in order to sustain life) a cutting exercise was undertaken and the event fully documented. The summary report is provided below and the full report can be found in Annex K.

CTW cutting exercise report summary

The following cutting exercises were completed to gain a broad understanding of the equipment and how it performed in a real life situation :

1. Cutting into an open weir box (situated below the CTW drum). This was a single lateral cut of approximately 30cm using:
    a. 4½ inch disc angle grinder (110v).
    b. 9 inch disc angle grinder (110v).
    c. Plasma cutter.
2. Cutting into the drum
    a. 4½ inch disc angle grinder (110v).
    b. Plasma cutter.
3. Cutting into lateral rib of the drum.
    a. 4½ inch disc angle grinder (110v).
    b. 5 inch disc angle grinder.

Prior to the cutting exercises, other equipment options were discussed, including nibblers, reciprocating saws and hydraulic cutting gear (FRS equipment). These options were discounted as ineffective and / or slow.

In addition, merits of different power supplies to tool were discussed, including:

1. 240v, 110v or battery powered – it was thought that 110v supply was the best option.
2. Consideration was given to trailing leads during an emergency event but it was felt that this risk was manageable where time was of the essence.

The best type of cutting discs to be used was considered and the agreement was that normal discs, designed for the individual grinders, would give the best result. Only a single disc configuration was used for all cutting exercises.

The aperture size for cutting into the CTW drum was approximately 55cm x 26cm to allow injured party extraction. This size was based on an individual being placed in a restraining stretcher – MIBS, (equipment supplied by ESS Safeforce), prior to the commencement of any cutting exercises.

The following equipment was used during the cutting exercises:

1. 4½ inch disc angle grinder – standard equipment, 12k RPM, standard cutting discs and 110v supply.
2. 9 inch disc angle grinder – standard equipment, 12k RPM, standard cutting discs and 110v supply.
3. Plasma cutter – type 26i, 110v supply and compressed air generator.
4. 5 inch disc angle grinder – standard equipment, 12k RPM, standard cutting discs and 110v supply.

It was concluded from the exercise that the 4½ inch and 5 inch disc angle grinders were preferable to both the 9 inch disc angle grinder and the plasma cutter options. This information therefore supersedes that as stated in the CTW CoP 2017 version Section 14.

Note: In the event of an emergency where cutting into the CTW drum is required, the engineer must be fully educated and trained in the use of the tool and know where to cut into the CTW structure. The principles of a "hot work permit" should be followed to prevent a serious fire situation developing (although the permit need not be completed as this will delay the action).

It should also be acceptable as work is being undertaken on the outside of the CTW, to use 110V AC (centre-tap earthed transformed), or pneumatically powered tools.

The "hot work permit" principles:

a) Remove all obvious combustible material, including work in barrows, from the area. (Where material cannot be removed it must be protected, or hosed down).
b) Clear the immediate floor area of lint and rubbish
c) One person standing by as a fire watch during the whole operation (and a minimum of one hour after the work).
d) Use a welding screen during the entire task.
e) At least 2 suitable fire extinguishers or a hose reel available in the immediate area.
f) Check the equipment being used is in sound condition, certificated where necessary and all gas bottles secured?

Documentation

Companies may vary in who is responsible for and how documentation is maintained, but all CTW entry procedures, SSOW (Annexes A and B), employee information and any associated documents will be required to be retained on the site for a minimum of 4 years. They must be available for inspection by any interested authority body.

The table below should be currently maintained by site and include relevant telephone numbers that could be required in an emergency situation.

CONTACT NAME	TELEPHONE

Whilst this should be kept with the documentation, it could also be usefully located in Reception, at general telephone locations and in management offices.

EQUIPMENT LIST FOR CTW ENTRY

For protection

A risk assessment should be undertaken for the exercise, and any PPE that is considered should be deployed as Primary PPE to protect against a known hazard. A typical definition of Primary and Secondary PPE (workwear related) is given below, for information only.

- Primary PPE is designed for protection against an existing known hazard or for interacting with said hazard, or when a significant risk is present. Primary PPE examples, which is usually task-based gear, include aluminized suits, firefighter turn out gear, safety glasses, hard hats, face shields, aprons, hearing protection and gloves.
- Secondary PPE is designed for continuous wear throughout one's workday for protection against potential intermittent, short-term thermal exposures, like arc flash, flash fire, intermittent molten metal splash and welding slag. Secondary PPE examples include FR pants, shirts, coveralls and balaclavas.
- Lightweight, polyester cotton boiler suit, shoes and gloves
- Knee pads, elbow pads (care should be taken to evaluate their benefit against their potential to restrict movement, especially in small machines)
- Bump cap head protection with battery powered lamp
- Two-way radio
- Suitable hand/wrist protection to EN388 standard, cut resistant level 5 e.g. chain mail glove/wrist chain protectors MUST be worn if using a blade to cut work.
- Air condition monitor/ gas analyser. Advice has developed over recent years and a 4-gas analyser is now generally recommended to sense the adequate level of oxygen as well as the dangerous levels of carbon monoxide, hydrogen sulfide and any combustible gases. Depending upon the type of work being processed in the CTW, this may be necessary. There are many links to various advice and products.

Note: The analyser must be stored in line with the manufacturers recommendations and kept charged ready for use and/or have spare batteries available. In addition, the sensor(s) must be recalibrated or replaced at the intervals recommended by the manufacturers.

For enhancing the working conditions

- Light sticks minimum of 2 per person (4h life min.)
- Equipment should ideally be battery powered, but if mains transformed, to 25V AC maximum

- Lamps should be battery powered, but if mains, transformed to 25V AC maximum
- Fixed open blade knives should not be used, but a hacksaw blade in holder with 16-22 TPI is permissible providing suitable hand/wrist protection is worn.

