TUNNEL FINISHERS

SAFE OPERATION

CODE OF PRACTICE

ISSUED 16/01/23 | **REF: CoP002**
UPDATED NOV 2024

INTRODUCTION

The Tunnel Finisher, the 'hot-box', or definitively, the Garment Finishing Tunnel is a commonly found equipment in all laundries processing polyester and polyester/cotton blended fabric garments and can also be used in the garment manufacturing sector for a number of finishing purposes for all fabric types.

It is not dissimilar to a pass-through tunnel oven or drying chamber in principle in as much that it facilitates a high temperature, hostile and dangerous enclosed environment, which may require human entry to implement correction (e.g. break-down; operational and quality faults). Because of the nature of machine design, entry is all too easy and the education and training of operators on the dangers and how to deal with them is mandatory to comply with the Confined Spaces Regulations.

https://www.hse.gov.uk/pubns/priced/l101.pdf

Entry must only be undertaken with extreme caution, following the completion of a risk assessment and the preparation of proven, documented safe procedures, by staff who are trained and competent.

PRINCIPLES FOR SAFE OPERATION

For instructions on the operation of a tunnel finisher, refer to the manufacturer's operating manual which will have been provided following installation and commissioning of the equipment. The purpose of this section is to emphasize those activities which will have an influence on the safe operation of the machine.

1. Reason for Entry

Reasons for entry may include:

- Breakdown or preventative maintenance
- Recovery of fallen garments/hangers
- Cleaning

The objective here is to put into practice procedures which will reduce the need to enter the tunnel finisher.

2. Planned Preventative Maintenance (PPM)

The PPM schedule recommended by the manufacturer should be followed in order to limit the number of mechanical and utility breakdowns. Particular attention should be paid to

- Condition of hangers
- Condition of the conveyor hanger pegs (one hanger per peg) and carrier worm
- Condition of emergency equipment (fire extinguishing system)

3. Training

- The need and implementation of hazard and risk assessment for entry into the tunnel finisher
- Operation of the tunnel finisher, including vigilant observation of continuing performance e.g. empty spaces on carrier, empty hangers, fallen garments in the tunnel finisher.
- Planned and emergency shutdown procedures
- Emergency evacuation of staff overcome by conditions in the tunnel finisher

4. **Processing**
   - **Wash Processes** - Proper sorting, classification, selection of wash process for incoming work: This is to ensure complete soil and satin removal, particularly of oils which could otherwise flash off in the tunnel finisher and cause a fire or build up as pools of liquid on the floor of the tunnel finisher. It is also important to conduct regular water hardness check to assist in adequate removal of oils from textile products. Refer to Annexe I at the end of this document.
   - **Loading and Inspection of Garments** - Inspection of each hanger before use (rejection criteria). Accurate dressing and buttoning of garments onto hangers and correct placement of hangers on the feed rail. Checking that the hangers are correctly fed from the feed rail onto the carrier, one per peg.
   - **Hazards** – The hazards associated with entry into a tunnel finisher include
     - Temperature and heat stress
     - Hot surfaces
     - Slips, trips and falls; oil on floor, cuts, bruises, head injury, sprains etc.

5. **Safe System of Work (SSoW)**
   A written and trained-in SSoW must be implemented for all activities where a hazard and risk assessment indicates it is required.

Safe System of Work – Non-entry

For the purposes of this code, entry shall be defined as the encroachment of any part of the operator's body through the plane of the tunnel finisher entry.

- The most likely activity not involving entry will be the retrieval of fallen garments.
- As a minimum requirement it will be necessary to stop feeding garments into the tunnel and to allow those garments which have already entered to be finished and clear the tunnel.
- It will also be necessary to inspect the tunnel entrance/exit for liquid oil which will present a risk of slipping.
- The technique for removing the fallen garments will involve the use of a hooking or snagging device on the end of a pole. It may therefore be necessary to shut down the tunnel (including full isolation) in order to let it cool down and stop the movement of hot air. The lower entrance and exit plates may need to be removed. Appropriate PPE for protection against hot surfaces may need to be provided.
- Once retrieval is complete the lower entrance and exit plates should be replaced and the tunnel started up as per usual.

