



STEWARDSHIP / KNOWLEDGE / INNOVATION / **EXCELLENCE**

The Micronclean SKIEs initiative - at the very heart of everything we do at Micronclean



# WORKWEAR MAINTENANCE FOR THE 21<sup>ST</sup> CENTURY

Let Micronclean keep your workwear clean and compliant





» HOW IT WORKS FOR YOU

# Micronclean has the most modern laundry in Europe

Detailed here is our Workwear PPE Maintenance programme demonstrating how we work to keep you 100% compliant.

Utilising our dedicated transport fleet, garments arrive at Louth.



» Garment check-in

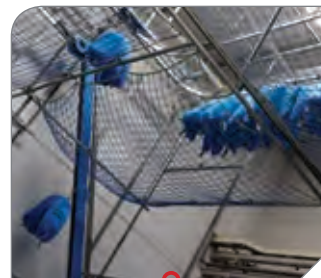


Segregated inward and outward docks.



Soiled goods uphanging to overhead mono-rail.

Soiled goods uphanging to overhead mono-rail.



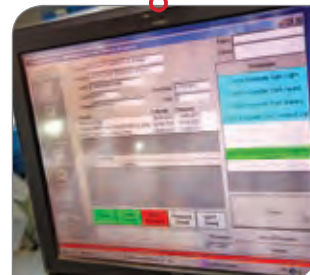
Soiled goods arrive at scanning and 1st inspection.



» Scan and inspect



Garment RFID transponder scan and visual inspection - Protrack display.



Protrack database - set of choices for progress of garment.



Garments held in wash types in orange overhead bags - 55kg loads for continuous batch washer and 70 kg for batch washers.



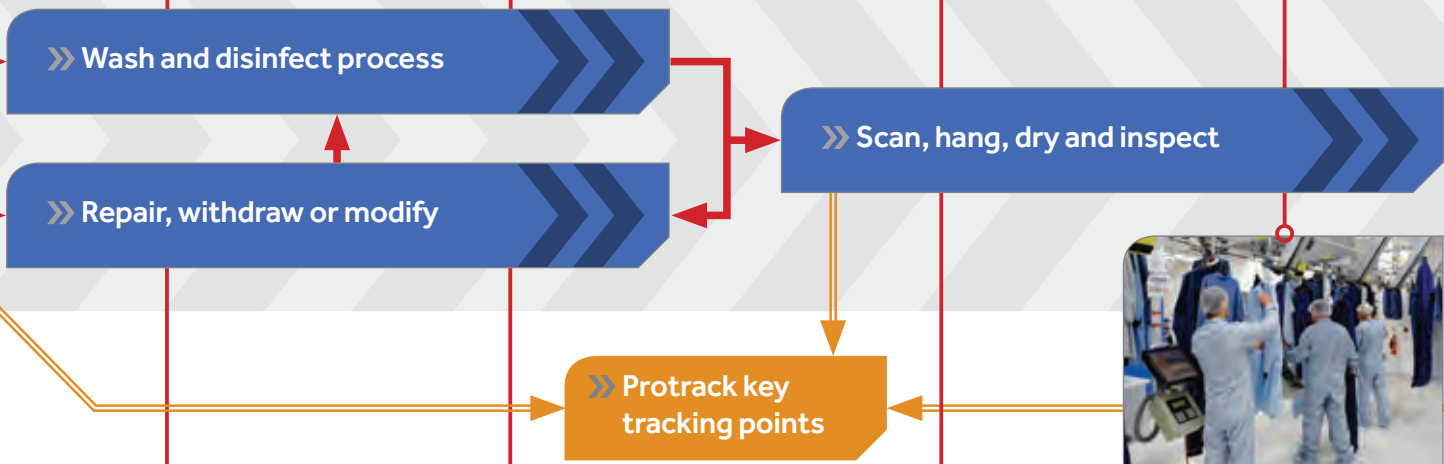
Garments held in wash types, awaiting automated machine availability call.