Note: Welding generator and gas supply equipment must never be taken inside a CTW. Service lines to the point of welding must be of necessary length and in sound condition.

Welding must only be undertaken by fully educated and trained competent persons both in respect of the welding exercise and the design elements of the CTW. Competency in the practice of welding in a confined space must be proven.

ANNEXE A –

A1. SAFE SYSTEM OF WORK - CTW (OTHER ACTIVITY PROCEDURE)

DATE: TIME:

EVENT CONTROLLED BY (PRINT NAME): SIGNATURE:

Describe the type of event and location of the activity :

	SSOW – STEPS TO BE FOLLOWED (Additional guidance on the isolation of hazardous services products and laundry chemicals is given in Annexes D & E)	YES (✓)	NO (✓)	MANAGER'S SIGNATURE	ENGINEER'S SIGNATURE
1	Has steam valve #1 been physically locked off?				
2	Has steam valve #2 been physically locked off?				
3	Has the machine been flushed through to remove excess chemical residues and reduce the internal temperature?				
4	Have the drain valves in the 1ST and last pocket been opened to remove residual water?				
5	Has the main electrical supply to the CTW been physically locked off?				
6a	Has the PRESS head (or press bell and preformer for a 2 stage press) been positioned in the bottomed/down position? (See Annex F)				
or 6b	Has the CENTRIFUGE been put in the safe position, and supported/secured/locked in accordance with the manufacturer's instructions? (See Annex F)				
7	Has the main electrical supply to the PRESS/CENTRIFUGE been physically locked off?				
8	Has the water supply to the CTW been physically locked off?				
9	Have the air supply valves (x 2) to the CTW been physically locked off?				
10	Has the main electrical supply to the chemical auto dosing unit been physically switched off (detergent, bleach and other)?				

A2. SAFE SYSTEM OF WORK - CTW ENTRY (OTHER ACTIVITY PROCEDURE) – “OPERATORS’ HEALTH CHECK RECORD”

NAME	HEALTH CONDITIONS											
	Tiredness	Claustro-phobia	Blackouts	Panic Attacks	Fitting	Asthma	Chest infection	Chills, colds and/or flu	Any open wound	Back or neck injury	Any breathing difficulties	Any other illness or symptom

NAME	DATE AND STATUS OF HEPATITIS “B” INOCULATION (REQUIRED FOR HEALTHCARE SITES ONLY)		
	DATE	STATUS	COMMENTS

A3.SAFE SYSTEM OF WORK - CTW (OTHER ACTIVITY PROCEDURE) – "SIGN OFF RECORD"

All operatives involved with-in the hopper, 1st / last pocket and press/centrifuge area of the CTW sign below to confirm that:

1. they have been trained in CTW entry activity within the last 12 months to ensure full competency is maintained
2. they have volunteered to participate in this CTW activity
3. they have clearly and truly identified to the Manager their personal state and condition of health prior to any CTW activity
4. they are satisfied that all attributes of the CTW entry SSOW have been implemented.

NAME (PRINT): SIGNATURE:

NAME (PRINT): SIGNATURE:

NAME (PRINT): SIGNATURE:

NAME (PRINT): SIGNATURE:

NAME (PRINT): SIGNATURE:

NAME (PRINT): SIGNATURE:

NAME (PRINT): SIGNATURE:

ENGINEER'S NAME (PRINT): SIGNATURE:

ENGINEER'S NAME (PRINT): SIGNATURE:

ENGINEER'S NAME (PRINT): SIGNATURE:

ENGINEER'S NAME (PRINT): SIGNATURE:

Further names and signatures can be recorded on the reverse side of this page.

A4. SAFE SYSTEM OF WORK - CTW (OTHER ACTIVITY PROCEDURE) – "OPERATORS' PPE RECORD"

NAME	HEAD	KNEE	ELBOW	HEAD LIGHT					

A5. SAFE SYSTEM OF WORK - CTW (OTHER ACTIVITY PROCEDURE) – "EQUIPMENT TAKEN INTO THE DRUM"

NAME	EQUIPMENT DESCRIPTION	No: TAKEN "IN"	No: TAKEN "OUT"

A6.SAFE SYSTEM OF WORK - CTW (OTHER ACTIVITY PROCEDURE) "TIME RECORD OF WORK ACTIVITY BY OPERATIVES"

OPERATIVE'S NAME	TIME IN	TIME OUT	OPERATIVE'S SIGNATURE	CO-ORDINATOR'S SIGNATURE	REMARKS

ALL OPERATIVES ARE TO HAVE A MINIMUM OF 30 MINUTES BREAK BETWEEN EACH CTW ENTRY

A7. PROCEDURE FOR CTW REINTRODUCTION TO OPERATION

	SSOW – STEPS TO BE FOLLOWED	YES (✓)	NO (✓)	MANAGER'S SIGNATURE	ENGINEER'S SIGNATURE
1	Has the inspection hatch(es) been refitted and sealed?				
2	Have the security restraints on CTW drum been removed (i.e. wooden chocks, straps)?				
3	Have the drain valves in the 1ST / last pocket been closed?				
4	Have all of the items used for CTW entry been removed from the CTW drum? Complete the check-list				
5	Has the water supply to the CTW been switched back on?				
6	Has the air supply to the CTW been switched back on?				
7	Has steam valve #1 been switched back on?				
8	Has steam valve #2 been switched back on?				
10	Have the side panels been replaced and are they secured in position?				
11	Has the side panel identifying the inspection hatch location been replaced in the correct position?				
12	Has the main electrical supply to the chemical auto dosing unit been switched back on (detergent, bleach and other)?				
13	Has the main electrical supply to the CTW been switched back on?				
14	Has the main electrical supply to the PRESS/CENTRIFUGE been switched back on?				
15	Has the loading system to the CTW been switched back on?				
16	Have all the lock off's been removed as detailed on the lock off map?				
17	Has all of the CTW "non-entry activity" paperwork been correctly filed for future reference?				
18	Have all of the PPE, locks / hasps/keys and all other items used in CTW entry been stored away for future use (inc items that need recharging)?				