Safe System of Work – Entry

- A tunnel finisher falls under the definition of a confined space and all precautions and due diligence must be applied for entering such an area in which hazards have been identified and risks assessed.
- The first action prior to entry is to stop loading garments into the tunnel and to let the tunnel empty. The tunnel must then be stopped and isolated (activating the emergency stop buttons as necessary). The isolation should be locked (T - ock ut Tag ut) with individual key, held by the person entering the space.
- After allowing time for cooling (minimum minutes) and using appropriate PP the lower plates at the entrance and exit should be removed. (ote: Cooling can be aided by leaving the fan(s) on with the heater unit off). nsure the area is fully lit to enable any obstacles or adverse conditions to be seen.
- The tunnel may now be entered via the garment entry or exit apertures.
- Care must be taken to observe and negotiate any obstacles, such as fallen garments, hangers, water or oil deposits, etc.
- nce repairs, maintenance, cleaning or garment retrieval have been completed and the tunnel confirmed as clear of personnel, the lower entrance and exit plates should be replaced and the tunnel formally recommissioned. This may require official handing over from engineering staff to operational staff.
-

Hazard isk ssessment

- It is recommended that a system of risk rating similar to the one described below is adopted to assess the existing situation and again after any necessary steps have been taken to reduce the risk (to acceptable levels).
- ach identified hazard is evaluated in terms of the likelihood that harm will occur and the severity of the harm in view of any mitigating circumstances present e.g.
    - isk ating, (likelihood of occurrence) x (severity of harm)
    - ccurrence and harm may be estimated on a scale of to and
    - may be considered acceptable (unless one or other of the estimates equals or)
- Template for hazard and risk assessment
    - A sample template is included in Annex A.

7. Review Equipment Design and Maintenance to Prevent Hangers/Garments from Falling at Any Point in The System

Since garments falling is the most common reason for needing to enter a tunnel finisher, it is recommended that the frequency and numbers of fallen garments is monitored and to then consider whether retraining staff, maintenance/cleaning, or improvements to the procedures should be reviewed.

Hanger design and condition, manual hanging procedure, automatic feeder/loading system and conveyor condition should all be frequently assessed/inspected and the maintenance regime recorded.

8. TSA Technical Webinar 27.05.21 Summary Notes

A well-functioning overhead hanger system can have positive implications on:

- Health and Safety considerations
- Production Efficiency
- Customer service
- Cost
- Life of hangers, garments and rail systems.

The following key concerns were identified to be inserted in this industrial guidance:

- Observe and record repeated occurrences and the number of hangers or garments falling off the rails
- There may be unusual increases in numbers which will need investigating, possibly, throughout the system to find the cause
- Implementing a hanger numbering system will improve traceability
- Encourage a culture of reporting – operators to make note of individual hangers falling
- Quarantine any hangers that do fall off for examination and necessary repair
- Record the type of garment and fabric weight etc relevant to that hanger incident.

Design and Maintenance

- Replace worn parts with original quality or as instructed by the manufacturer
- Specify the best calibration methods/tolerances for the hanger
- Maintenance regimes and record keeping
- cleaning practices and regular inspections of gates, tubing, slick rails, guide rails
- Consider areas where there may be a need for additional design tweaks and work with the supplier to consider readily available solutions

- Placing of additional rods, without interfering with basic functionalities to reduce the motion of the hangers that may be causing repeated hanger falls
- Introducing ‘stay bar’ just before the final descent to ‘user point’ this will stop the swing effect and reduces the risk of the hangers falling off
- Additional guide rod from the loading rail to the auto-loader entry point and this prevents sideways movement
- Adjust the system to prevent large numbers of hangers at each gate. Reduce to 2-3 instead of 8-10. This will have no adverse impact on production, but will prevent hangers from clogging/fouling free passage at gate points.