Following centrifugal extraction, garments are discharged into the ISO Class 6 Cleanroom. The initial task is registering each garment's RFID transponder to an RFID tracked hanger, Protrack is then 'aware' of the garment's location.

The identified garments now pass via the overhead system into a finishing tunnel to dry and de-crease.

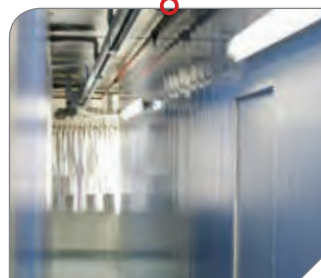
Garments being automatically loaded into continuous batch washer.



Protrack flag showing nature of repair required.



Repair completed and Protrack updated, garment rejoins the system.



In the drying tunnel.

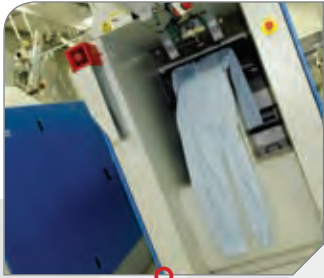


The dried crease-free garments are now 100% quality inspected for cleanliness and defects in accordance to customer requirements. Any rejects are flagged for repair/ replacement and Protrack is updated.



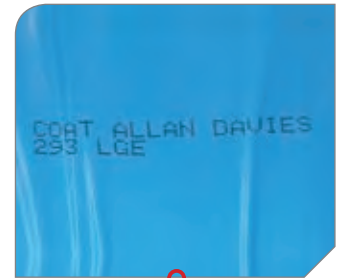
Garments now approach a set of automatic folding machines, where the garment's RFID transponder is read and the garment is dropped. It is transferred by vacuum into the folding machine and folded in accordance to the data held by Protrack for that RFID number.

The now folded garments pass immediately into an integrated set of packaging machines for individual bagging.



The bagged garment with its RFID transponder is now re-registered with Protrack and associated with a specialised bagged garment hanger which too has a unique RFID transponder.

Printing of details such as garment type, locker number, department etc is now printed onto the bag under the control of Protrack.



## » Pack and fold

## » Hang, print and store



Now safely bagged the garments individually leave the cleanroom area.



Bagged garments are lifted onto an overhead storage system.



Bagged garments are now stored in a specialist overhead system in basic 'super routes' which are Micronclean logistics routes.



The garments remain in this store all day, in order to allow garments delayed by repair, re-washing or replacement to join the 'super route' over the course of the day.



Each 'super route' is brought via the overhead system into the primary sortation area, where it is automatically sorted by Protrack into customer accounts.

The primary sortation once complete starts the next step of sorting, which can be customised by discussion with the customer to allow sorting by department, colour, age etc, basically by any factor stored on the Protrack database.

The secondary and tertiary steps of sortation can now take place, e.g. secondary sort by department, then tertiary sort by locker number.



» Automatic sorting and bagging



Once sorted into an order satisfactory to the customer requirements, the batch of garments passes down into a final packaging area. Here the garments are batched into hampers, again according to rules set by Protrack i.e. 20 items per hamper.



A final RFID scan ensures the correct garments are being bagged. The hampers are specially designed to keep garments in the order they were packed e.g. locker order. Each hamper is then labelled with customer details and number in batch i.e. hamper 1 of 20 etc.

» Return to customer



Garments are now delivered by our dedicated transport fleet to customers nationwide.



» **LOUTH PLANT**

# Our Louth Plant

State-of-the-art, purpose-built processing and storage facility.

For customers working at ISO Class 6 to 9, our Louth facility supplies and processes cleanroom undergarments, low shedding polyester coats, paint spray coveralls, antistatic garments, poly-cotton garments for Food, Pharmaceutical and Industrial companies, and PPE in a wide range of colours, designs and fabrics. All garments are individually bagged.

Transponders allow every garment to be tracked throughout its life, proving 'due diligence' and forming the basis of our extensive management reports.

