

Modular water resources management information system for water production. Quality assurance and protected area management on the basis of GE Smallworld

LIWIS® – Groundwater

Technical Application (Ground) Water Monitoring

Groundwater monitoring is a central element of proactive groundwater protection. Through water legislation, monitoring is obligatory for the planning, approval and operation of systems that affect groundwater.

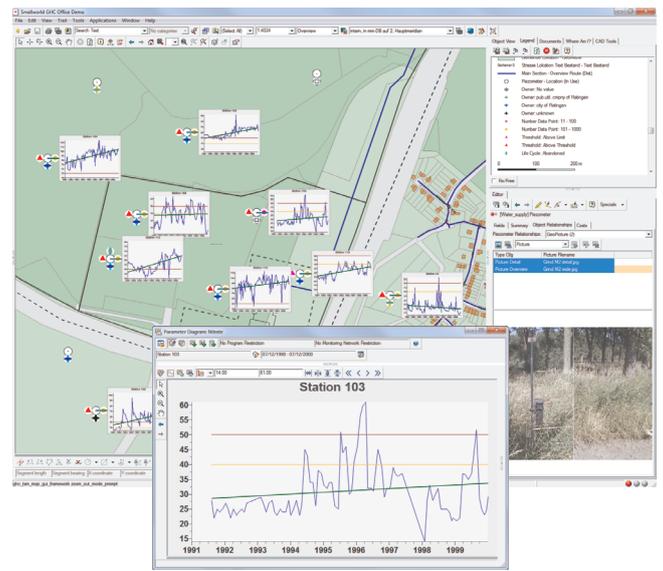
The operation of a suitable measurement network with regular evaluation of measured groundwater related data in terms of the chemical and quantitative conditions builds the basis for precautionary measures and serves as evidence. Therefore, adverse changes are detected in advance, which leaves time to counteract negative developments before severe and irrevocable damage is done to the groundwater resources (quality assurance).

The Product

LIWIS® - Groundwater (monitoring) is a high-performance, standalone Smallworld GIS – technical application for the field of water resources management (water collection and quality assurance). It offers a central documentation, evaluation and information solution for the task of ground water monitoring with seamless integration within the existing Smallworld GIS environment.

LIWIS® - Groundwater is a component of the LIWIS® product family with additional, special applications for water resources management. It is continuously developed in close collaboration with water supply companies in various federal states of Germany. In these states it has been in use for many years.

- Time series and measured value diagrams, also in map view
- Contour area and isoline evaluations
- Content filters for the selective presentation of objects
- Integrated data consistency and plausibility tests
- Configurable labels and aspect fields
- Integrated related documents and image management



Functionality

LIWIS® - Groundwater consistently supports the operative procedures of water resources management in terms of design and monitoring of the measurement network operation. Furthermore, it provides assistance in the collection as well as the spatial and temporal evaluation of the measurement and analysis results in the context of the master data of the measurement installations:

- Import/capturing of measured value reports
- Monitoring of measurement network operations (schedules, threshold values)
- Interactive, additive database queries for expanded evaluations

Data Model

The data model of the LIWIS® technical application facilitates the comprehensive, standardized documentation of data from operational measurement networks and their measurement equipment for wells, ground, seepage and drinking water measurement points, sources and meteorological stations.

Master data include information regarding:

- Lining (material, filters)
- Hydrogeology (drilling profile, pumping tests)
- Location and site measurement
- Designations
- Project conformity
- Drinking water catchment and protected areas (LIWIS® - LGF)



Dynamic data includes observations and measurements (time series) in terms of:

- Microbiological parameters
- Chemical and physical water parameters
- Groundwater levels
- Abstraction volumes
- Etc.

References

- Trinkwasserversorgung Würzburg GmbH (TWW)
- badenova AG & Co. KG
- Niederrheinische Versorgung und Verkehr AG (NVV)
- Stadtwerke Düsseldorf AG (SWD)
- Heidelberger Versorgungs- und Verkehrsbetriebe GmbH (HVV)

The collage displays several key windows from the software:

- Contour Map Creation - Select Project:** Shows a list of projects and a map outline for 'Big Project'.
- Contour Map Interpolation - Specify Interpolator:** Configures interpolation methods like 'Invers distance Weighting (D/W)' and grid parameters.
- Contour Map Interpolation - Specify Contour Levels:** Sets minimum and maximum values and spacing for contour lines.
- Contour Map Creation - Create Map:** Displays a table of data points for interpolation.
- Contour Map Creation - Select Data:** Shows a list of data sources and monitoring devices.
- Raster Blender - Process Control:** Monitors the execution of various processing tasks.
- Editor:** Shows the final map with various layers and a legend.

Extensions

Due to the modular concept of the LIWIS® technical applications, an extension of all modules has been prepared:

- **LIWIS@SIAS** for integration into a SIAS based information solution
- **LIWIS@Oracle-InSync** for Oracle supported data storage
- **LIWIS®-Resources** for production & monitoring

Special functional expansions and interfaces are also available:

- **GHC IsoLine SURFER**
- **GHC SEBA – Import Interface** (for Seba data logging files)
- **GHC LabDüs-2-Interface** (Laboratory data transfer format 2.0 Baden-Württemberg)