Training

- Discuss Correct loading of product - Trained competent operators
- Correct hangers for the application - Design and evaluation, operator competency
- Clear and concise instructions for the staff who are using the equipment along with refresher training and involving them in implementing a solution. They may have a practical suggestion as to why hangers fall off, e.g. certain garments, sizes or fabrics which needs a corrective action to improve efficiency and quality.

ANNEXE A: SAMPLE RISK ASSESSMENT FOR GARMENT RETRIEVAL

PROCESS	ASSOC. HAZARDS	RISK RATING	PREVENTATIVE / FURTHER ACTION	RISK RATING REVIEWED	BY WHOM	BY WHEN
Ensure all garments are out of the tunnel					Operator	
Ensure machine is fully locked off and all services isolated. Leave fans on to cool the tunnel. Additional portable fans may be required for speed.	• Electricity • Heat	2 x 3 = 6	• Train only authorised staff to follow isolation procedures • Supervisor to ensure all services are isolated and tunnel is safe to enter	2 x 2 = 4	Supervisor	
Remove lower plates on entrance and exit to tunnel	Exposure to heat	2 x 3 = 6	Allow tunnel to be cooled down – asses temp prior to entry.	2 x 2 = 4	Supervisor / Operator	
	Manual handling	2 x 3 = 6	All staff to receive manual handling training	2 x 2 = 4	Supervisor	
	Metal splinters	2 x 2 = 4	Protective gloves to be worn	1 x 1 = 1	Operator	
Turn off fans when tunnel cooled and remove portable fans so no obstruction to apertures			Supervisor to confirm all fans are off		Supervisor	
Notify Supervisor you are to enter the tunnel		3 x 3 = 9	A second person to remain at entrance of tunnel with constant audio and visual contact with person inside tunnel. An emergency response procedure is required	2 x 3 = 6	Operator	
Retrieve garment from tunnel	Exposure to heat	2 x 3 = 6	Only enter when fully cooled down	2 x 2 = 4	Operator	

	Darkness	3 x 3 = 9	Portable torches to be carried by person entering tunnel. Second person outside to also have a torch as back up.	2 x 2 = 4	Operator	
	Confined work area	3 x 3 = 9	Only suitably trained staff to enter tunnel	2 x 3 = 6	Supervisor	
		2 x 2 = 4	Use of reach pole if possible	2 x 1 = 2	Operator	
Return to entrance	Exposure to heat	2 x 3 = 6	Only enter when fully cooled down	2 x 2 = 4	Operator	
	Darkness	3 x 3 = 9	Portable torches to be carried by person entering tunnel. Second person outside to also have a torch as back up.	2 x 2 = 4	Operator	
	Confined work area	3 x 3 = 9	Only suitably trained staff to enter tunnel	2 x 3 = 6	Supervisor	
		2 x 2 = 4	Use of reach pole if possible	2 x 1 = 2	Operator	
Replace lower plates and reconnect all services	Manual handling	2 x 3 = 6	All staff to receive manual handling training	2 x 2 = 4	Supervisor	
Restart machine	Metal splinters	2 x 2 = 4	Protective gloves to be worn	1 x 1 - 1	Operator	

ANNEXE B: CONFINED SPACE REGULATIONS

This section is for general guidance and information and the principles of managing activity and awareness in such conditions as may be considered to create a wholly or partially confined space.

Whilst the entry and egress constraints for a tunnel finisher do not present the same degree of hazard as that for a continuous tunnel washer (CTW), with which our industry is generally familiar, there are still many opportunities for slips, trips and falls to occur and the key elements of CSR practice are highlighted here, including reference to the 'emergency procedures' documented in the CTW CoP.

A risk assessment (see Annex A) should be undertaken and any person who may enter the tunnel finisher must be trained and thus be competent in correctly practising the procedures resulting from the risk assessment. No person should ever enter the tunnel finisher without ensuring that all physical conditions are suitable for human entry and then never without a competent person in attendance at either the entry or exit aperture, always maintaining audio-visual contact. Both parties should be equipped with the advised PPE.