Processing of food garments which are supplied mainly in poly-cotton fabric folded in individual bags or packed in the 'hanging' state takes place at Micronclean's Grantham facility.

Registered to ISO 9001, Micronclean's quality systems are rigorously enforced and continuously improved. Micronclean has also validated allergen removal from garments through its decontamination processes providing garments appropriate for customers managing this risk.





» LOUTH PLANT CAPABILITIES

# Industrial Work Wear

## Meeting your needs and requirements

- Specialist Polyester fabric processing
- Unique aqueous paint removal process
- Cleanroom processing and packaging to ISO 6 ( paint critical )
- Named wearer (locker numbering) and pool stock capabilities
- Rapid installation and replacement capability of standard designs

### Automotive Paintshop Specialised Polyester

**Typically Used**  
Automotive paint spray clean areas, mastic and sealant applications.



### Workwear

Polyester, Polyester/Cotton and Cotton Rich

### Typically Used

Engineering and manufacturing garments to meet every application.

### Factory Uniform

Polyester and Polyester/Cotton

### Typically Used

Workwear and uniforms, heavy duty undergarments and transport wear..



» LOUTH PLANT CAPABILITIES

# PPE Workwear

### How the Louth plant keeps you safe

- Qualified fabric and retroreflective tape wash processes to ensure compliance is in accordance with EN471 and/or EN531
- Ability to repair these specialised garments includes retroreflective tapes and fire retardant logo and badges
- Named wearer & pool stock report history of frequency of 'send in' for laundry and repairs or replacements
- Flexible and bespoke inspection and repair policies



**High Visibility**  
Polyester and Polyester/Cotton

**Typically Used**  
Workwear and transport wear.

**Flame Retardant**  
Probanised Polyester/Cotton

**Typically Used**  
Workwear and transport wear.

**Flame Retardant**  
Aramid

**Typically Used**  
Workwear and transport wear.

**High Visibility and Flame Retardant**  
Polyester and Aramid

**Typically Used**  
Two piece designs for hot areas and factory uniform use.





## » LOUTH PLANT CAPABILITIES

# Food Workwear

### How the Louth plant works with the food industry

- Specialist Polyester fabric processing which is both light and very colour fast
- RABC EN 14065 compliant laundry (hazard risk analysis system)
- Cleanroom processing and packaging to ISO 6 individual bagging
- Named wearer (locker numbering) and pool stock capabilities
- Rapid installation and replacement capability of standard designs

### General Coats and Coveralls

Specialised Polyester and Polyester/Cotton

#### Typically Used

Throughout facilities, colour coding options.



### High Risk Area Garments

Polyester and Polyester/Cotton

#### Typically Used

Unique designs for higher risk processes such as integral hooded garments.

### Tunics and Trousers

Polyester, Polyester/Cotton and Cotton Rich

#### Typically Used

Two piece designs for hot areas and factory uniform use.



» LOUTH PLANT CAPABILITIES

# Other PPE Workwear



**Anti-Static Garments**  
Polyester and Cotton

**Typically Used**  
Where an ungrounded garment requirement exists.



**Molten Repel Garments**  
Thermguard™ / Meta Aramid

**Typically Used**  
General industrial manufacturing.



**Waterproof Garments**  
Polyester/Nylon

**Typically Used**  
Where risk assessments have identified a requirement for an EN471 Class 3 item.



## » LOUTH PLANT CAPABILITIES

# Pharmaceutical and Medical Device Industries

### How the Louth plant excels

- Specialist Polyester fabric processing
- Tracking and management to support GMP audit requirements
- Cleanroom processing and packaging to ISO 6
- Named wearer and pool stock capabilities
- Rapid installation of standard designs



### In Cleanroom

Polyester Mono-filament

### Typically Used

Cleanrooms ISO Class 6 to 9 applications.



### Outer Area and Laboratory

Polyester/Cotton

### Typically Used

Laboratory wear, medical device and non-cleanroom applications.



