

# Process optimization through digital solutions

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QualiMaster VC1 and VC2



Pro시오 Vision as Eirich's competent partner in the field of process optimization

## Our mission: We want more than just good processing

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Our aim is permanent optimization of the process by measuring relevant parameters. This compensates fluctuations in raw materials and production conditions.



Optical granulate measurement through VC1





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# QualiMaster VC1

## The system for optimum production results

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The system identifies the particle size distribution, grain shape and surface structure of bulk materials and granules. So the VC1 delivers important data for process optimization, troubleshooting and quality assurance in the field of process engineering.

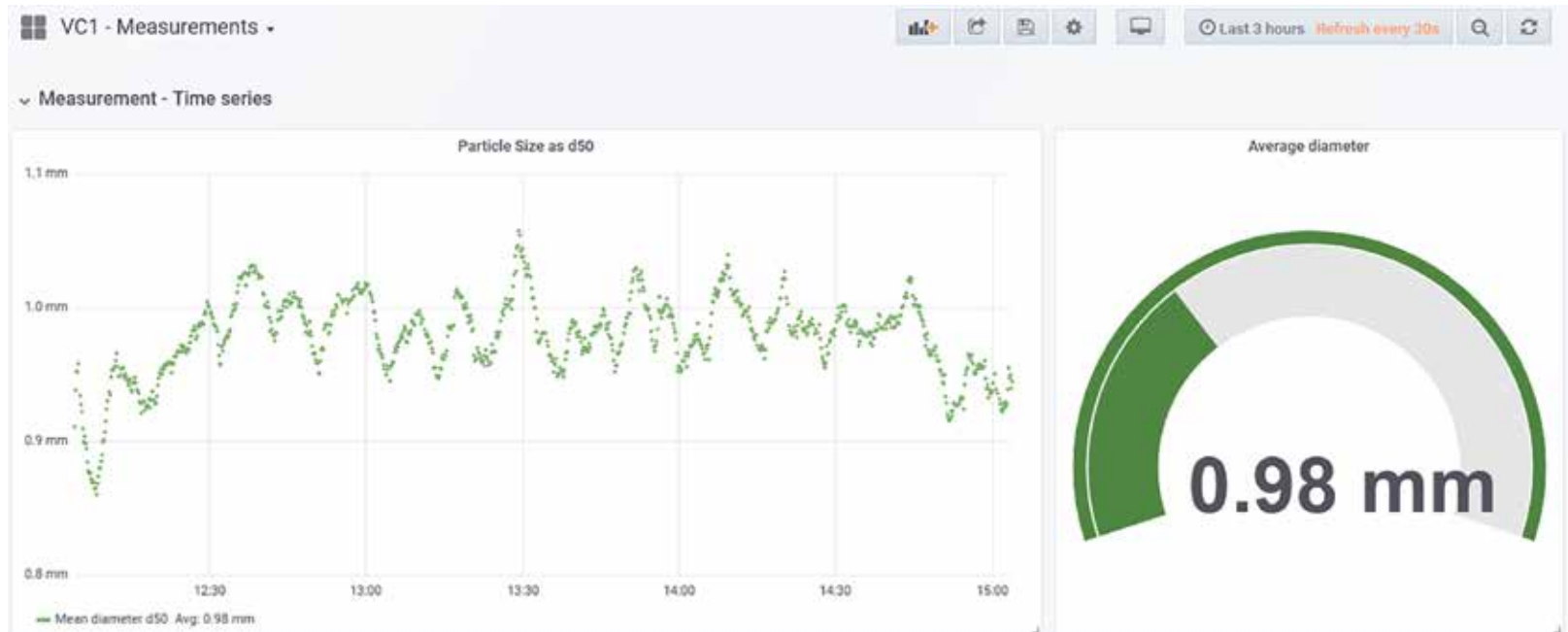
The installation of VC1 is above a belt conveyor. The measurement is contactless which results in less maintenance and cleaning effort.

The integration and communication of the recorded parameters with the plant control system and other interfaces is customer specific adjustable.





