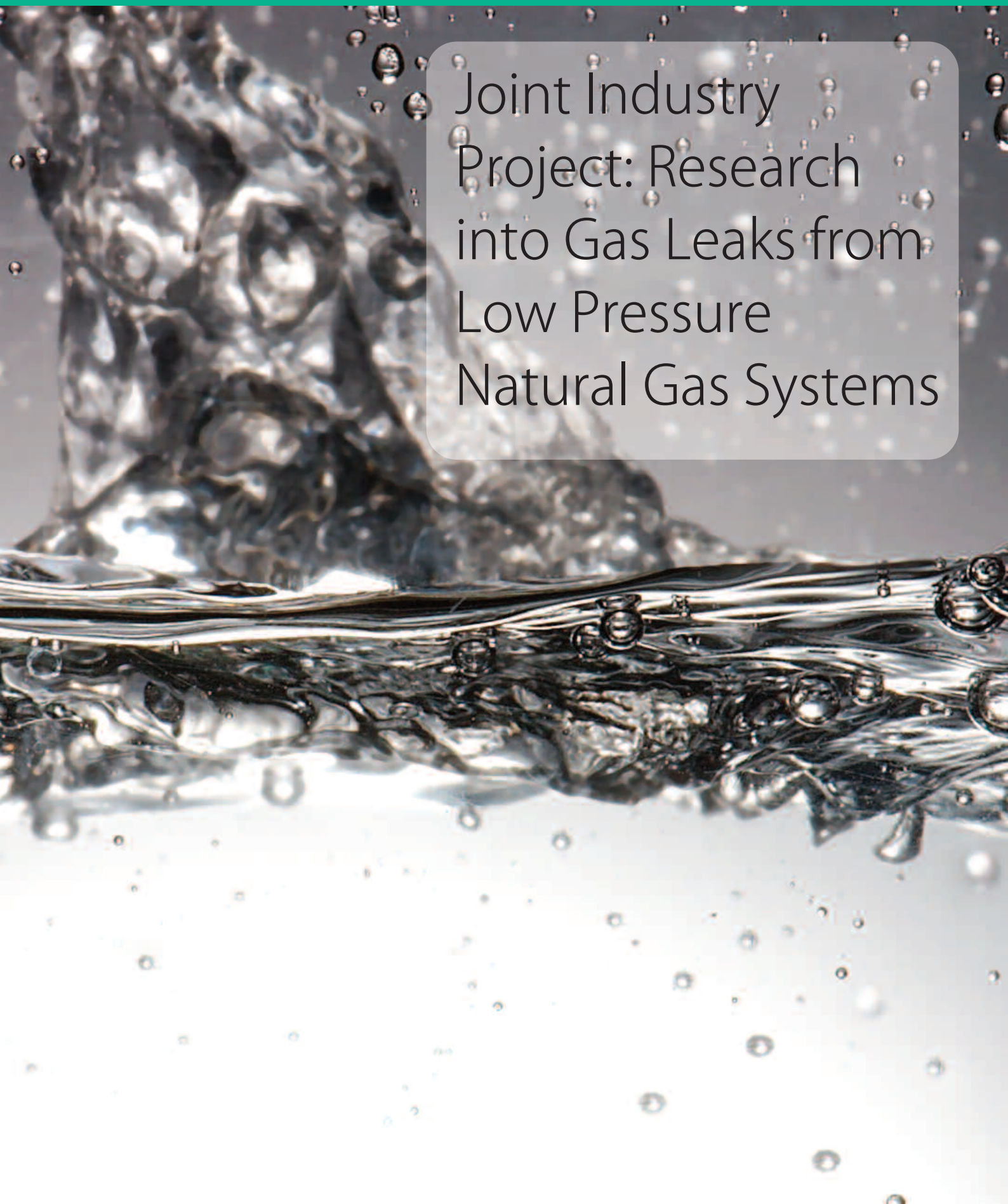
Health & Safety Laboratory
An agency of the Health & Safety Executive

HEALTH & SAFETY LABORATORY

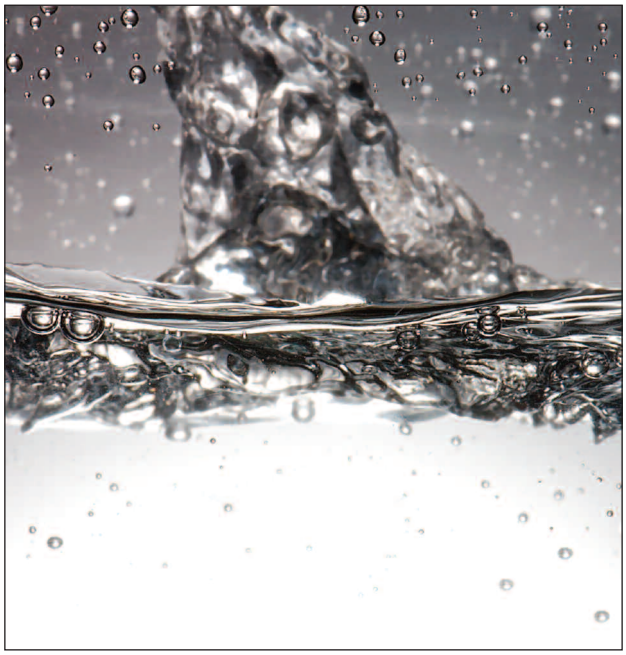
Using our brains to save and improve the lives of workers



# Joint Industry Project: Research into Gas Leaks from Low Pressure Natural Gas Systems

## The Client

- Burgoyne Consultants
- Corus Construction and Industrial
- Danish Gas Technology Centre
- Directorate for Civil Protection and Emergency Planning
- EnergieNed
- EON-UK
- Epsilon Compliance (Europe)
- Gastec Technology
- Gasunie
- Hamworthy Combustion
- Health and Safety Executive
- Knauf Insulation Ltd
- National Grid
- Northern Gas Networks
- SGL Technic Ltd
- Slough Heat and Power



## The Problem

- The ATEX Workplace Directive (1999/92/EC) has been implemented in the UK as the Dangerous Substances and Explosive Atmosphere Regulations (DSEAR).
- These regulations require area classification to be carried out where there may be a risk of explosion due to the presence of flammable substances.
- Existing standards for area classification were not developed to be applicable to low pressure gas systems and complying with the regulations using these standards would be costly to industry.

## What we did

- HSL has a proven track record in the field of ventilation, gas explosions and fluid flow modelling .
- The project took advantage of the dedicated research facilities at HSL including use of the purpose built test enclosure on site at HSL.
- We carried out a review of methods for assessing the effectiveness of ventilation for preventing the build up of gas following a low pressure gas leak.
- We carried out a series of experiments to provide data to validate a Computational Fluid Dynamics (CFD) model of low pressure gas leaks in ventilated enclosures.
- We used the CFD model to develop a methodology for the area classification of low pressure gas systems.

## Outcome/Benefits

This study led to the development of a more cost effective approach to meeting the regulatory requirements, characterised by:

- A reduction in the need for costly area classification assessments.
- The removal of the requirement for the unnecessary installation of expensive protected equipment.
- The ability to restrict costs to areas of genuine risk.