### Undergarments

Texturised Polyester

### Typically Used

Cleanroom undergarments, ESD sensitive areas.



» MICRONCLEAN'S UK PRODUCTION PLANTS

# The Skegness Site

Micronclean's ISO 4 (EU GMP Grade B) facility has been purpose-built to exceed the needs of today's modern cleanroom requirements:

- » Validated ISO 14644 - Class 4 environment.
- » Semi automated cleanroom garment process.
- » Full decontamination to Class A of the ASTM 51/00 standard for garment particulate control.
- » All processes are fully validated.
- » Full traceability and garment management information available.
- » Regularly audited by Pharmaceutical and NHS customers.
- » ISO9001.
- » EN 14065 (RABC).

All garments received for processing are identified and scanned into the facility, then fully inspected via light tables to identify any repairs or issues, inline with exacting cleanroom customer requirements whilst ensuring compliance with GMP requirements. Once complete, any actions required are completed in house and logged in to the Protrack database against the item's unique barcode, then returned to processing.



Using Micronclean's validated cleanroom wash programs, garments are processed using barrier washing machines into our ISO class 4 cleanroom (EU GMP grade B). Cleanroom garments are then placed into positive pressure, HEPA filtered tumble dryers to complete processing and aid final particulate removal.

Cleanroom garments are then folded and packaged before addition of batch information for full traceability.

Garments are collated and packed into Webknot bags, as required by you the customer. We pride ourselves on the ability to tailor packing of garments to meet customer needs by garment type, size and department, just to name a few.

GMP alcohol packaging area - this ISO 4 and ISO 6 packaging area is a separate 'single pass' airflow cleanroom designed exclusively for the manufacture of alcohol trigger sprays and wipes.



## » MICRONCLEAN'S UK PRODUCTION PLANTS

# The Grantham Site

Micronclean's Grantham plant was the first full barrier laundry for food industry processing in the UK and has been operational since 1989. The plant incorporates many design features compatible with food industry garment processing, including a positively-pressured clean work area and controlled staff access as well as the structural barrier itself, providing total segregation of clean and soiled work. The plant processes workwear for the food and industrial sectors.

- ▶ All processes are fully validated.
- ▶ Full traceability and garment management information available.
- ▶ Regularly audited by Food and Industrial customers.
- ▶ ISO 9001.
- ▶ ISO 14001.

Garments received for processing are fully inspected to identify repairs or any issues, inline with customer requirements whilst ensuring all garments are fit for use and logged into the plant for processing. Once complete, any identified action is carried out in-house and also logged, then returned to processing. All information is held within Protrack.

Garments are received into the clean side of the barrier laundry after being processed in barrier washing machines. Once in the clean side, garments are sorted and scanned on to Micronclean's overhead system. They are then dried with a further inspection before being packaged in accordance with your requirements.

The plant operates under the principles set out in EN 14065. This standard, 'Risk Analysis and Biocontamination Control', is specific to the laundry industry (having similarities with the food industry's HACCP system) and outlines a management system to control the microbiological quality of laundered textiles.



The Grantham site was amongst the first to be awarded ISO 14001, which was presented by Dr. David Bellamy.

This system helps to ensure that workwear supplied from the Grantham plant meets the stringent hygiene requirements of the food industry.

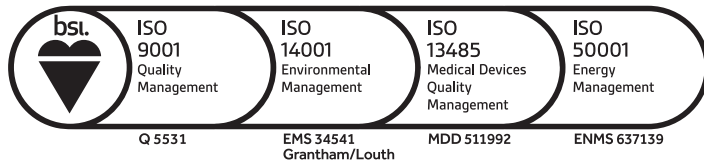




» MICRONCLEAN'S ACCREDITATIONS

# Maintaining the Highest Standards

Micronclean's quality systems are rigorously enforced and continuously improved with external verification carried out by independent accreditation bodies.