## In-line process recording: The key for process optimization



The system can be adopted and configured based on specific applications to be perfectly suited for measurements like particle size distribution, surface structure or color characteristics. Depending on the lens, the camera measures particle sizes from 0.2 to 10 mm. The current camera images are not only shown on line via a display but additional access from control cabinets or control rooms is possible too. The QualiMaster VC1 measures in-line and provides information immediately and in high temporal resolution.

This results in faster access to the measured values in comparison to laboratory evaluations. They enable rapid correction of plant parameters in the event of unfavorable changes in product properties. So the QualiMaster VC1 creates the basis for modern and efficient controlled production.

The new Eirich QualiMaster VC1 thus is an essential component for digitalization of complete plants in bulk material preparation and processing.

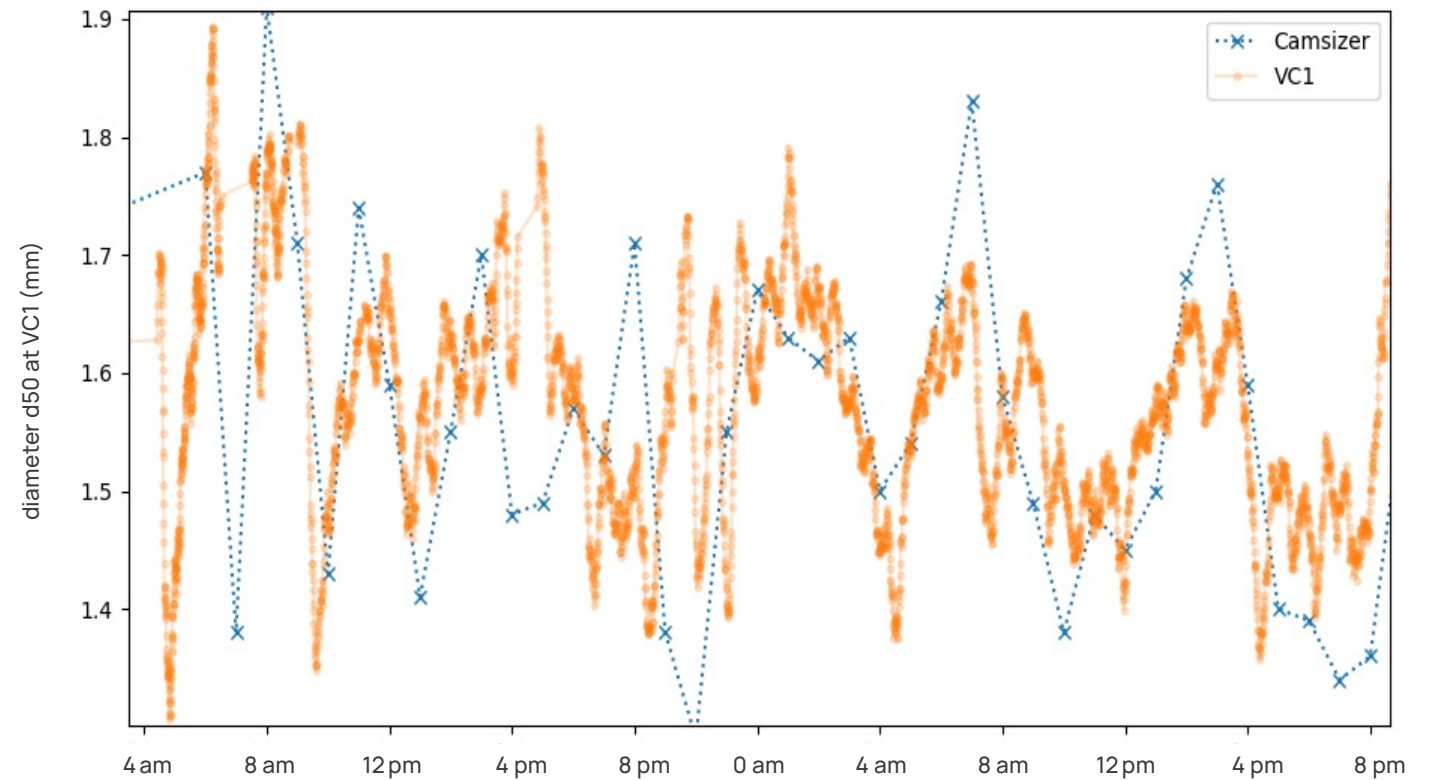


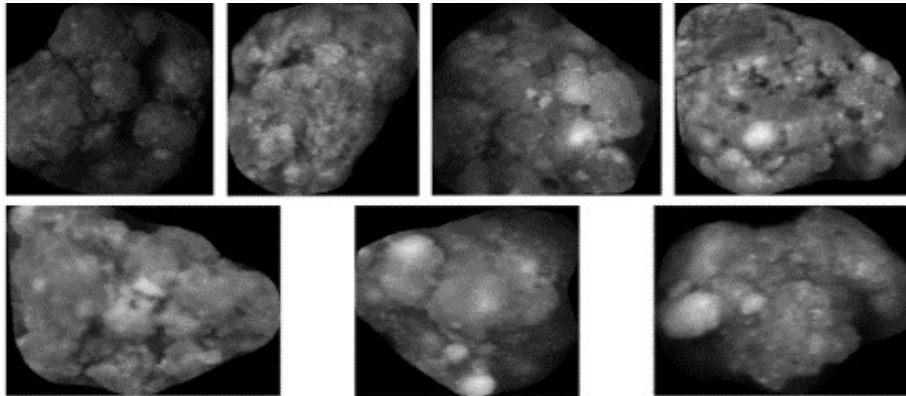
# Comparison of the medium granule diameter with VC1

## In-line measurement vs. Camsizer laboratory measurement

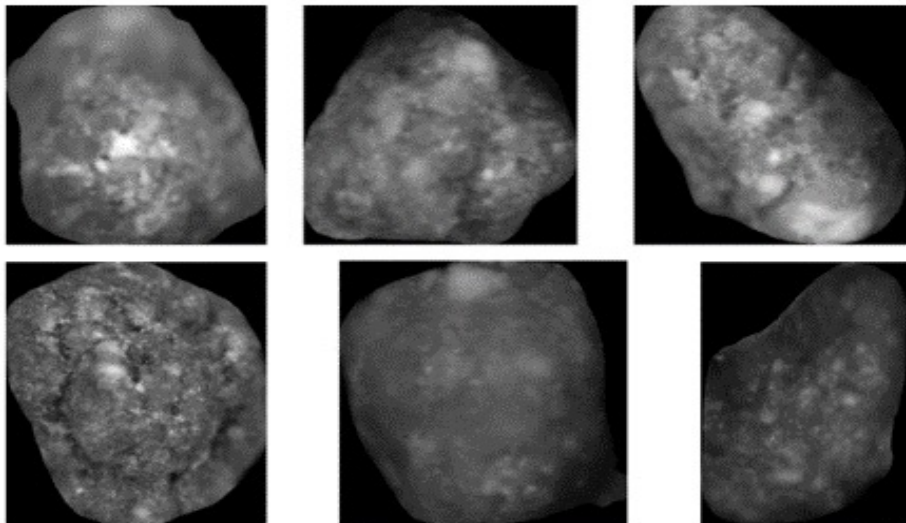
The comparison of the two measurement devices shows proper agreements between the results. The VC1 enables a clearly higher temporal resolution. Fast trend detection is essential for an efficient control.