1. Employer Training

Fully documented syllabus for CSR specific training, including Permit to Work, SSOW awareness and competency and 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 facilitate the training of staff in the required skills to ensure competency in carrying out the SSOW in place. 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).

Specialist Confined Space Regulations 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 (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 Tunnel Finisher.

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 documentation.

Work and Rest Periods

Listed below are the times for work activity and rest periods between work activities applicable for the SSoWs - full entry to the tunnel finisher with arduous activity or entry only at the in or out access apertures – non-entry activities.

SSOW	WORK PERIOD	REST PERIOD
Full Entry with arduous activity	30 mins	30 mins
Non-entry activities	2 hrs	30 mins

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

- Hot factory conditions
  - Availability of cold water drinks;
  - Availability of cool area with fresh air.
- Cold factory conditions
  - Availability of blankets to provide warmth immediately after egress from a warm tunnel finisher;
  - Availability of hot drinks;
  - Availability of a warm area;
  - Availability of a change of dry clothing.

2. Medical Conditions

- The HSE Employment Medical Advisory Service (EMAS) has advised that any operative who is trained to complete full 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 full entry and other medical conditions ought not to be reported to the Company. Annex C provides an example of a confined space medical assessment form.
- The operatives have a responsibility to inform the company of any changes to their personal medical condition or the taking of medicines.

- Annex D provides a list of pertinent questions about the well-being of an operator immediately prior to full 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 full entry.

N.B. It is not considered necessary for the above measures to be taken so rigidly for staff working in a Tunnel Finisher, however it is good management practice to ensure that staff are considered to be of sound health and able to undertake the work in question.

3. Emergency Procedures

Preparing an Emergency Procedure

By following this guidance document, operators will have complied with the Confined Spaces Regulations (CSR) and dealt with the operation of tunnel finishers to reduce the incidence of garments/hangers falling. It now remains to consider the nature of an emergency which might occur during the full entry of a tunnel finisher and the planning and documentation for its resolution.

- **Key Principles**
  - The initial objective during an emergency is sustaining life
  - The primary objective during an emergency is to effect an evacuation, in conjunction with other emergency services.
  - The Emergency Procedure will be based on
    - A pre-incident risk assessment
    - A dynamic risk assessment during an incident
  - A tunnel finisher is a confined space and entry must comply with the CSR guidance. It is a requirement under CSR to plan and execute an Emergency Procedure in the event of sudden incapacity of persons within a confined space.
  - The Site Manager who is present and responsible must be competent to assess the situation and decide upon the action to be taken.

Pre-emergency Planning

- **Emergency Scenarios**
  - 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.

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

- **Emergency Services -** It is unlikely that such support would be necessary, however consideration should be given. For example, flammable residues may exist in the tunnel finisher and the potential for a fire to start should be considered especially if weld repairs are to be undertaken. Local emergency services - clarification of the level of support available is essential and this should be researched. 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.
- Identification of an emergency, assessing the environment and gauging the status of the injured person (IP). It is a requirement that entry is carried out in pairs. Both should have basic training in First Aid and be able to assess or accurately report the condition of the IP.
- **Evacuation options** - To facilitate the decision-making process for the Manager, a list of evacuation options should be documented in advance. Particular machine design, its location and operation will need to be taken into consideration and advice sought from the manufacturer/supplier as required.
  - How far is the nearest point for evacuation?
  - How convenient is it to reach it? Is it at a convenient and safely accessible height?
  - Can the IP be evacuated with minimum assistance?
  - Does the IP require a significant amount of assistance to be evacuated?
  - Is the IP in considerable pain which must be managed before assisted evacuation?
  - Is the IP unconscious? What was the likely cause? Can the IP be revived?
  - Is there a threat to life a) if the IP is moved b) left at the incident point?
  - Can the IP be evacuated by mechanical or other means?