ANNEXE B - B1. SAFE SYSTEM OF WORK - CTW ENTRY (UNBLOCKING PROCEDURE)

DATE: TIME: MACHINE:

EVENT CONTROLLED BY (PRINT NAME): SIGNATURE:

Describe the type of blockage and where it has occurred (machine and pockets) :

Describe details activities taken to prevent CTW entry by a person (inc mechanical rotation, use of extra water and / or lubricant):

	SSOW – STEPS TO BE FOLLOWED (Additional guidance on the isolation of hazardous services products and laundry chemicals is given in Annexes D & E)	YES (✓)	NO (✓)	MANAGER'S SIGNATURE	ENGINEER'S SIGNATURE
1	Is entry into the CTW the absolute last resort option?				
2	Is the General Manager in control of the event?				

B2. SAFE SYSTEM OF WORK - CTW ENTRY (UNBLOCKING PROCEDURE) – "OPERATORS' HEALTH CHECK RECORD"

NAME	HEALTH CONDITIONS											
	Tiredness	Claustro-phobia	Blackouts	Panic Attacks	Fitting	Asthma	Chest infection	Chills, colds and/or flu	Any open wound	Back or neck injury	Any breathing difficulties	Any other illness or symptom

NAME	DATE AND STATUS OF HEPATITIS "B" INOCULATION (REQUIRED FOR HEALTHCARE SITES ONLY)		
	DATE	STATUS	COMMENTS

B3. SAFE SYSTEM OF WORK - CTW ENTRY (UNBLOCKING PROCEDURE) – "OPERATORS' SIGN OFF RECORD"

All operatives involved with CTW entry will sign below to confirm that:

1. they have been trained in CTW entry activity within the last 12 months to ensure full competency is maintained
2. they have volunteered to participate in this CTW entry activity
3. they are have clearly and truly identified to the General Manager their personal state and condition of health prior to any CTW entry activity
4. they are satisfied that all attributes of the CTW entry SSOW have been implemented.

NAME (PRINT):	SIGNATURE:
NAME (PRINT):	SIGNATURE:
NAME (PRINT):	SIGNATURE:
NAME (PRINT):	SIGNATURE:
NAME (PRINT):	SIGNATURE:
NAME (PRINT):	SIGNATURE:
CHIEF ENGINEER'S NAME (PRINT):	SIGNATURE:
ENGINEER'S NAME (PRINT):	SIGNATURE:
ENGINEER'S NAME (PRINT):	SIGNATURE:
ENGINEER'S NAME (PRINT):	SIGNATURE:

Further names and signatures can be recorded on the reverse side of this page

B4. SAFE SYSTEM OF WORK - CTW ENTRY (UNBLOCKING PROCEDURE) – "OPERATORS' PPE RECORD"

NAME	HEAD	KNEE	ELBOW	WALKIE TALKIE (Battery only)	HEAD LIGHT (Battery or portable only)	Suitable hand and wrist cut resistant protection to level 5 EN388	FOOT WEAR	OTHER

EQUIPMENT TAKEN INTO THE DRUM		
EQUIPMENT DESCRIPTION	No. TAKEN "IN"	No. TAKEN "OUT"

B5. SAFE SYSTEM OF WORK - CTW ENTRY (UNBLOCKING PROCEDURE) "TIME RECORD OF ENTRY BY OPERATIVES"

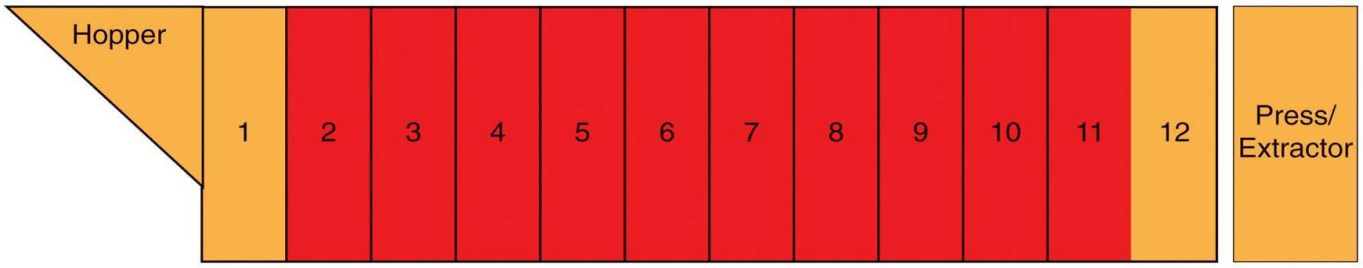
OPERATIVE'S NAME	TIME IN	TIME OUT	OPERATIVE'S SIGNATURE	CO-ORDINATOR'S SIGNATURE	REMARKS

