

## **Introduction**

The Energy Innovation Centre (EIC) works in partnership with the UK electricity and gas distribution network operators (networks) to identify and support businesses in developing and commercialising products for the energy sector.

The latest in a series of Calls for Innovation seeks potential solutions to a problem area identified by a number of networks. Specifically, this call seeks to identify personal protective equipment (PPE) innovations that are either new technologies or products that are not readily available and therefore may not have been included in tendered purchasing by the networks.

The gas and electricity distribution networks operate and maintain critical UK infrastructure which pose serious health and safety risks for their operatives. Significant risk management systems are already in place within the networks. In addition to this approach, and as a final resort, an operative can be issued with PPE appropriate to the task.

Typical PPE currently in use by the networks include: breathing protection, head protection, feet protection, eye protection, protective clothing, hand protection, ear protection and visibility.

PPE is purchased through a defined tender process and should meet individual network requirements based on the specific needs of their operatives.

The networks are keen to uncover innovative new products or potential projects that could *improve the protection of their operatives and their PPE experience*, including but not limited to: fit, materials and usability.

An outline specification for the suitability of PPE is provided, including items for consideration such as: the job to be undertaken, the environment and the surrounding conditions of the job, the person, compatibility with other PPE and cost.

To register initial interest, please enter your details online or call the Energy Innovation Centre on 0151 348 8040 and quote the reference number GDN-17-07.

Returned proposals for this call for innovation are to be made by way of a video application (maximum three minutes). Details of the video requirements and how to upload files will be given in reply to your registration.

**DISCLAIMER:** This is not a tendering exercise and as such does not guarantee either a project or product sales. This is a market research exercise on behalf of the EIC's distribution

network operator partners seeking *potential* solutions/alternative products in which the networks *may* see benefit over existing methods.

## Background

The Call for Innovation process, managed by the EIC, offers innovators the opportunity to register interest and offer potential solutions to targeted energy distribution sector requirements.

The EIC have worked with a gas and an electricity distribution network to develop the following specific call.

## The need/challenge

The gas and electricity distribution networks operate and maintain critical UK infrastructure which pose serious health and safety risks for their operatives.

Every employer must ensure that suitable PPE is provided to their employees if they are exposed to a risk to their health and/or safety whilst at work, except where this risk has been adequately controlled by another means which is equally or more effective.

Significant risk management systems are already in place within the networks that seek, in a tiered approach, to: eliminate risk, substitute risk, control engineering activity and control administrative activity. Further to this approach an operative can be issued with PPE appropriate to the task.

*‘PPE is equipment that will protect the user against health or safety risks at work. It can include items such as safety helmets and hard hats, gloves, eye protection, high-visibility clothing, safety footwear and safety harnesses.*

*Hearing protection and respiratory protective equipment provided for most work situations are not covered by these regulations because there are other more specific regulations that apply to them. However, these items need to be compatible with any other PPE provided.*

*PPE should be used as a last resort. Wherever there are risks to health and safety that cannot be adequately controlled in other ways, the Personal Protective Equipment at Work Regulations 1992 require PPE to be supplied.’*

[HSE, Personal Protective Equipment (PPE) at work - a brief guide, indg174 (rev2), published 06/16]

Typical *PPE used currently* by the networks include:

- **Breathing protection**
  - Fresh air breathing systems
  - Dust masks
  - Personal gas detectors
  
- **Head protection**
  - Hard hat
  - Bump cap

- **Feet protection**
  - Steel toecap boots
  - Steel toecap shoes
  - Steel toecap trainers
- **Eye protection**
  - Safety glasses
  - Safety sunglasses
  - Goggles
  - Full face visor
  - Prescription safety glasses
- **Protective clothing**
  - Clothing to protect against heat and flame (such as coveralls, trousers, fleece, bib and brace, jackets, balaclava) conforming to standards such as EN ISO 11612:2008
  - Clothing to protect against static build up and discharge
  - Clothing to protect whilst using chemicals
- **Hand protection**
  - Cut resistant gloves
  - Electrically insulated gloves
  - Chemical resistant gloves
- **Ear protection**
  - Ear defenders
  - In ear buds
- **Visibility**
  - Hi-visibility vest
  - Hi-visibility bib and brace
  - Hi-visibility Jacket
  - Head torch

## The output/goal

The networks are keen to be made aware of innovative new products or potential projects that could improve the protection of their operatives and their PPE experience.