Results for VC1 as a moving average





Example of particles with irregular surface structure

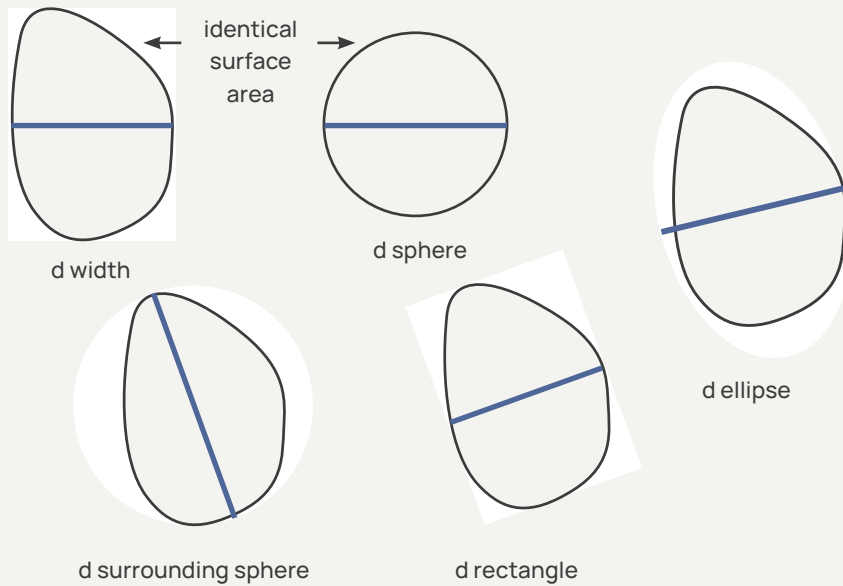


Example of particles with a regular surface structure

## Characteristic value for the surface structure

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The surfaces of the recorded granules are compared with reference images and are evaluated afterwards. This allows the measurement of defective surfaces during normal product flow.



### Particle size

The VC1 identifies individual particles from images of bulk solids and determines their diameter. As non-spherical particles do not have a clearly defined diameter, the VC1 can determine different diameters in order to optimally adapt the evaluation to the needs of the customer and the product. The data recorded can not only be shown as an average value, but in the form of distribution curves too.

### Grain shape

In addition to the particle size, the VC1 can also determine the sphericity. This indicates to what extent a particle resembles a sphere. The data recorded can be shown as an average value and in the form of distribution curves too.



# QualiMaster VC2: The system for fast trend detection

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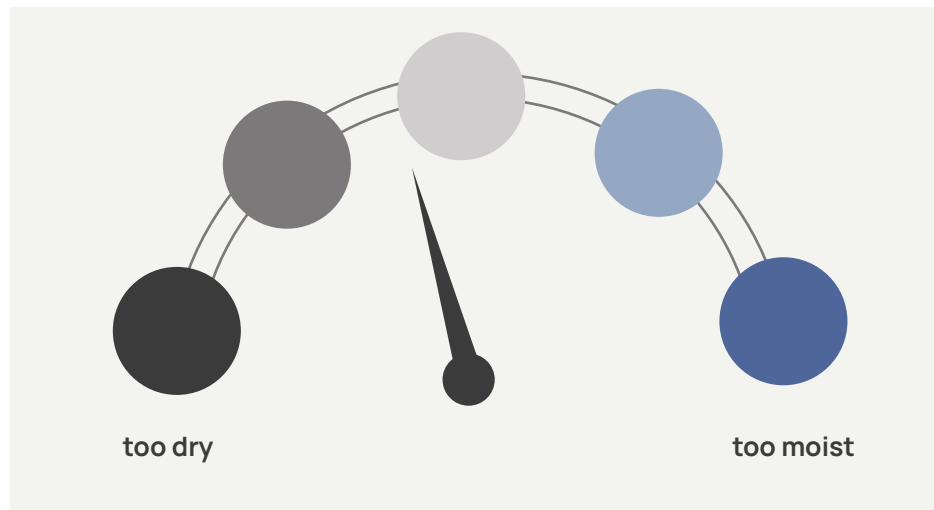
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Modern Deep-Learning

The VC2 compares and evaluates the current consistency of a product with reference pictures. Whether finely dispersed, crumbly or pasty, the VC2 can be used for all structures.



# QualiMaster VC2: The system for fast trend detection

The relative evaluation of the parameter is translated to a dimensionless value between 0 and 1. This value can be visualized via a traffic light or a speedometer.