ALL OPERATIVES ARE TO HAVE A MINIMUM OF 30 MINUTES BREAK BETWEEN EACH CTW ENTRY

B6. PROCEDURE FOR CTW REINTRODUCTION TO OPERATION

	SSOW – STEPS TO BE FOLLOWED	YES (✓)	NO (✓)	MANAGER'S SIGNATURE	ENGINEER'S SIGNATURE
1	Has the inspection hatch(s) been refitted and sealed?				
2	Has the security restraints on CTW drum been removed (i.e. wooden chocks, straps)?				
3	Have the drain valves in each pocket been closed?				
4	Have all of the items used for CTW entry been removed from the CTW drum?				
5	Has the water supply to the CTW been switched back on?				
6	Has the air supply to the CTW been switched back on?				
7	Has steam valve #1 been switched back on?				
8	Has steam valve #2 been switched back on?				
9	Have the drain valves been closed?				
10	Have the side panels been replaced and secured in position?				
11	Has the side panel(s) identifying the inspection hatch(es) location been replaced in the correct position?				
12	Has the main electrical supply to the chemical auto dosing unit been switched back on (detergent, bleach and other)?				
13	Has the main electrical supply to the CTW been switched back on?				
14	Has the main electrical supply to the PRESS/CENTRIFUGE been switched back on?				
15	Has the loading system to the CTW been switched back on?				

B7. SAFE SYSTEM OF WORK - CTW ENTRY (UNBLOCKING PROCEDURE) – "POCKET LOCATION MAP"



KEY	SSOW APPLICABLE
	SSOW – CTW (OTHER ACTIVITY PROCEDURE)
	SSOW - CTW ENTRY (UNBLOCKING PROCEDURE)

B8. REGISTER OF CTW ENTRY ACTIVITY

DATE	MACHINE	REASON FOR BLOCKAGE

ANNEX C – TO REALISE THE OPTIMUM DESIGN

'The CTW, whilst perfect in so many aspects remains fallible and it is imperative that a key fault element, that of the tendency to block with work, is eradicated in order to realise its totally safe and productive operation in all the laundries around the world'.

'The target is to develop this, our industry's essential tool and optimise the CTW operation as a whole in order to minimise the dangers and inefficiencies associated with work blockages'.

The optimum design would demand that neither this nor any similar fault condition can take place and that if it did then it would self correct and continue to discharge the perfect clean load each time (ZERO RE-WASH).

Such a massive capital investment by any laundry company in what is generally a critical processing function warrants this further development and the CTW manufacturers are consequently tasked with realising this optimum design.

This initiative is being promoted through the industry user groups, trade associations, manufacturers and standards bodies.

The following key points refer:

- Down time must be reduced to a minimum by enabling on-site staff to enter and correct the blockage situation safely, see the TSA CoP, SSOW.
- Access/observation apertures at every stage
    - Emergency forced draught ventilation and cold-water flushing systems
    - Independent variable speed drive for slow forward and reverse rotation
- Precise fail-safe loading system to ensure correct load at every drop
- Sensing of load drop into CTW hopper
- Observation CCTV system to monitor key operations
- Password protection and fail-safe programme control fail-safe drive system for correct positional, oscillation and rotation control
- Sensing of load transfer from stage to stage
- Fail safe water flow and level control
- Fail-safe process control for chemicals and temperature

These can be achieved through the application of current and proven technology as outlined in the following categories.

There are four main areas where CTW operation needs consideration in order to ensure safe working without blockages.

1. Operational control and drive system.
2. Control of water flows, drains, bath exchanges and dip levels.
3. Process control, temperature and chemicals.
4. Loading, transfer and discharging of the linen.

1. Operational control and drive.

a) Monitoring sensor for rotational operation, in additional to switches and safety timers.

b) Interlocks to prevent transfer if any of the process requirements are not met, such as linen overload, transfer from conveyor or monorail, discharge into press or centrifuge.

2. Control of water flows, drains, bath exchange and dip levels

a) Sensors to prove dip levels in all zones and sections.

b) Controls to ensure that bath exchanges always replace water to the correct level even if incorrectly selected.

c) Accurate control of water flushing into compartment 1. and subsequent compartments for washing and rinsing.

3. Process control, temperature and chemicals

a) Password protected system to prevent access to control from unauthorised personnel.

b) Automatic monitoring and fault display of machine operating criteria, visible display of sensor monitoring to aid easy detection of failure

c) Emergency Programme that would allow machine to operate at correct disinfection levels to empty machine if process control fails.

d) Ability to ensure and control changes in classification and temperature without affecting liquor to load ratios and transfer interlocks.

4. Loading, transfer and discharging

a) Sensor for weight and or loading into compartment 1 correctly.

b) Strict control over transfer sequence with constant load and level monitoring.

c) Automatic Interlocking of machine if transfer fault occurs.

d) Monitoring of discharge cycle and interface with press or centrifuge.

Other features that would assist in the event of a blockage would come under safe operation practices for both maintenance and when no alternative is left but to gain entry to the machine.

The features would include access manholes, removable top covers, easy ventilation, easy draining of the machine, easy cooling and safe manual overrides and clear instructions for their use.

ANNEX D - CTW ENTRY: REDUCING THE RISK OF CONTACT WITH LAUNDRY CHEMICALS

1. As soon as the blockage is noticed, the laundry chemical dosing system should be switched off and the equipment electrically isolated.

a) Isolating the dosing system will stop the addition of laundry chemicals to the CTW and prevent any further increase in chemical concentration within the CTW. Seek advice from the chemicals supplier about fitting additional isolation valves to specific installations

b) If there is a central dosing system in place (i.e. dosing laundry chemicals to more than one washing machine), then laundry chemical supplies to all machines will be stopped.

2. The pipework conveying the laundry chemicals to the CTW should NOT be disconnected, drained or flushed into the CTW.

a) When the dosing equipment is electrically isolated, no laundry chemicals are fed into the CTW and therefore pose the least risk when confined in the pipework.

b) Flushing or draining laundry chemicals into the CTW will actually increase the chemical concentration within the CTW and increase the risk of chemical reactions between the concentrated chemicals.

