

GIC Now!

WP managers:

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Summary of SDA objectives

- Provide a real-time view of the GIC activity in southern Finland in the area of the natural gas pipeline network.
- Measure GIC at one site of the pipeline.
- Provide general information about ground effects of space weather.
- Restricted part: real-time estimates of GIC and pipe-to-soil voltages in the pipeline, and yearly reports for the Gasum company.

Summary of user needs

Expected users:

- Gasum company (especially persons controlling the operation of the pipeline system)
- Other industrial utilities interested in GIC
- General public

Some specific requirements:

- WWW-based service
- Continuous operation of the server, within the resources available at FMI Space Research

Evaluation of user satisfaction (including financial benefit)

- Knowledge of GIC helps to identify possible sources of disturbances detected by the control system.
- A near-real-time identification of GIC as a source of disturbances saves time, since then other reasons for fluctuations can be excluded.
- A large cumulative GIC risk at some parts of the pipeline system may lead to a need to shorten the control period there.
- Information about GIC is one of the elements that may affect decision making regarding preventive maintenance.
- A quantitative estimation of financial benefit is difficult to give.

Sustainability of the service (business plan)

- GIC Now! will continue at the same level as during the pilot project: nowcasting and postanalysis give the relevant information.
- A similar service could be installed at any region with pipelines or power systems if local magnetic recordings are available.
- Resources needed to tailor such a service depend very much on the details of the conductor system.
- Additionally, other types of GIC activities are going on between FMI and industrial utilities.

Prospective for improvement of the service

- Quantitative estimation of GIC effects on the systems
(for example, increase of corrosion rate in pipelines due to GIC)
→ external engineering expertise needed
- Scientific long-term challenge: from postanalysis and nowcasting to forecasting.
- Reliable forecasts obviously useful for power companies (due to immediate GIC effects), but not very important for pipeline companies (cumulative effects dominate).