

# UniTRACK

NUCLEAR SERVICES NEWS

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## Protective Clothing Decontamination: Understanding the Science

UniTech's unique controlled protective apparel laundry process is the result of years of research, development and continuous improvement. Today, using newly available technology, and responding to customer requirements and industry regulation, UniTech's controlled laundry process exceeds standards set for safety, consistency and garment cleanliness.

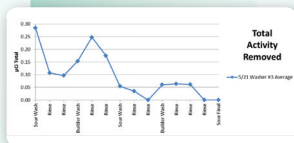


UniTech's laundering and decontamination system was inspired and made possible by:

- ✓ **Customer needs**
- ✓ **Garment design and high-tech fabrics**
- ✓ **High-tech wash process developed by chemists**

### FACTS

- ✓ UniTech routinely TESTS garments before laundering and after each of the 14+ wash cycles.
- ✓ UniTech laundries are consistently clean and sanitary. Our workers even wear special lab coats as if working in a cleanroom. We invite customers to tour our facilities to see for themselves.
- ✓ UniTech's laundering process has in essence eliminated radiological rejects!



- Our proprietary pH Cycling Process detaches any loose contamination from the garment and
- ✓ **Does not permit redeposition onto the garment**

Garments are CLEAN AND DECONTAMINATED when 14+ step laundering is complete.

Our European laundries are subject to annual garment testing audited by an independent laboratory, which tests for bacterial and chemical cleanliness.



### NOT mere industrial laundering

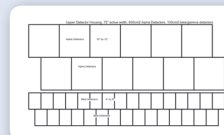
UniTech assures its customers receive a science-based, high-tech, closely controlled laundry process for nuclear protective apparel.

UniTech's controlled laundry = 14+ step process including a multiple pH CYCLING PROCESS.

**14+ STEP**



- Consistent, reliable, repeatable monitoring verifies that garments are decontaminated.
- Digital instrumentation with individually amplified detector signals allows for monitoring to very low levels of activity.
- All systems use two rows of



staggered gas flow detectors to assure optimal counting geometry above and below the belt.

- 100% of the surface of the garment is monitored.
- UniTech's small probe ALM 100 is the workhorse, supported by the low-activity LAM 410 and the alpha/beta ABALM 100/600 for the results we promise and deliver to our customers.

## Hohenstein Institute Aids UniTech in Clothing Evaluation

Recently, UniTech contracted with an independent researcher to evaluate their clothing, attempting to improve fabric and function in European nuclear environments.

The German research company, the Hohenstein Institute, is an independent laboratory that has tested textiles since the 1940s. UniTech has contracted with Hohenstein three times over the last four years to understand their



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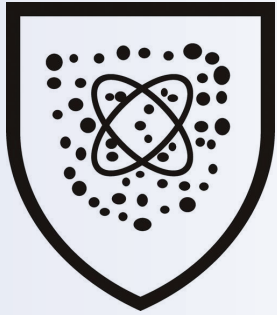
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## Ask the Nuclear Protective Clothing Expert

### What's Different About Clothing Certifications in Europe vs. the United States?



As with many safety and health standards in the United States and Europe, UniTech's clothing must undergo an entirely different series of tests to be certified in Europe.

EN 1073-1 and EN 1073-2,

the European standards for ventilated and non-ventilated protective clothing against particulate radioactive contamination, require numerous garment tests. Each standard stipulates the classification based on the nominal protection factor, which is determined by a leakage test.

For initial testing, clothing is exposed to a range of specified temperatures. Next, a worker is put through a variety of exercises, including standing, walking and kneeling in the tested clothing. Then the worker is asked to fill and empty material into and out of a hopper, for which the worker kneels and shovels for about 10 minutes. During the latter test, inspectors analyse fastening, ease of movement, comfort (including heat stress and humidity transfers), wearers' responses, and visible defects. The tests also measure inward leakage and undergo a "joint and assemblage" pull test. The inward leakage test measures seamlessness and particle tightness of the garment as well as attached and conjoined garments (such as gloves, boots, hoods, and respirators). During this test, the worker goes into an airtight cabin and again walks and kneels while the leakage readings are taken. Other tests are intended to measure resistance from abrasion, tearing, fire, punctures, and seam strength.

UniTech Safety Services Director Vic Crusselle said that products that are tested accordant to EN 1073-1 or EN 1073-2 are subject to an annual test performed by an independent lab.

"Because of these requirements, we maintain tight production and quality controls as set in the applicable CE standards." ■■

## OPG Pickering Celebrates One Millionth Anti-C Coverall Processed Since 2004

### Plant Significantly Reduces Radioactive Solid Waste



Richard Jackson, UniTech Services Manager  
Technical Accounts with Judy Bartley, OPG  
Pickering FLM Laundry Coordinator

OPG Pickering Nuclear Generating Station in Pickering, Ontario, Canada has an ongoing initiative to reduce the quantity of consumable products it adds to the radioactive solid waste stream. Pickering management decided in 2004 to begin using Anti-C coveralls (composed of 99% nylon and 1% carbon) to replace

disposable TyVek® coveralls. These coveralls were the first washable item introduced to Pickering Nuclear.

Time has proven this to be a good choice. One significant number tells the story. On January 15, 2014, UniTech Services Group, which has acted as OPG's laundry service provider since the 2004 switch to reusable

coveralls, laundered the one millionth coverall from Pickering Nuclear. According to OPG Senior Technical Officer Jack Page, "This is a very important occasion as it relates to a savings of an estimated 2,703 cubic meters of radioactive solid waste that has been diverted since the implementation of this single item."