3. Laundry chemicals already within the CTW should be removed by repeated dilution. The flooded CTW should be emptied either by draining or by pumping out. The most effective method for this will depend on the design of the machine. Machine Manufacturers should recommend the most appropriate method for dilution.

a) It is not feasible to eliminate the risk from laundry chemicals by neutralising or other chemical reaction methods, dilution is the only option.

CTWs with a drain and/or an inspection hatch on every section would significantly assist the chemical dilution process.

b) The use of indicator strips for pH and residual oxidising agents could be used to establish when sufficient dilution of the laundry chemicals has occurred.

4. The control of chemical risks associated with the manual handling of the actual linen blockages in a CTW can only be satisfactorily achieved by the use of appropriate personal protective equipment.

a) The personal protective equipment required will depend upon the laundry chemicals in use. The relevant Safety Data Sheets provide recommendations for personal protective equipment.

ANNEX E - CTW ENTRY: ISOLATION OF HAZARDOUS PRODUCTS OR SERVICES

Summary

The following provisions for isolation are recommended for all installations to ensure the safety of any person working on or in a CTW or other machines in the line.

A detailed inspection of the circuitry must be completed to ensure that any machine inter-connection is clearly identified such that the isolation is always complete.

MECHANICAL

Steam, condensate, water and compressed air

2 isolating valves in sound order should be mounted in series in the singular un-interrupted supply line to the CTW. The valves can be any distance apart, but clearly identified both physically and by schematic.

If 2 valves are not present, the service line must be broken and blank flanged or a spade inserted at a convenient flanged joint.

ELECTRICAL

Mains voltage

Full lock-off procedure as well recognised and stated in the CoP

Control signals

A detailed risk assessment of the system which controls the whole line will identify the isolation required and ensure that it may be done without endangering the operator or the machines.

CHEMICAL

Detergent, bleach, starch, acid sour

The principle is to isolate chemicals in the dosing lines to prevent additional chemicals entering the CTW and to avoid spillages outside the machine. As soon as a blockage is noticed, the laundry chemical dosing system should be switched off and the equipment electrically isolated. Lines should not be broken into nor attempts made to drain them.

See the separate advice on actions to be taken to reduce the risk of contact with laundry chemicals prior to entry into the CTW (Annex D)

ANNEX F – SAFE POSITIONING FOR PRESSES AND CENTRIFUGES

Introduction

Continuous Tunnel Washers (CTW) are provided with a press or centrifuge unit for hydro extraction. Forms for SSoW are provided in

ANNEX A: SAFE SYSTEM OF WORK – CTW (OTHER ACTIVITY PROCEDURE) – point 6 and 6a

ANNEX B: SAFE SYSTEM OF WORK – CTW (UNBLOCKING PROCEDURE) – point 9 and 9a

Presses

The press head should be in the down position (including any pre-press head if fitted). The reason for this is that :

a) This is the best fail safe position for the press head,

b) In the main, this allows the easiest access for an operator when accessing the press unit / CTW.

Centrifuges

The centrifuge should be put into and supported in the up position to allow access as per the design of the equipment. It is important that the support equipment is used correctly and routinely inspected, all in accordance with the manufacturer's recommendations, to ensure its continuing fitness for purpose.

ANNEX G – CORRECT LOADING OF A CTW: STAFF TRAINING AND SAFETY

1. INTRODUCTION

The following key points should be included in the operator training programme to limit the hazards and reduce the risk for operators who undertake loading of storage systems which feed a CTW.

1.1 Step Conveyor

The operator should load only at the start/loading end or first compartment of the conveyor and never try to fill at any other position.

The operator should never climb or walk on the conveyor at any position along its length.

The operator should be fully trained in manual handling to ensure the safe lifting of work onto the conveyor.

The Operator should wear PPE appropriate for the handling of the soiled work and be trained in its use.

1.2 Monorail System

When loading work into a bag the operator should ensure that all items are fully contained in the bag and none left "hanging" over the bag ring such that they could fall out at a later stage of transfer.

The operator should be made aware of key basic observation requirements to supplement the maintenance programme. The Engineering Department should regularly maintain bag assemblies including release mechanisms and cords to ensure a load is not discharged accidentally.

The operator should be aware of the hazard points at the bag loading/discharge stations which should be correctly guarded, interlocked and signed to restrict access.

d) The operator should be fully trained in the process of manual handling in order to safely transfer linen from carts/belt conveyors into the monorail bag.

Note: The under-guarding of high level monorail systems should be the subject of a risk assessment to determine the risk of a bag or items falling and causing injury.

ANNEX H – CONFINED SPACE MEDICAL ASSESSMENT

Company		Site	

Employee Details			
Employee Name		DOB	
Occupation		General Practitioner	
Employee's home address			
Employee or NI Number			

Medical History

Past Medical History	Fits /Blackouts	☐ No	
	Cardiac problems Angina	☐ No ☐ No	
	Asthma	☐ No	
Current Medical Problems	Diabetes	☐ No	
	ENT problems	☐ No	
	Psychological problems	☐ No	
Medication	Alcohol	☐ No	(units per week)
	Smoker	☐ No	(Amount)
	Other(specify)	☐ No	

On examination

Height		Weight		Age	
Blood pressure		Resting pulse			

Cardiovascular system	Gastrointestinal system	Musculoskeletal system
☐ Acceptable ☐ Refer	☐ Acceptable ☐ Refer	☐ Acceptable ☐ Refer
Respiratory system	**Central nervous system**	**Urinalysis**
☐ Acceptable ☐ Refer	☐ Acceptable ☐ Refer	☐ Protein ☐ Glucose ☐ Blood ☐ Other (specify)