- Is it necessary to cut into the machine to effect an evacuation if the IP must be evacuated as quickly as possible
- Is there a requirement for specialist medical attention evacuation procedures

ec are an mergency

- **mergency Ser ices** The point at which an mergency should be declared, and the mergency Services called, should be made clear. (Calling the mergency Services see below). mergency rescue plan needs to be documented and suitable rescue equipment made available, as the emergency services should not be the only means for emergency support.

Post Incident eporting Proced res - detailed and documented reporting of the incident (procedures, equipment, process, I) should be carried out to comply with H S regulations.

In the ent of an Incident
The inside team or outside team makes it known that an incident has occurred.

- The manager will assume direct control and make contact with the inside team, via open hatches, communication system, cameras etc.
- irst Aider will assess IP condition and stabilize IP if possible
- anager will consider evacuation options from prepared list. eed to assess on an individual basis that additional risks may be introduced by the choice of particular options.
- anager will declare an mergency if this is indicated and calls mergency Services
- Any specialist equipment and operators required are made ready this should be done as routine preparation ahead of permitting entry
- anager will have prepared a handover brief for the mergency Services related to machine and IP status and be prepared to offer further assistance and advice.

raining e irements

- **irst iders** - The presence of irst Aiders (minimum two) in the entry team is a requirement: They must be:
  - Selected for suitability for full entry
  - Trained for entry as for any other entrant
  - Have updated operational awareness of a tunnel finisher
  - aintain their irst Aider certification.

- **Engineers** - Engineering staff are to be trained and conversant with all primary and ancillary equipment detail and function, including cutting equipment and be able to demonstrate competency in their application
- 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. manufacturers' unblocking teams.

Calling the Emergency Services
If an emergency involving an operative inside a confined space requires the emergency services to be called. State clearly:

- The company name and the address, including post code
- Explain the nature of the emergency including that:
    - the incident involves a person(s) trapped in a "confined space"
    - the emergency services may need the use of specialist cutting equipment capable of cutting into 4mm thick stainless steel to be able to complete a rescue

Under no circumstances should any other person be allowed to enter the confined space 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

- Operatives in the confined space must be informed of the alarm
- Operatives must immediately exit the confined space via the nearest available exit point (i.e. hopper, press/centrifuge area or inspection hatch(es) if designed for access)
- Provided it is safe to do so, all in attendance at the entry must exit the building together as a group, after completing the 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.

4. Review Procedures

Review of Each Confined Space Entry

Every entry into a confined space should be reviewed in order to:

- Identify causes of the fault and take corrective actions as assessed
- Make necessary corrections or improvements to the SSoW.

Risk Assessments

A suitable and sufficient risk assessment should be completed and reviewed annually for all confined space entry procedures.

Emergency Drills

An annual confined space entry training exercise should be held, which also addresses related emergency considerations.

ANNEXE C: SAFE SYSTEM OF WORK – CONFINED SPACE ENTRY **OPERATORS HEALTH CHECK RECORD**

Name:	Fatigue	Claus trophic	Blackouts	Panic Attacks	Fitting	Asthma	Chest Infection	Cold / Flu	Open Wound	Back / Neck Injury	Breathing Difficulties	Other Illness/ Symptoms

ANNEXE D: SAFE SYSTEM OF WORK – CONFINED SPACE ENTRY
STAFF SIGN-OFF RECORD

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

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

Name (PRINT):		Signature:	
Name (PRINT):		Signature:	
Name (PRINT):		Signature:	
Name (PRINT):		Signature:	
Name (PRINT):		Signature:	
Engineers Name (PRINT):		Signature:	
Engineers Name (PRINT):		Signature:	
Engineers Name (PRINT):		Signature:	
Engineers Name (PRINT):		Signature:	
Engineers Name (PRINT):		Signature:	

