



ingenieurberatung

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**hammerer-system-messtechnik**

## **Digitalization in the energy and water industry**

**with PROFI 4.0 for**

supply quality, supply security,

efficiency, customer service, employee development



Digitization is the collection, transfer, consolidation and evaluation of data in a central data pool in order to generate transparent processes through networking, which represent a technical and economic added value for the company, the customer and the employees.



## Digitalization in the energy and water supply

Digitization is the use of digital data for modernization, automation, monitoring and control of processes in energy and water supply. This increases the transparency of the supply systems and allows targeted measures to be achieved to maintain or improve the quality of supply, efficiency of operations and expansion of customer service.

Employees must be involved in these change processes and new technologies so that the results can be evaluated through their experience. Prerequisites for achieving these goals and progress are the structure and quality of inventory and condition data and inclusion of measurement and inspection data. In many cases, digital data of the line and plant documentation from the GIS is merged with measurement, condition and customer data and new solution approaches are developed with the help of "artificial intelligence".

From this, ecological, organizational and economic added value can be generated.

The process groups in the utilities area are subdivided as follows:

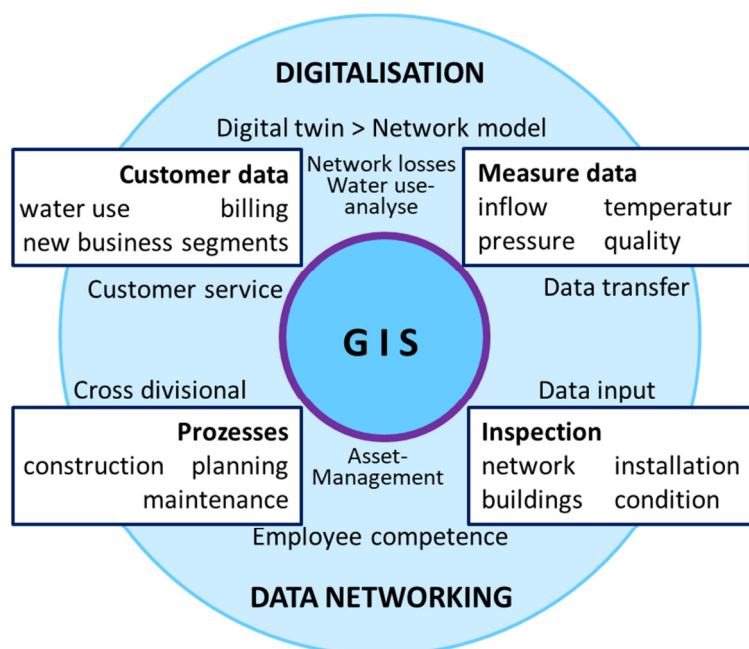
**Network-related processes** Planning, construction, operation, maintenance for optimum supply quality

**Customer-related processes** Interaction around customer usage behavior and customer service

**Business-related processes** Strategic management and development of the company for the future

Due to climate change and other influencing factors, companies are required to take up and implement supply resilience measures so that changes can be identified at an early stage and steps can be taken to ensure supply.

Data networking in conjunction with modern programs allow future tasks of energy and water supply to be solved transparently and integrated into a smart city concept.



Digitization and data networking as modern change management



## Steps towards the introduction of digitization

In the world of work, digitization also means realigning corporate processes and changing traditional workplaces. This is reflected in new technologies and ways of working that offer great opportunities for employees in the future (change management).

Introducing and building digitization in utilities requires extensive preparations defined by the following steps:

- Strategy** *Strategic objectives of digitization must be specified by defining existing and new processes and business areas (planning, construction, maintenance, mobility, network and asset monitoring, customer service, corporate management, ...).*
- Expectation** *The availability of digital data enables the redesign of ways of working that aligns customer service and operational processes in line with corporate strategy. Implementation steps must be aligned with expectations.*
- Innovation** *The company's ability to innovate is influenced by the requirements of the market and the feasibility of framework conditions. Prerequisite for this are market analyses and ideas, for the development of new solutions.*
- Technology** *Key factors in digitization are intelligent deployments of innovative technologies and the consistent use of opportunities to redesign solutions. This requires the use of modern IT infrastructure and networked software.*
- Employees** *The digital transformation requires employees to have knowledge and skills in dealing with new technologies and in applying them to planned processes. Employees must be adequately trained and educated for these digital areas.*

Die Digitalisierung in der Energie- und Wasserwirtschaft wird weiter an Dynamik gewinnen und es müssen individuelle Antworten auf die Handlungsfelder gefunden werden, damit die Versorgung der Kunden mit den wirtschaftlichen und ökologischen Unternehmenszielen in Einklang gebracht werden kann. Die zentrale Datenhaltung und -Verteilung ist Voraussetzung zur Erreichung der gesteckten Ziele. Durch Einbindung künstlicher Intelligenz zur Erstellung neuer Lösungsansätze wird ein Mehrwert für Kunden und Mitarbeiter erwartet und das Unternehmen im Wettbewerb stärken.

| Transparency                                                                                                                                                                          | Employee satisfaction                                                                                                                                                | Customer satisfaction                                                                                                                                                                             | Synergies                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Added value through:<br>Transparent billing<br>Data security concepts<br>Optimization of sales<br>Control of. customer service<br>Network-maintenance costs<br>Documented data access | Added value through:<br>Personal responsibility<br>Acceptance of work<br>Creative freedom<br>Increased commitment<br>Education and training<br>Personal satisfaction | Added value through:<br>Transparent customer service<br>Transparent tariff structure<br>Increased quality of supply<br>Consumption self-control<br>Own consumption analysis<br>Security of supply | Added value through:<br>Central data management<br>Process data consistency<br>Central data backup<br>Avoidance of redundancies<br>Cross-divisional data usage<br>Everything from one source |

Goals and added value for the company, employees and customers in the context of digital change management



## Intelligent supply systems

Smart grid operation is becoming increasingly important, so energy and water flows are measured and the population's consumption is detailed. The measurement data are transmitted to a central server and merged with other data and information. It must be determined that the data collected is meaningful and accurate. With advanced programs combined with artificial intelligence, results are expected to show optimal load flow behavior and predict energy and water demand. This creates the basis for the provision of sufficient energy and drinking water for the population, taking into account possible incidents and failure of lines and stations.

Climate change increasingly requires measures to optimize network distribution and plant dimensioning for all sectors. An acceptable outcome of digitization is to ensure care with minimal use of resources. The system must respond quickly to disruptions and recover after a major disruption. Instrumentation, control and automation are the key components of a digital and intelligent supply system.

Risks of modernization through automation can be the growing dependence of people on digital systems. Therefore, it is necessary that employees are sufficiently familiarized with modern technologies as part of change management and continue to determine the operational management of the energy and water supply through experience and engineering knowledge.

Drinking water supply is particularly affected by climate change, so digital methods are needed to capture and reduce pipe network losses and energy provision through real-time load flows with digital metering. The water sector is mostly energy intensive. Affordable electricity is critical to pumping water. This connection can be solved with intelligent approach to bring the UN goal "**clean water and energy for all**" to a solution!



**Change** management as **chance** for intelligent supply systems!