	Predicted Value (P)	Actual Value (A)	(A/P)x100 =%	Pass criteria
FEV_1				1. >75% of predicted value 2. FEV_1 change of < 0.25 litre since last test.
FVC				
Ratio FEV_1/FVC				

ANNEX I - CTW PRE-ENTRY CHECK FOR FITNESS TO WORK

This Code of Practice recommends that a medical assessment is carried out and a record kept for persons who may enter CTWs (clause 11a). There is an additional requirement to check the person's well-being immediately prior to entry (clause 11c). This is NOT intended to be a medical check, but to provide an opportunity for the person and his manager to calmly consider reasons why the person ought not to make the entry. It has the form of a self-assessment to be undertaken in the presence of the person's manager, with a declaration signed by both. The questionnaire below is a guide to this requirement and is intended to give it structure. Companies are advised to check the contents with their medical adviser.

This requirement extends to a contractor undertaking the entry and the customer (equipment owner/operator) should request such confirmation together with all standard risk and method statement documentation.

This is particularly important if the persons entering or working simultaneously externally to the CTW are employed each by the customer and the contractor and thus have a shared responsibility for each others' welfare.

CONFIRMATION OF CURRENT FITNESS

It is the person's responsibility to notify his employer of any changes in condition since the medical assessment which may adversely affect the ability to undertake the task. It is also the responsibility of the employer to take due regard of any obvious and relevant changes in the condition or state of health of the person.

In the event of dispute, the employer has the authority to decide whether the person is fit, but the person must always declare willingness to carry out the task.

AGREEMENT

I am aware of the detail stated on my medical assessment dated …… I have completed the

following questionnaire in the presence of my manager: IF ANY ANSWER IS 'YES', GIVE

Further details:

In the last week, are you are aware has there been a change (cross out as applicable) in your current

physical and psychological condition? YES NO

Is there any reason why you should not be present to undertake your normal work duties or this task? YES NO

Have you consumed alcohol within the last 24h? YES NO

Are you currently taking prescribed medication? YES NO

Have you in the last 2 weeks experienced convulsion or loss/disturbance in consciousness or dizziness? YES NO

Do you have a head-ache, influenza or cold symptoms? YES NO

Do you have any un-healed, unprotected cuts or wounds? YES NO

Do you have any musculo-skeletal injury/restriction which impairs the required mobility for this task? YES NO

Have you had abnormal sleep/rest over the last 48h? YES NO

Have you eaten abnormally over the last 24h? YES NO

I am competent, prepared, willing and fit NOW to undertake the work for which I have been trained involving entry and working within a CTW. YES NO

NAME: POSITION:

COMPANY:

SIGNED: DATE: TIME:

I am the manager responsible for ……..
I agree that to the best of my knowledge the above statement and details are true and correct and I have no reason to doubt or question the detail.

THE OPERATOR IS CONSIDERED FIT/UNFIT TO UNDERTAKE THE TASK ON THIS OCCASION

NAME: POSITION:

COMPANY:

SIGNED: DATE: TIME:

This declaration of agreement can apply to one person only.

ANNEX J - CTW ENTRY REVIEW

1 Issues identified on pre-entry and entry forms

1.1. .....

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Corrective action to be taken: .....

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.....

Action by: ..... Target completion date: .....

1.2. .....

.....

.....

Corrective action to be taken:

.....

.....

Action by: ..... Target completion date: .....

1.3. .....

.....

.....

Corrective action to be taken:

.....

.....

Action by: ..... Target completion date: .....

1.4. .....

.....

.....

Corrective action to be taken:

.....

.....

.....

Action by: ..... Target completion date: .....

2. Possible improvements to procedures prior to and during entry

Action by: ..... Target completion date: .....

3. Suspected cause of blockage

4. Actions to prevent reoccurrence

1. .....

Corrective action to be taken:

Action by: ..... Target completion date: .....

2. .....

Corrective action to be taken:

Action by: ..... Target completion date: .....

3. .....

Corrective action to be taken:

.....

.....

.....

Action by: ..... Target completion date: .....

4. .....

.....

Corrective action to be taken:

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Action by: ..... Target completion date: .....

5 Procedural or disciplinary issues

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Action by: ..... Target completion date: .....

6 Notes

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.....

Signed
(Engineer): ..... Date: .....

Approved: ..... Date: .....