What does a savings of 2,700 cubic meters of radioactive solid waste look like? This amount of waste, if generated, could fill a hockey arena to **over seven feet deep**.

*The amount of radioactive solid waste saved by using Anti-C coveralls for the last decade would, if it had instead been generated, fill a hockey arena to over seven feet deep.*



OPG Pickering Nuclear Generating Station

Pickering Maintenance Manager Chris Johnston credits plant staff: "We're all responsible for proper waste disposal and reduction at our station. This success would not have been possible without the help from you, the users! You have assisted us with new washable product

development to remove consumables from our radioactive solid waste stream, to the point where we now have 38 different washable products at Pickering Nuclear." These 38 washable products in total contribute to Pickering's total savings of over 1,000 cubic meters of radioactive solid waste per year. ■■



## UniTech to Hold 10th International Workshop in Romania



UniTech Services Group will conduct its tenth annual International Workshop on September 24 and 25, 2014 in Brasov, Romania.

Nuclear industry experts will share specific initiatives

and programmes that address economic, time, environmental, and regulatory imperatives. Presenters including management from nuclear plants throughout Europe and firms providing services and products to nuclear facilities will lead presentations and discussions. Topics will include advances in protective clothing and gear, radioactive waste minimization, equipment and tool monitoring and decontamination, methods to manage worker heat stress and other workplace risks, and more.

According to Gunter Bruckner, UniTech Europe's Director of Operations, "UniTech's International Workshop is an event that allows nuclear specialists to connect. Each year, we really try to provide insight into nuclear industry problems and solutions as well as offer excellent networking opportunities."

The workshop is designed to provide value for nuclear industry professionals involved with radiation protection; radioactive waste management; respiratory protection; nuclear facility maintenance; scaffolding, tools and equipment management; protective clothing programmes; or outage management.

The workshop will also feature optional social activities to be announced.

Registration will open for nuclear industry professionals in early June. Email [atabuto@unitecheu.com](mailto:atabuto@unitecheu.com) for additional information. ■ ■

## What's New?



**Flame-Retardant Polythene:** Plastic sheets available in four-meter rolls. The sheets provide a barrier to protect against dust, dirt, paint, and pattern transfer.

### HP Instrument Bags:

Containing waterproof fabric and reflective tape, these bags provide a durable case for tool transport.



### Reduced Residue Duct Tape:

This heavy-duty tape can be used for jointing, sealing, bonding, and maintenance. The tape is extruded, then laminated. It's also UV stable and can be removed cleanly.

**Safe2Walk Shoes:** These comfortable, metal-free shoes are also puncture-resistant, water-repellent and breathable. They prevent slipping and ankle twists and are available as lace-ups, slippers or high boots. ■ ■



## UniTech UK Receives Award During SRP 2014

UniTech's UK technical account team (Managers Paul Chesters and Archibald Montgomery) recently won the award for best exhibition at the Society for Radiological Protection's (SRP) annual conference.

For the first time, SRP asked delegates to vote for the best exhibitor stand. SRP asked delegates to vote on exhibitors' appearance, information and products, and out of 29 stands, UniTech's was chosen for the award.

UniTech's stand displayed several products and services, including various clothing items, reusable tents and descriptive posters.

"The stand was very successful, with many existing customers visiting and requesting information along with some new possible customers," Chesters said.

"Since the award, we've received many congratulatory emails from customers." ■ ■



Archibald Montgomery and Paul Chesters, UniTech UK Technical Account Team Managers

## Hohenstein Research Aids UniTech in Clothing Evaluation

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garments better. Most recently, Hohenstein tested UniTech's reusable garment ensemble against a competitors' disposable outfit.

The garments were measured for their resistance to heat and water vapor as well as their effect on range of utility (where measurements included heart rate and rectal temperature). They were tested as textile layers with a skin model as well as with a mannequin.

Hohenstein, in previous research, concluded that deviations from normal core temperatures led to declines in performance. In other words, heat or cold stress lead to diminished wellbeing and compromised focus on the part of the worker. Furthermore, breathable clothes ensure against excessive temperature strain and enable workers to be more effective and efficient.

The garments were tested in extreme hot and cold temperatures in isolated environments. UniTech's garments showed a greater range of utility. Additionally, UniTech's garments performed better over a long period of time, meaning workers can carry out functions more effectively in extreme temperatures and over a long period of time by wearing UniTech's reusable garments.

"Tests are done based on standardised test procedures, therefore the results cannot be dictated by the company," UniTech's European Operations Manager Gunter Bruckner said. ■■

HOHENSTEIN  
INSTITUTE

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## UniTech Europe Selects New Purchasing Manager



**Gary Hall** has been selected to manage the European Purchasing Team for UniTech Services. Hall will be based in UniTech's Laar, Germany facility and will be responsible for procuring UniTech's product assortment; new product development; pricing; supplier and vendor relations; product and procedural quality; CE certifications; marketing and e-commerce; customer service; and operations at the Laar facility.

Previously, Hall supervised the development of the UniTech Services Group Product Distribution Center in Morris, Illinois for nine months. He also served as a Customer Account Manager in the UK for four years. ■■



Certificate Number 968  
ISO 9001, ISO 14001



A Subsidiary of UniFirst Corporation

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