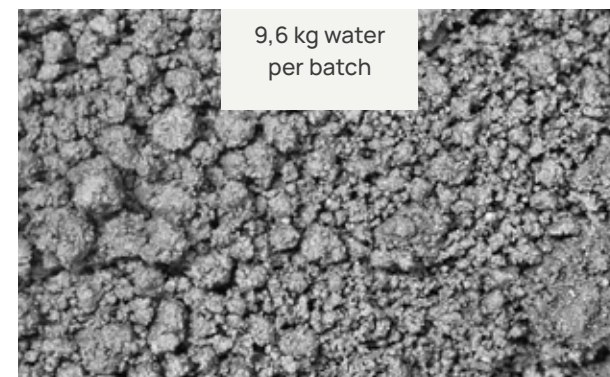
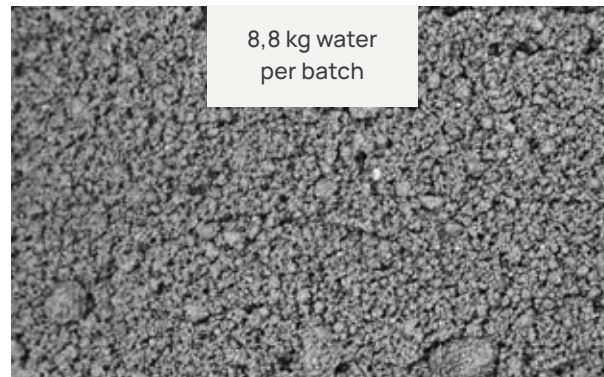


# QualiMaster VC2: The system for fast trend detection

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## Recording of the VC2 from the surface of the pre-product

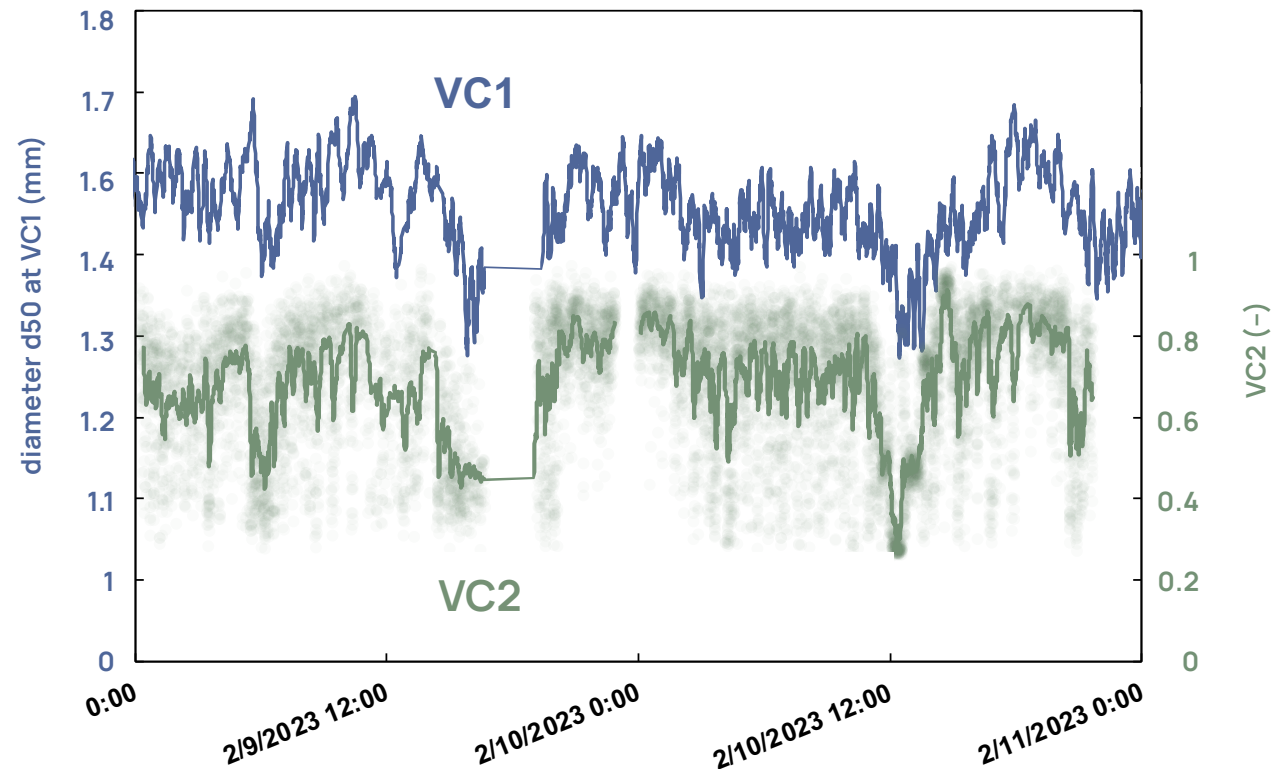
Less than 0,5% of water in the mixture may change the consistency of the mix enormously. The VC2 can map the knowledge of a plant operator as a measurement value.



