



# Institute for Energy Technology

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Match making Greece-Norway, 20/01/2021

# Institute for Energy Technology (IFE)



- Independent foundation
- Established by the Norwegian government in 1948
- Located at Kjeller and in Halden
- 24 advanced laboratories
- 100 M€ annual revenues
- 600 employees
- 38 nationalities
- Certifications:
  - ISO 9001 and 14001
  - Achilles JQS and Utilities
  - GMP



# Vision: Research for a better future



## IFE services and work areas



Renewable energy



Nuclear technology



Materials technology



Digitalization



Radiopharmacy and health



Oil and gas



Industry and environment



Safety and security

## IFE works towards UN sustainability goals:

**3** GOOD HEALTH AND WELL-BEING

**6** CLEAN WATER AND SANITATION

**7** AFFORDABLE AND CLEAN ENERGY

**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE

**11** SUSTAINABLE CITIES AND COMMUNITIES

**12** RESPONSIBLE CONSUMPTION AND PRODUCTION

**13** CLIMATE ACTION

**15** LIFE ON LAND

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

The Fluid Flow department's history is the development of the multiphase flow technology for the oil & gas industry

## Modelling activities

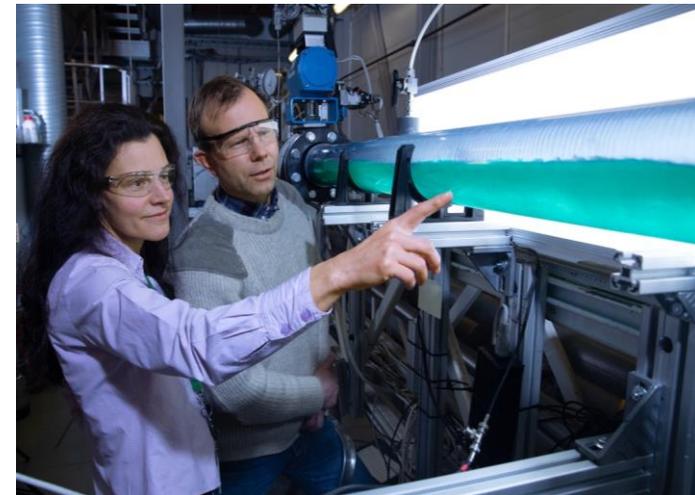
Models and simulators are developed for special needs. In multiphase flow, flow assurance needs to be understood and accounted for in the design of the pipelines



Dr. Kjell Bendiksen received in 2012 the Aftenposten award for the most important scientific advance of the last thirty years for the multiphase flow technology

## Experimental activities

Test facilities with 45 m long test-section, extensive knowledge in scientific instrumentation and data analysis



# A unique software that simulates precipitation from saline aqueous solutions - Saltsim



Saltsim offers completely new possibilities for detailed simulations that do not exist elsewhere.

For desalination processes IFE offers to:

- Build a module for freshwater production
  - Different evaporator types
  - Reverse- and forward-osmosis
- Software verification with lab and plant data

The simulator is intended for process optimization and maintenance prediction.

Coupled with live process data, it provides decision support for the control room.

# The Fluid Flow department developed a Flow Network Simulator, also suitable for water pipeline networks

During development of a flow network simulator for oil/gas/water transport pipelines, a system was developed that provides extensive flexibility. New components (pipelines, pumps, chokes etc.) can be added, and improved models can conveniently be introduced.

- Tuning systems against field and laboratory measurements
- Flexible method to put together a network of pipe models and other components
- Methods for interaction with existing third-party software
- Tracking of components through a pipeline system, for example injected tracers and solids that accumulate in the pipeline
- Pipeline leakage analysis. On-going activity for water pipeline network!



PHOTO: KAI STOKKELAND / NRK

# Process Analytical Chemistry. Environmental solutions



## WASTEWATER SOLUTIONS

- Advanced analytical tools
- Microalgae-based technology
- Sorption
- Advanced oxidation



## LANDFILL SOLUTIONS

Leachate characterization and novel treatments



## PRODUCED WATER

Tailored treatment and analytical on-site solutions



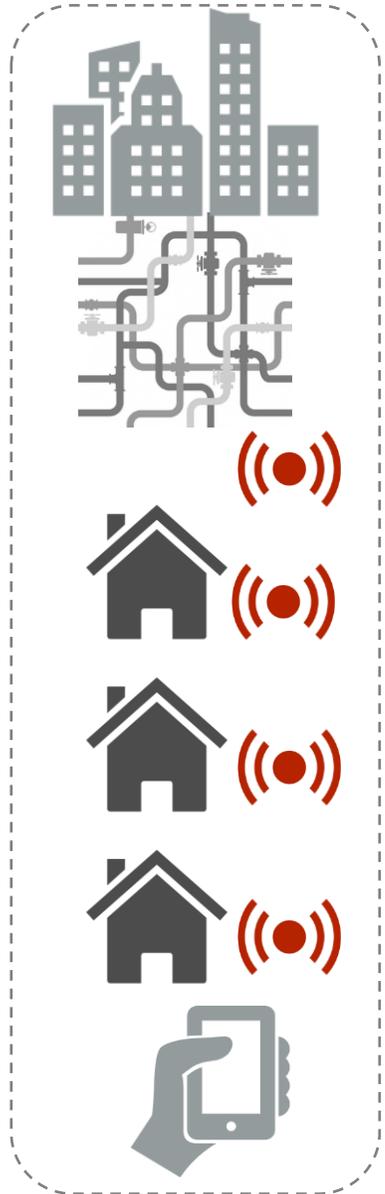
## BIOPROSPECTING



# The Digitalization Sector of IFE

## Data marked for smart city water data

Data owners and providers



Data consumers



Data science toolbox



Data marked



Data-collection

Data driven services

Prerequisites



Services



Institute for Energy Technology  
Research for a Better Future!



## Contact us!

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