ANNEX K – RISK ASSESSMENT AND METHOD STATEMENT KEY POINTS

PENETRATING THE MACHINE BY MAKING (CUTTING) A NEW APPERTURE

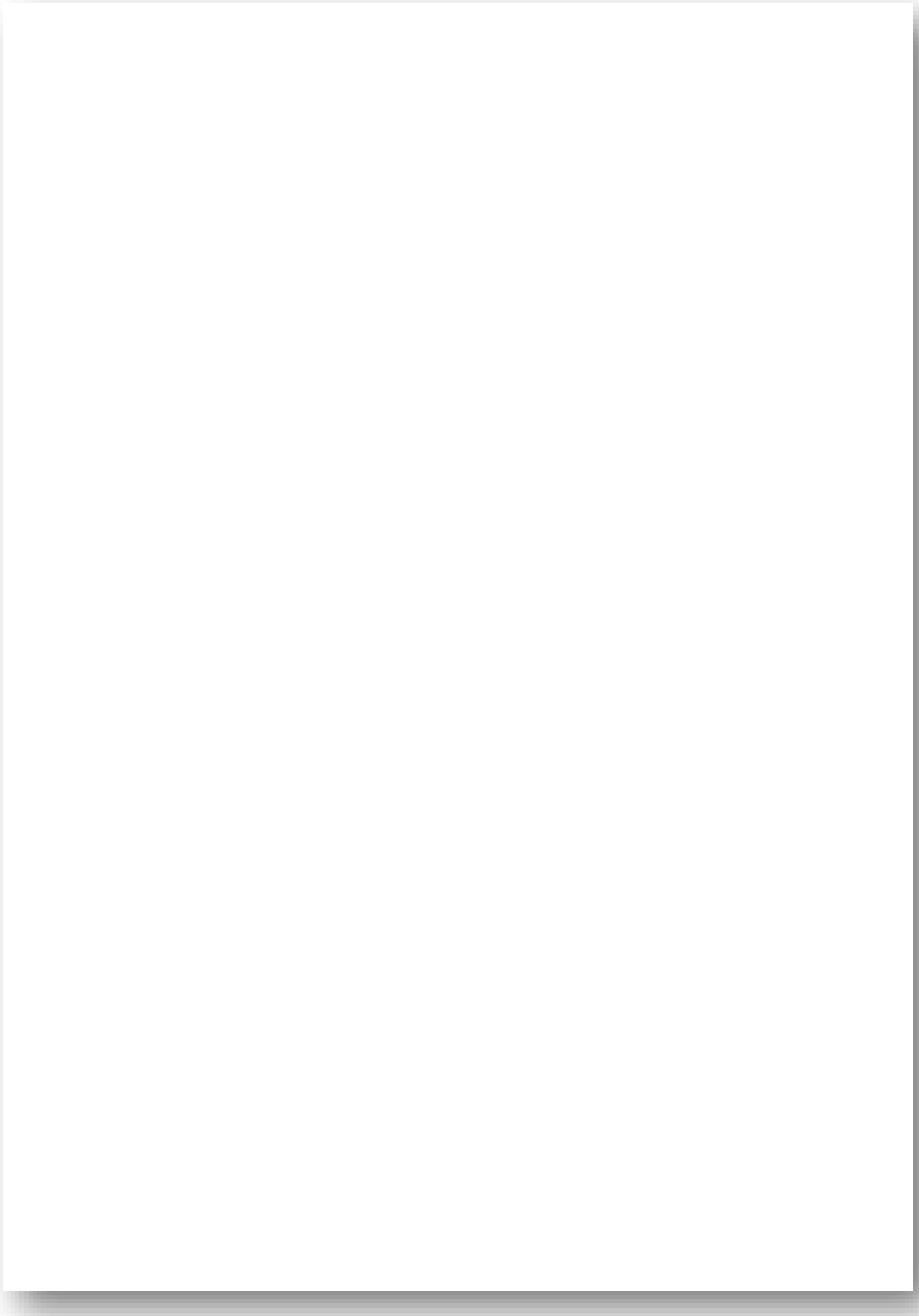
In no specific order, the following should be addressed, along with any local issues, when constructing RAMS documents before undertaking the mechanical exercise, which should only be attempted in accordance with the manufacturer's instructions.

1. Housekeeping & combustibles in surrounding area
2. Training & competency of staff involved in this process
3. Location of personnel, fumes, physical contact, noise, flying debris, etc.
4. Internal fire within drum + emergency fire procedures
5. Reaction of chemical residues with the heat from grinding
6. Maintained equipment & electrical regulations (including 110v, RCDs)
7. Cutting locations & options (beware cutting through/ striking any utility lines)
8. Availability of technical information concerning machine design
9. PPE requirements for all the above possibilities (including BA sets)
10. Working at height
11. Making safe extraction hole
12. Safe extraction process (Fire authorities)
13. Potentially working in confined / restricted space
14. Potential partial lone working inside CTW
15. Speed of activity + crucial timeframe
16. Interaction with Fire & rescue services
17. Communications (on going medical condition updates etc.)
18. Critical control points in the entire procedure
19. Staff access & controls (exclusion zone)

ANNEX L – RISK ASSESSMENT AND METHOD STATEMENT

CLEANING A CONTINUOUS TUNNEL WASHER SYSTEM

Risk Assessment



RISK ASSESSMENT
CLEANING A CONTINOUS TUNNEL WASHER SYSTEM

To prevent skin contact, inhalation and consumption, specify the required PPE clothing along with eye protection, e.g., gloves, coverall, FFP3 to EN149 face mask, goggles	Fire, inhalation of smoke, particles, atomised water droplets, chemical burns	4 x 2	8	All actions as defined in column 1 (Key Steps) are necessary. Follow these steps carefully and take due regard for the safety of others at all times.	2 x 1	2		
Implement all relevant safe practices for this procedure and refer to the CTW CoP	The CTW Cop defines many associated hazards such as exposure to harmful gasses, chemicals and particles, e.g., from flame cutting or burning off	4 x 4	16	Follow the procedure identified in the CoP	2 x 1	2		
Prepare suitable receptacle for collecting waste matter								
Combustion, pressure jetting or chemical treatment may be required								
Prepare necessary drainage facilities								
Where possible, relocate machine parts to open air and foul sewer drain or catchment area for cleaning								
Rinse components with fresh water								
Dispose of Biofilm residue (contaminated goods) safely and responsibly								
Apply surface treatment to machine components where specified, e.g., chemical, paint, etc. This would apply to loading and discharge chutes and the press area rather than internal stages								
Return machine to normal use and operate disinfection cycle where specified.								
Remove all PPE and discard or clean as appropriate.								