ANNEXE E: SAFE SYSTEM OF WORK – CONFINED SPACE ACTIVITY **OPERATORS PPE RECORD**

NAME	HEAD	KNEE	ELBOW	HEAD LIGHT	OTHER	OTHER	OTHER

ANNEXE F: SAFE SYSTEM OF WORK – CONFINED SPACE ENTRY **EQUIPMENT TAKEN INTO THE CONFINED SPACE**

NAME	EQUIPMENT DESCRIPTION	NUMBER TAKEN IN	NUMBER TAKEN OUT

ANNEXE G: SAFE SYSTEM OF WORK – CONFINED SPACE ACTIVITY **TIME RECORD OF WORK ACTIVITY BY OPERATIVES**

Operatives are to have a minimum of 30 minutes break between each entry activity.

NAME:	TIME IN	TIME OUT	OPERATIVE'S SIGNATURE	CO-ORDINATOR'S SIGNATURE	COMMENTS

ANNEXE H: SAFE SYSTEM OF WORK – CONFINED SPACE ENTRY **ISOLATION OF SERVICES**

Summary

- The following isolation procedures are recommended to ensure the safety of any person working on or in a tunnel finisher.
- A detailed inspection of the combined equipment circuitry must be completed to ensure that any inter-connected machine(s) is identified and the isolation is complete. This may apply to a separately powered hanger conveyor, garment loading system or garment folder.

Mechanical (Steam, Condensate, Water & Compressed Air)

- Two isolating valves in sound order should be mounted in series in the singular un-interrupted supply line to the tunnel finisher. The valves can be any distance apart, but clearly identified both physically and by schematic. A full mechanical lock off procedure using padlocks and signage should be used along with recorded key ownership.
- If two 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)

- Turn the control panel off and then turn off the main electrical isolator, implementing the standard full lock-off procedure with suitable signage and padlock key ownership.
- Other equipment may be separately powered or interlocked and should be isolated in the same manner.

Gas (Main Gas Supply)

- Turn the burner off following the normal shut-down procedure and ensure the post shut-down purge cycle is completed. Then isolate the main gas supply to the burner and apply the normal Full lock off procedure for the gas valve.

ANNEXE I: FIRE INCIDENT **INVESTIGATION REPORT - UNKNOWN SUBSTANCE IN TUNNEL DRYING DUCTING (MICRONCLEAN AUG 2023)**

Summary
An investigation was carried out by one of TSA members (Micronclean) in order to ascertain the identity of an unknown flammable liquid, which is collecting in the ducting above industrial tunnel dryers. This liquid poses a fire risk to industrial laundries. FT-IR and NMR analysis revealed the main component of the flammable liquid to be a polyethylene glycol (PEG) type substance. The analysis of common industrial wash chemicals revealed the presence of the same PEG type substance, making wash chemicals the likely source of the flammable liquid.

Recommendations

- Reduce the temperature of tunnel dryers to <150oC to reduce the build-up of flammable liquid (note this will only be effective if the PEG type substances are similar to those found in the three common industrial wash detergents tested as part of this investigation)
- Increase the air flow in ducting above tunnel dryers to reduce the build-up of flammable liquids.
- Talk to industrial wash chemical manufacturers about the presence of PEG type chemicals, and whether these can be removed or replaced with alternatives.
- Increase industrial washer rinsing efficiency to reduce the amount of PEG type substances present on garments entering dryers.
- Issue a Health and Safety notification to advise against cleaning tunnel dryer ducting with bleach/ hypochlorite chemicals.

Conclusions
We can conclude that the main component of the unknown liquid, collected from the ducting above an industrial tunnel dryer, is a PEG type substance.

We can conclude that some common industrial wash chemicals contain these PEG type substances, and are the likely source of the unknown liquid which collects in the ducting above tunnel dryers.

Click here to get back to the wash process page

Questions or comments to:

Shyju Skariah
Programmes & Projects Director
E: shyju.skariah@tsa-uk.org
M: 0754 322 0303

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

WWW.TSA-UK.ORG