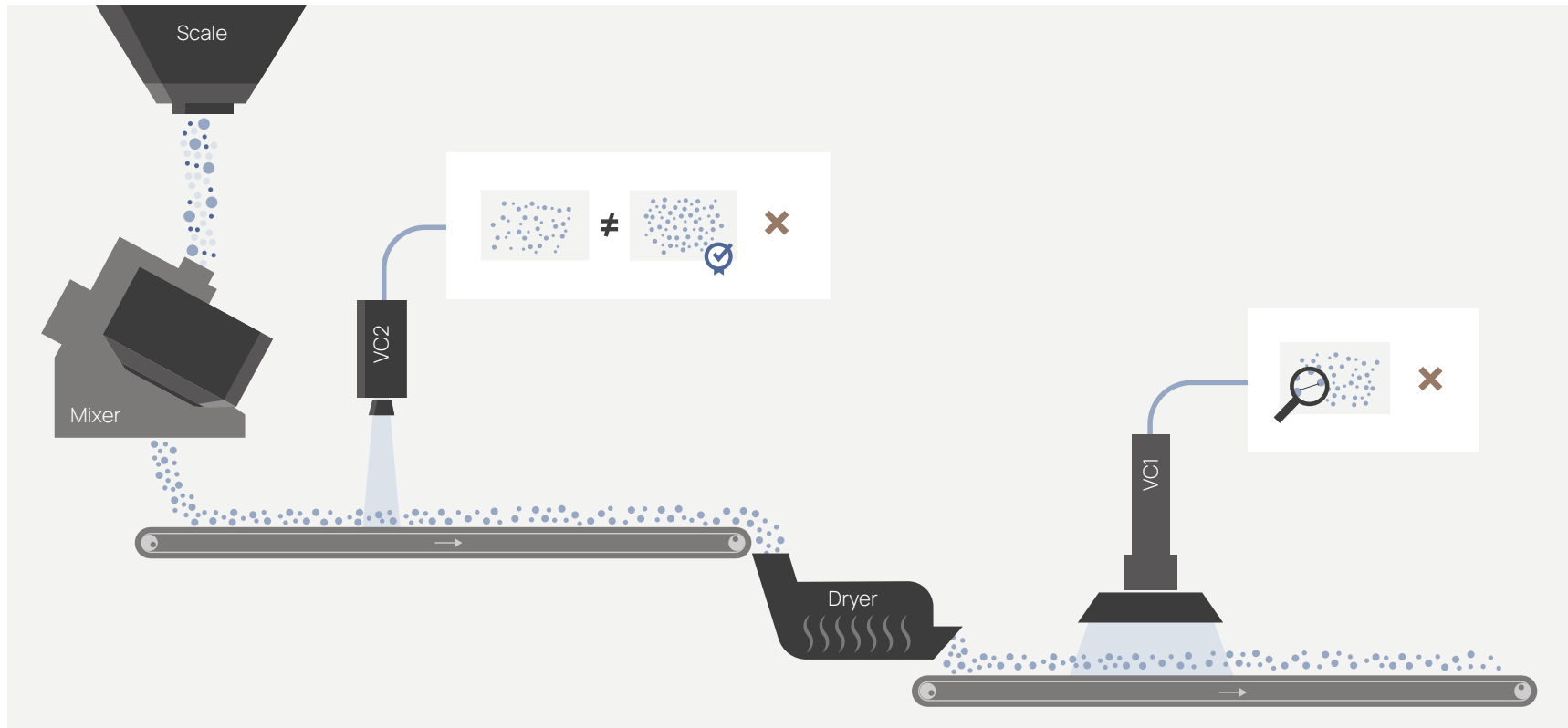


# System comparison of VC2 on pre-product and VC1 on final product

In this case study the VC1 determines the quality of the final product by taking the grain diameter  $d_{50}$  as base value. The measured values of the VC2 show a high grade of correlation to the quality values from the VC1. The VC2 delivers the data already 30 minutes earlier which enables a dynamic control of the preparation of the preliminary product.