Method Statement

CLEANING OF CONTINUOUS TUNNEL WASHER SYSTEMS TO REMOVE LAUNDRY PROCESS LIQUOR RESIDUES/BIOFILM

The removal of soil, scale and general process water and effluent residues must be undertaken to ensure the hygienic quality of laundered textiles and safe working conditions for Laundry operatives. Routine physio-chemical procedures should be practised to control these conditions in water storage tanks, washing extractors, continuous tunnel washer systems and water distribution and drainage systems.

Operating, maintaining and cleaning a Continuous Tunnel Washer (CTW) system requires specific reference to the CTW Industry Code of Practice, developed over the last 20 plus years to become the global industry bible for its safe operation.

Such procedures shall be undertaken in accordance with this method statement and the associated risk assessment which must be designed specifically for the task in hand.

For the purpose of designing the specific task risk assessment, the sections 5, 7 and 8 of the CTW Industry Code of Practice along with their respective annexes shall be followed. These identify the correct precautions and procedures to be followed where ‘non-entry’ and ‘entry’ activities are defined, to describe the requirements for access to and working within certain parts or stages of the whole CTW system.

Once these requirements have been confirmed the remainder of this method statement shall be followed with due reference to the CTW specific risk assessment which references the cleaning of defined areas.

The cleaning involves a comprehensive and meticulous process to ensure that tanks, surfaces and associated water and drainage systems are free from contaminants and safe for close proximity or use. The contamination of textiles and the personal hazards to staff from contact, inhalation or consumption of contaminated water or air-borne droplets must be prevented at all times. The frequency of cleaning and the procedures for reducing the risks for each task are documented in the risk assessment which should be used for risk assessing all situations and cleaning procedures.

The procedure(s) will include several critical steps:

Risk assessing the procedure: determine all potential hazards, paying special attention to PPE requirements, slip/trip/fall hazards and the loan working and confined space regulations/guidelines. This is where the ‘non entry’ and entry’ definitions in the CTW code of practice are critical.

Draining the Tank or CTW stage: The first step involves draining completely to remove all stored water and thus allowing for thorough inspection and cleaning of the interior surfaces.

Physical Cleaning: Once drained, physical cleaning involves the removal of sludge, scale, and biofilm deposits. Specialised equipment and techniques may be required to scrub all surfaces, effectively removing any deposits that could harbour bacteria and other harmful microorganisms. Disposal of such liquid or solid deposits should be undertaken responsibly.

Disinfection: After physically cleaning, disinfection using an appropriate biocide, e.g., chlorine, is crucial to eliminate any remaining bacteria, viruses, or other pathogens which are obviously not visible. The disinfectant should be applied uniformly and given necessary time to ensure that all surfaces within the tank are adequately treated.

Rinsing: Following disinfection, thorough flushing of any remaining deposits and rinsing to remove any residual disinfectant is critical to ensure that the water stored in the tank after cleaning is safe for use.

Refilling and Testing: Refilling the tank or re-commissioning the machine will require water samples to be taken at various stages and analysed to ensure that the cleaning and disinfection process has been effective, and the water meets all safety and quality standards. The installed thermal disinfection procedure may be required as the final stage of this procedure.

THE HEALTH AND SAFETY AT WORK ACT, THE CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH) AND THE CONTROL OF LEGIONELLA IN WATER SYSTEMS ARE THE RESPONSIBILITY OF THE DUTY HOLDER

Water tank cleaning is essential for several reasons, primarily related to health, safety, and compliance with regulations.

The Health and Safety at Work Act 1974 (HSWA) mandates that employers and those in control of premises ensure the health and safety of their employees and others who may be affected by their activities. Regular cleaning of water tanks is a critical component of meeting this duty of care.

Additionally, the Control of Substances Hazardous to Health Regulations 2002 (COSHH) requires employers to control substances that are hazardous to health, which includes biological agents such as Legionella bacteria. Proper water tank maintenance is a necessary control measure to eliminate the risk to health from such hazards.

The HSE Approved Code of Practice L8 (ACoP L8) provides practical guidance for controlling Legionella bacteria in water systems. It outlines the responsibilities of duty holders and specifies risk assessments, method statements and control measures, including the regular cleaning and disinfection of water tanks.

Bacteria thrive in stagnant or poorly maintained water systems, posing a significant health risk such as Legionnaires' disease. Regular cleaning and disinfection of water storage and distribution systems prevents the growth and spread of bacteria, ensuring a safe water supply. Besides Legionella, other harmful microorganisms can inhabit water tanks, leading to various waterborne diseases. Regular cleaning ensures these pathogens are effectively removed, safeguarding public health.

Failure to comply with water hygiene regulations can lead to severe legal repercussions, including fines, lawsuits, and damage to reputation. By adhering to mandated cleaning schedules and standards, businesses and institutions can avoid these legal issues. Regulatory bodies conduct inspections to ensure compliance with health and safety standards. Regular water tank cleaning helps in passing these inspections, avoiding penalties and enforcement actions.

Contaminants like sludge, scale, and biofilm can cause blockages, corrosion, and other issues that impair the efficiency and lifespan of water systems. Regular cleaning prevents these problems, ensuring smooth operation. Preventative maintenance through regular cleaning is more cost-effective than dealing with emergency repairs and system failures. It reduces downtime and extends the life of water infrastructure.

In summary, water tank cleaning is not just a regulatory requirement but a crucial practice for maintaining water quality, ensuring safety, preventing disease outbreaks, and avoiding legal and operational issues.

Textile Services Association
Venture House
2 Arlington Square
Downshire Way, Bracknell
RG12 1WA

E: **tsa@tsa-uk.org**
T: **020 3151 5600**

Championing the
Textile Services Sector