### QUALITY APPROVALS

**ISO 9001** is the most popular internationally recognised standard for certified quality management systems. The standard is based on a number of quality management principles and ensures that Micronclean has both a strong customer focus and an internal continual improvement culture.

**ISO 14001** is the internationally recognised standard for certified environmental management systems. It maps out a framework to set up an effective environmental management system so that Micronclean can measure the environmental impact of its operations and drive improvements.

**ISO 50001** is the international standard for certified energy management systems. It specifies the requirements for establishing, implementing, maintaining and improving an energy management system in a systematic way. In this way Micronclean can achieve continual improvement in energy efficiency, energy use and consumption.

**ISO 13485** is the international standard for quality management systems associated with the manufacture of medical devices, where Micronclean's syringe packs can aid compliance and provide efficiency gains in the field of aseptic drug preparation.

### THE RABC SYSTEM

We also hold the RABC European standard (EN14065 - reprocessed textiles in laundries - Biocontamination Control System). The system is designed to identify and control critical parts of the laundry system which could be hazardous to our customers. The system is specific to laundries and we were one of the first to be registered in the UK.

**Washing Critical Control Point** Micronclean processes garments in excess of the minimum required standard set by the Department of Health for Thermal Disinfection.

If thermal disinfection is not reached there may still be bacteria and fungi on the garments which could potentially contaminate other garments in the cleanroom and pose a contamination risk to customers' products and processes.

### Repairs Critical Control Point

Needles that break and are not fully recovered could fall out at our customers' premises and into their product. Broken needles are recorded and, if a needle breaks in a garment, the garment is sent for replacement to reduce this risk.



» **GARMENT TRACKING**

# Protrack - How we track and trace each garment

Micronclean use RFID transponders to track your production garments through our entire process.



All of the garments processed in our Louth and Grantham laundries have RFID transponders, the only two laundries in the UK that make full use of this technology.

The advantage of RFID is that it does not need line of sight to scan, is quicker and is more accurate than Barcodes.

Our Protrack software makes full use of the advantages of RFID scanning. The fundamental difference between Protrack and most other laundry systems is that Protrack manages the individual garment and allows a high level of traceability whereas most other systems treat individual items as part of a pool. As the Louth Production plant is highly automated, each garment's status and location is known throughout its processing, e.g. checking in, inspection, repair, wash process, drying, folding, bagging etc.



At every level from "customer" (all your garments) down to an individual garment (locker number, size, colour age etc) the system allows us to set up bespoke services for customers, such as:

- » **Invoicing: hard copy or electronic**
- » **Garments can be sorted using a multitude of criteria allowing them to be in locker order, departments, sizes, in effect any criteria which can be held on the Protrack database may be used to 'sort' the output to meet customer requirements.**
- » **Inspection criteria can be set to meet the customers need and by using RFID transponders the individual garment details are presented at inspection.**
- » **Many PPE fabrics have wash limits set by the manufacturer and Micronclean can set an electronic 'flag' in order to automatically replace those garments when the process limit criteria is reached. The software automatically creates the requisition that replaces the garment.**

Protrack has been developed using industry leading programming languages and utilises the Microsoft .Net Framework and a Microsoft SQL Server database. Micronclean are able to utilise this environment to produce bespoke reports that are automatically emailed to our customers weekly or monthly. The automation demonstrates our confidence in the data stored on Protrack.

Reports that can be provided to customers include:

- » **Contract overview including number of garments, charges and Outstanding Residual Values.**
- » **Garment information including issue date, last scan and number of scans.**
- » **Scan information by week or period.**
- » **Repair information, by wearer, department, time period, cost centre etc.**
- » **We are able to give customers remote access to Protrack to see the live data for their contracts.**



STEWARDSHIP / KNOWLEDGE / INNOVATION / **EXCELLENCE**

Supporting cGMP Compliance in the UK and Worldwide



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For more information about our SKIEs initiative, please ask for a copy of our SKIEs brochure.

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