The goal of this call is to identify innovators within PPE that have new technologies/products that are not currently involved in tendered purchasing or not currently used by the UK GDNs/DNOs.

Solutions that are 'like for like' replacements of current PPE will not be considered.

Areas of potential interest include but are not limited to:

- **Fit**
  - PPE that is more fashionable or standout, increasing the likelihood of operative adoption
  - Compression fit clothing that provides support for operatives that stand for long periods or have poor circulation
  - PPE that feels like a second skin
  - 'Personalised fit' clothing and ear protection
  - Form-fitting PPE
  - PPE that accommodates differences in personal style e.g. changing hair styles, facial hair, long hair, no hair
  - PPE that takes into account the specific requirements of female operatives

- PPE that meets the needs of operatives that are below or above average UK height
- PPE that accommodates changing body shapes
- **Materials**
  - PPE that makes use of softer, more flexible materials
  - PPE that is more breathable with increased moisture wicking and better comfort
- **Usability**
  - Anti-fog
  - Low profile
  - Light weight
  - Hot/cold conditions
  - Simpler solution
  - Protection Vs task, taking dexterity into account
  - Easy care e.g. cleaning

## The outline design specification

It is essential that any proposals do not compromise the protection operatives currently receive from the use of existing PPE.

Specifically, any proposals will need to meet (or be able to meet) current standards associated with the type of protection offered.

Notwithstanding the above, and as highlighted earlier in this call, potential developments will be considered.

The **suitability of PPE** must be considered, including, but not limited to:

- Is it appropriate for the risk or risks involved, the conditions at the place where exposure to the risk may occur, and the period for which it is worn?
- Does it take account of ergonomic requirements and the state of health of the person or persons who may wear it, and of the characteristics of the workstation of each person?
- Is it capable of fitting the wearer correctly after adjustments, within the range for which it is designed?
- So far as is practicable, is it effective to prevent or adequately control the risk or risks involved without increasing overall risk e.g. protective goggles impairing vision?
- Is it CE Marked?
- Does the solution improve rather than compromise protection levels?

Applicants should consider:

- **The job**
  - The job to be undertaken
    - Network work, inspection, driving, dextrous activity etc.
  - The risks from which protection is needed
    - Chemical, flame, static, electric shock, impact, cut etc.
  - Physical effort needed in the job
    - Ranging from light work to heavy exertion
  - Length of time PPE will be worn
    - Full day for some PPE, task specific for others
  - Requirements for visibility
    - Working in the carriageway, working at night etc.
  - Communication requirements
    - Site noise etc.

- **The environment and surrounding conditions of the job**
  - The weather conditions
    - 365 days a year, UK weather etc.
  - Heating
    - Moving from outdoors to indoors etc.
  - Noise
    - Working on site, using specific equipment etc.
  - Atmospheric
    - Dust, work space dimensions, etc.
  - Confined space
    - Small space, specific equipment etc.
- **The person**
  - Health of the operative
    - Age, strength etc.
  - Ergonomic
    - Close fit clothing reducing snags, movement etc.
  - Allergies
    - Latex allergy etc.
  - Musculoskeletal problems
    - Operative weight, posture, weight of PPE etc.
  - Thermal comfort problems
    - Warms when cold, cools when hot etc.
  - Physical dimensions of different workers
    - Shoulder width, arm and leg length, waist measurement etc.
- **Compatibility**
  - New PPE should be compatible with other items of PPE
    - Use of multiple items together e.g. eye, head and ear protection etc.
- **Cost**
  - The full product cost for a product must be considered,
    - E.g. a more expensive solution may last considerably longer

## Project funding

It is envisaged that appropriate solutions could be supported by funding either for design, development or trial within network partner organisations.

## Process for registering interest

The network operators are open to ideas and approaches to solve this challenge. Potential solutions can range from one single idea to several innovations that complement each other.

To register initial interest, please enter your details online or call the Energy Innovation Centre on 0151 348 8040 and quote the reference number GDN-17-07. Returned proposals for this call for innovation are to be made by way of a video submission (maximum three minutes). Details of the video requirements and how to upload files will be given in reply to your registration.

The closing date for registering initial interest is 03/11/2017. Please note office open hours are between 9am and 5pm Monday to Friday.

Works cited:

<http://www.safetyandhealthmagazine.com/> (accessed 25/07/2017)