# Two systems which are perfectly matching



## VC1

- Precise measurement data at the end of the process for quality assurance and documentation
- Output of defined values for the grain shape
- Qualitative assessment of surface structures
- Low maintenance effort for high data quality

## VC2

- Fast qualitative statements for early correction
- Output of absolute values for the particle size distribution
- Relative assessment of characteristic parameters of a product on basis of reference data
- Universal system for all consistencies
- Simple adaptation to changing requirements
- Low space requirement and simple installation

# Eirich Loglizer and ProView for professional data analysis

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The Eirich Loglizer is an in-house solution for professional data logging.

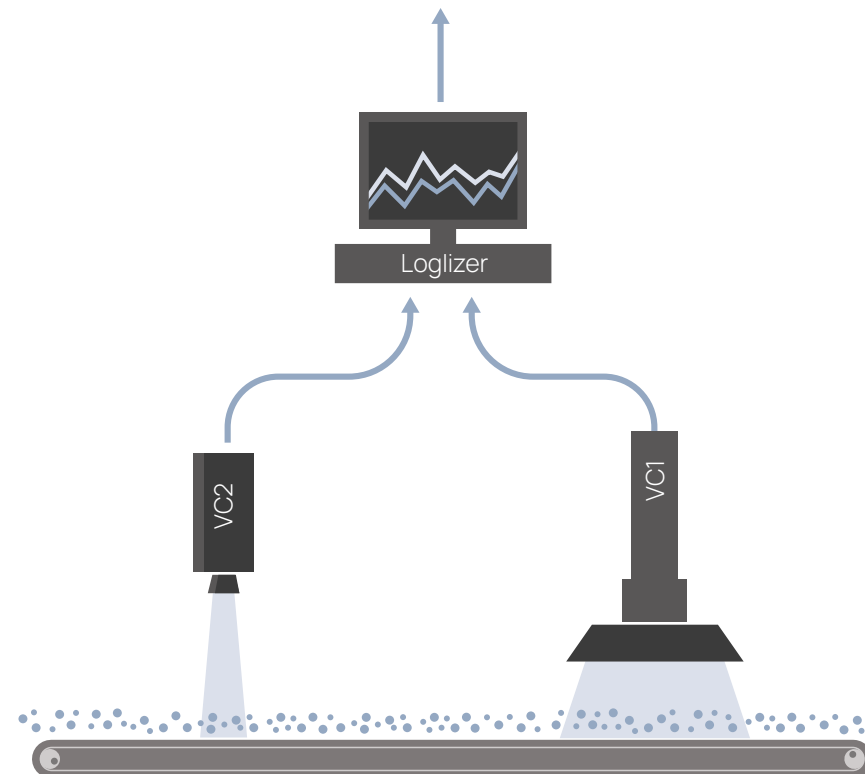
The analysis are based on the data stored in the Eirich Loglizer. This data needs to be systematically documented and analyzed together with other process data. The Eirich Loglizer is the basis for the data analysis. An initial data analysis can be carried out graphically using the visualization system Eirich ProView.

