SecureGas

Securing the European Gas Network

SecureGas extended components

SecureGas Components

Technologies for situational Awareness and Decision Support for Cyber-Physical Threats
- Safety and Security platform for Gas CI (LDO)
- Autonomous docking station and UAV based asset management (ADPM)
- Onshore Landslide Susceptibility and Alert/Monitoring System (RINA-C)

Technologies for information processing and management
- Cyber physical correlator (WINGS)
- Blockchain for data transmission and integrity verification (GT)
- Cyber Security for IT and OT networks weakness (ELBIT)
- WINGS Platform (WINGS)

Technologies for detection, identification and early warning
- Distributed Acoustic Sensing (DAS) for monitoring of leakages and third party intrusion in Oil & Gas pipelines (RINA-C)
- Cognitive framework for biometrics and video analytics (IDMG)
- Combined analytics for biometrics and video analytics (INNOV)
- Sensors for detection, identification and early warnings (WINGS)

Technologies for Joint Cyber-Physical Security Risk Management and Resilience Modelling
- Cyber-Physical Security Risk and Resilience Modelling and management (EXUS, GAP)
- Gas Network Advanced Modelling and Fast-Dynamics Simulation (FHG, JRC)
- Risk-Aware Information to the population (INNOV)

Gas Network Advanced Modelling and Fast-Dynamics Simulation

DESCRIPTION

This module includes the development of a gas network simulation software that will enable the user to predict gas supply situation under various operational conditions. Thus, this simulation software is based on the physical description of gas flow within the gas network topology. Implementation of the physical description have resulted in a robust hydraulic simulation tool capable of considering different aspects of modern gas transmission networks: complicated topologies; multiple sources; different ware of pipelines etc.

The software will also determine the vulnerability and importance ranking of network elements from the security of supply point of view based on an automated statistical evaluation of a large number of disruptions scenarios. The statistical assessment is performed utilizing a deterministic disruption scenario generation procedure.

The software will include a User-Interface and will be compatible with established pipeline network file formats.

# Gas Network Advanced Modelling and Fast-Dynamics Simulation

BENEFITS

The **MAIN BENEFITS** are:

(a) This component provides a statistical risk assessment which is based on the physical simulations of pipeline gas flows under disruption conditions.

(b) This allows for an informed decission making in regards to targeted reinforcement of weakpoints in the gas infrastructure.

(c) Support to a risk assessment study for an existing compressor station by identifying criticality/ranking of outgoing pipelines.

(d) Decision support for placing/connecting remote control for existing valves.

Gas Network Advanced Modelling and Fast-Dynamics Simulation

APPLICATION CASE

- **Business Case 2**
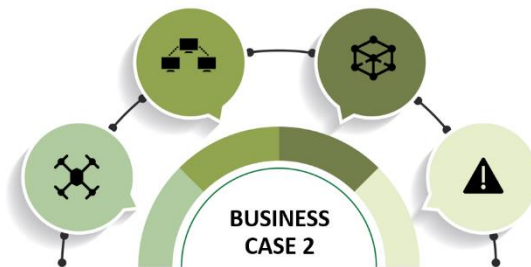
TARGETS

- **Target End Users:** Safety managers, network control engineers/managers in the field of gas CI

  Infrastructure developement engineers/managers in the field of gas CI

- **Target Assets:** Gas Transmission Networks.

SecureGas partner:

Sebastian Ganter (FHG)

Sebastian.ganter@emi.Fraunhofer.de

SecureGas partner:

Vytis Kopustinskas (JRC)

Vytis.kopustinskas@ec.Europa.eu

www.securegas-project.eu