

Will smart data soon purify your water too?

The water footprint of our enterprises is often underestimated. In almost all process industries this fluid gold plays a crucial part so it is best if we are economical with it. Thanks to the technological progress we collect plenty of data that we can use smartly to predict the result of production. This then gives rise to a reduction of water, energy and costs.

Have you ever heard of a virtual sensor? This technology is used today by, among others, the pharmaceutical industry to predict the quality of their pills. Based on previous production data and analytical algorithms, the 'sensor' predicts the quality of the product. If a sensor does one measurement every second during a year, you generate more than 31 million measurements each year. These millions of data coming from hundreds of sensors form the basis for an algorithm to deduce virtual downtime and maintenance costs of the process are minimized.



The example above shows how **datamining** and **machine learning** offer a solution on a daily basis for many industries. This is exactly where industry 4.0 makes the difference compared to classical automation. The latter is based on direct measurements and will raise alarm only when the problem actually occurs. A virtual sensor can call for preventive measures much quicker thanks to the interpretation of former data.

Save water for the future

This also applies to the purification of process water in several sectors. Analytical algorithms predict here as well the water quality based on collected data. "If you know which preceding steps form the basis of the water purity, you can improve it significantly", says Wybren van der Meer, AG Solutioneer. He works for AG Solution in Antwerp, an innovative company that is specialized in the use of data for 4.0 applications, machine learning and artificial intelligence (AI). "You do a constructive multivariable analysis starting

from process knowledge to determine every influence on the purity. That is valuable information to optimize the production or purification process."

"Through smart data use, you recuperate useable process water much faster and you convert recycled waste into energy."

In other words, the machine learning principles form an important foundation for a more sustainable industry. Who treats data smartly can even go a step further and have an impact on an international level. This is proven by AG Solution with their worldwide references in the pharmaceutical industry and the food sector. Van der Meer: "By making predictions, you can recuperate useable process water much faster and you can even convert recycled waste into energy. On the Canary Islands we worked on a project where residual sludge of purified water was used to induce warmth and energy. But even so, we already did water related projects going from large-scale fish farms in the Norwegian fjords to water purification for beer production in Nigeria."

A head start through process knowledge

The potential for a better process industry lies within reach. Or not? Many companies collect tons of information via their production processes but do not know how to perform relevant analyses. The right transformation, contextualization and analysis of data is a very important step towards relevant actions such as the ones described above.

"There are an enormous amount of data that do not have a structure at first. You have to clean and transform it in order for a computer to be able to work with pure data. Afterwards, it is of



paramount importance to have the right process knowledge", emphasizes Levi Slap, also a young and ambitious AG Solutioneer. "Our dataminers, the ones responsible for making data useable, have a clear process background. We can make recommendations based on other production processes because we did similar optimizations there with similar data and algorithms. In that way we can give recommendations rather quickly."

"You can often express the return of investment in months."

Those recommendations are often translated into made-to-measure solutions. At AG Solution all algorithms are self-written. "We make our own models to find for every problem the perfect solution", explains the AG Solutioneer. "Besides, these algorithms often disclose contra-intuitive things, connections between data that we as humans could never determine analytically. It is up to us to elucidate why an algorithm does

that particular operation and how we can use it to improve the process.

That optimization expresses itself very often in direct results, according to Slap. "The advanced way that we handle production data often proves to be so powerful that you can often express the return on investment in months whereas the client thinks in terms of several years at the beginning of project."

International teamwork

The versatile way of treating data requires multidisciplinary teams in which each team member has his or her own specialization. Therefore, they pay attention to good teamwork and an instructive atmosphere at AG Solution. "The variety within projects is a great added value for young starters. Because of the flat and open corporate culture you can immediately leave your mark and have a tangible impact on the improvement and innovation of international and renown customers", testify Levi and Wybren.

"Every project forms an interesting learning environment full of new experiences and challenges. Besides, you can specialize yourself further in the AG Academy. Our employer is active worldwide and has offices in Spain, Germany, Ukraine and France.

You have a worldwide impact and that is enormously satisfying."

"You have a tangible impact on the improvement and innovation of international and renown customers"

The impact of an innovative Flemish KMO on water at home and abroad.

- Drinking water production- and distribution in Antwerp
- Central production and distribution of demineralized water in the industry (Total, Arcelor Mital,..)
- Onsite production of demineralized water for industrial customers worldwide
- Water purification installations and quality checks, maintaining discharge standards waste waters
- Drastic reduction of water and energy consumption in pharma, food & beverage and fine chemicals industry
- Recuperation of warmth and electricity from residual sludge coming from water purification

Are you interested in our machine learning solutions?

Please contact us through contact@agsolution.be or call us +32 3 569 20 35