AQUANTIS
Inline Measurement Solutions

Particle Size Monitoring

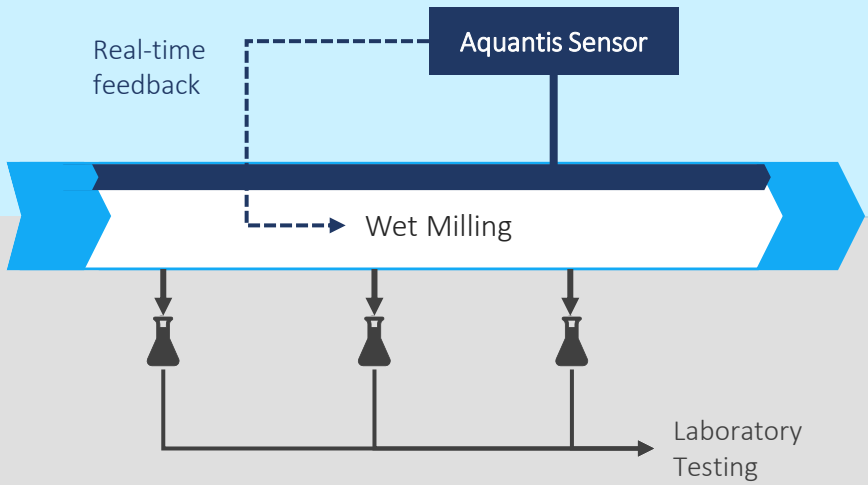
INLINE PARTICLE SIZE MONITORING – INDUSTRY 4.0

Particle size is one of the critical properties of numerous products and influences various properties of suspensions and emulsions. The particle size is a valuable indicator of the quality and stability of a material and is routinely measured across a wide range of industries including food, pharma and cosmetics. Evaluation of the particle size and understanding how it affects the products or processes is essential to ensure high-quality standards.

Variations in raw materials and environmental parameters affect the product processing and quality and require continuous adjustments of the production processes. Conventional follow-up of the particle size requires regular sampling, sample preparation and analysis in the lab (Figure 1). As an example, a 90-minute wet milling procedure is interrupted after 85 minutes to take a sample and to analyze in the lab. Based on the results the miller is restarted for a few minutes until the required size is obtained. This approach is time consuming, labor intensive, prone to manual errors and delays the quality control. This can eventually result in reduced quality or even loss of the entire batch.

Aquantis offers atline and inline sensing solutions based on micro- and millimeter wave technologies to track the average particle size and concentration during wet milling or wet grinding processes. The unique hardware designs together with the newly developed algorithm provide repeatable results for various products. **Highly-concentrated** samples no longer need sample preparation such as diluting the samples saving time, costs and eliminating manual errors. The measurements are not affected by the type of particles, the **transparency or opacity** of the particles nor the liquids themselves.

By continuously monitoring the particle size, it is possible to view the production data in **real-time** and get **full control** over the process. Process variations are minimized and corrected if necessary. This system allows automated and data-driven allocation and optimization of your resources reducing errors, time and costs. **Industry 4.0 flat out.**



Aquantis monitoring sensor
Continuous analysis

- No sample preparation
- Real-time feedback
- No manual work
- Reduced time & costs

Conventional techniques
Sampling and Lab testing

- Sample preparation
- Delayed results
- Manual work
- Prone to errors

Figure 1: Benefits of the Aquantis sensors over the conventional techniques for the follow-up of particle size.

MAIN FEATURES & APPLICATIONS

Our inline technology has various benefits compared to conventional particle sizing including:

- The same technology is used for various particle size ranges. This in contrast to existing manufacturers which need multiple technologies to cover the range.
- Measurements on highly-concentrated suspensions. There is no need to dilute the samples. The higher the concentration, the better the precision.
- Compatible with opaque and transparent particles and/or suspensions.
- Non-destructive measurements
- Immediate information and feedback.
- The sensors can be integrated in pipes or in milling tanks. In collaboration with the customer, the sensors can be customized to fit perfectly on new or existing equipment.

Our sensors are compatible with various samples and can be used to monitor and control suspensions and emulsions in different industries. The main domains include:


Pharma & Cosmetics


Food and Beverages


Environment - Water treatment


Chemicals


Pigments and Inks

TECHNICAL SPECIFICATIONS

Item	Aquantis Particle Sizers
Sensing Technology	Micro- and millimeter waves
Output	Average size and concentration
Particle size range	0.1 µm – 1.2 cm Smaller size or extended range possible*
Resolution	< 5 µm
Particle concentration	5% (w/v) – 40 % (w/v) Higher is possible
Acquisition time	< 1 s
Temperature sensing technology	RTD
Software	Web interface

Table 1: Technical specifications of the at-line and inline particle sizers.
* Application dependent

PROJECT-BASED APPROACH

Aquantis provides **project-based sensor solutions** tailored to the individual needs of a customer. Each of your projects will be evaluated by conducting a feasibility study to ensure our technological solutions fulfill your requirements. If the outcome is satisfactory, the technical specifications for the at-line or inline solution will be determined in collaboration with the customer.

On-site validation will be conducted using an at-line system to prove its benefits without interfering with the production processes. During this step, further customizations are possible to fit the application(s)-dependent needs. The final step includes the delivery of the **inline customized solution** which is integrated in the production process.

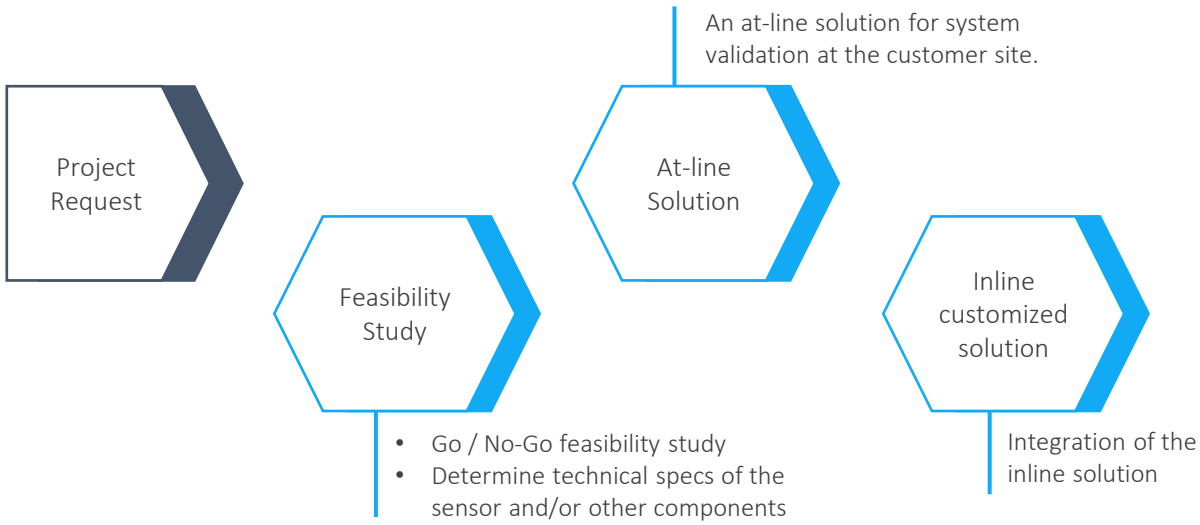


Figure 3: Project-based approach for inline customized solutions.

Contact Us

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