## Data logger Eirich Loglizer

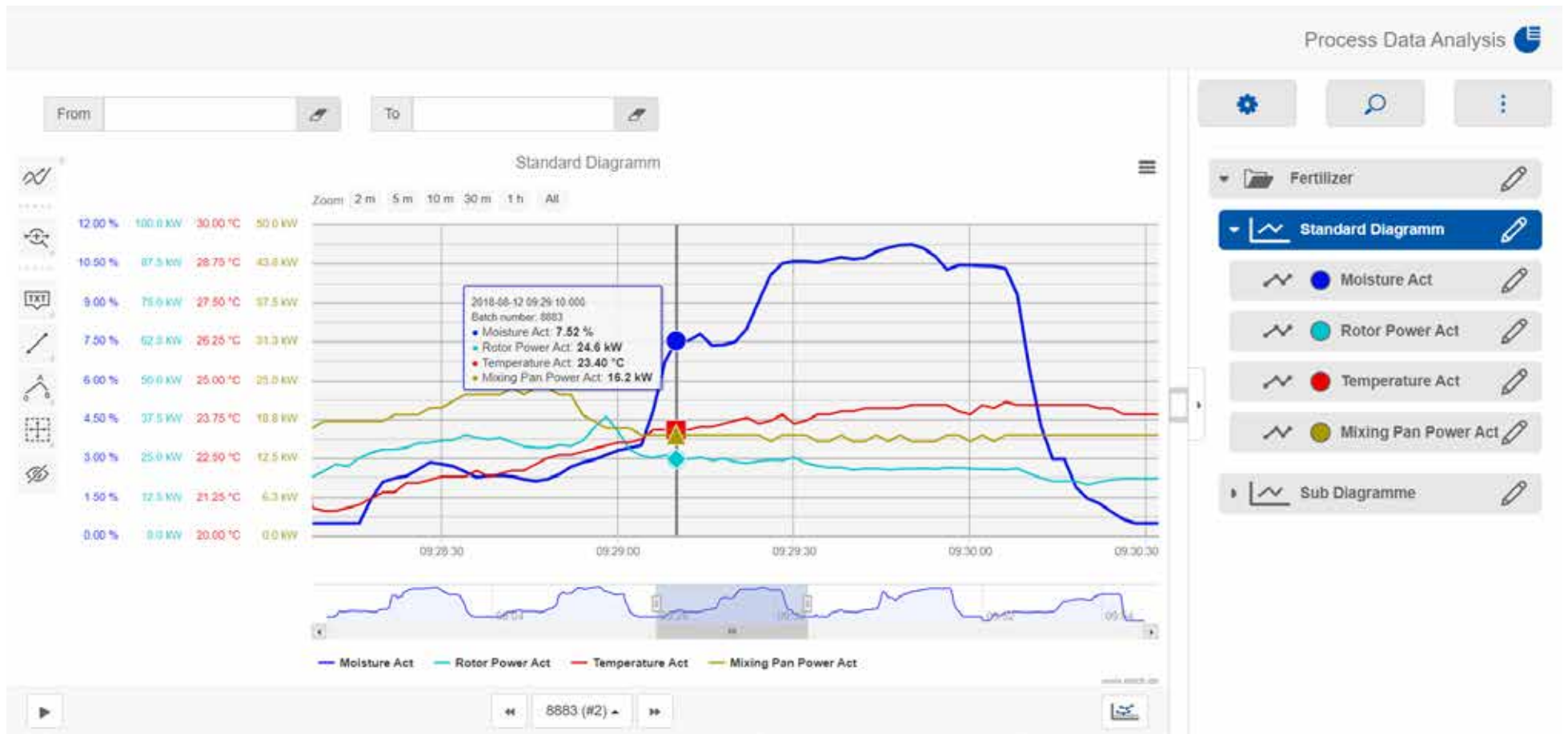
- data logging of maximum 1000 process data channels from the complete plant
- redundant archiving in a local SQL database. No Cloud connection necessary.
- sampling rate freely configurable over a wide range, starting from 10 ms.



Pro시오 Vision is a joint venture between Eirich and the start-up Pro시오 Engineering.







### Visualization with Eirich ProView

- Clear visualization of the process data
- Simple operation, no installation required thanks to web technology
- Access via the factory network or mobile devices





The Eirich Group, with Maschinenfabrik Gustav Eirich as its strategic center in Hardheim, is a supplier of machinery, systems, and services for industrial mixing, granulating/pelletizing, drying, and fine grinding. Our core expertise is in the field of processes and techniques used for the preparation of pourable materials, slurries, and sludges. We are a family-run company that operates 16 sites around the world.

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You can find more information at:  
[www.eirich.com](http://www.eirich.com)