RASCHKA

NEWSLETTER

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Sampling systems and process monitoring

Process monitoring and data analysis is essential for maintaining safety, quality and environmental compliance of any kind of industrial operations. Especially for petrochemical, chemical and pharmaceutical manufacturing processes we need effective real-time monitoring and control to guarantee a low-cost, safe and high quality production. Data for process monitoring will come from **Sampling** and **Process Analytical Technologies (PAT)**

Sampling systems

Sampling of processes is routinely done to check product quality, purity, or to refine process procedures. Sampling is typically a major concern for most plants since product samples must be representative and accurate. Environmental and safety concerns related to sample taking of toxic or hazardous materials are also having a larger impact on the type of sampling device required.

When considering process sampling, several critical questions must be answered to determine what type of sampling device will be suitable and the best method for taking the sample:

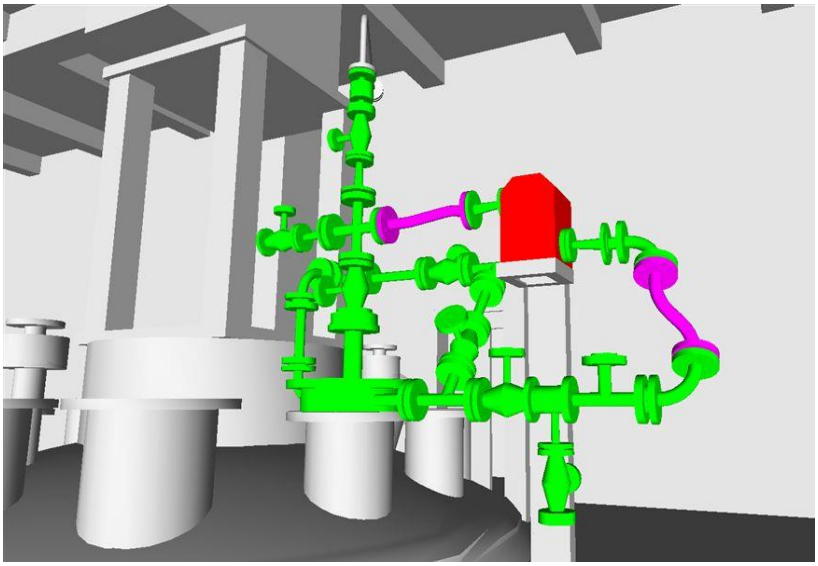
- Why is the media being sampled? (process verification, bacteria counts, quality assurance)
- How often is the media being sampled?
- What type of media is being sampled? (powder, slurry, liquid)
- What are the properties of the media? (corrosive, hazardous, flammable, carcinogenic)
- Where in the process is the sample being taken?
- What is the viscosity of the media and are solids present?
- Does the medium crystallize?
- Will the sample be taken from a pipeline or vessel?

Depending on the answer to these questions an adequate system can be chosen, the following examples will give an idea of systems used and some of it developed by Raschka Engineering.

Low cost sampling option for liquid, consisting of a full PTFE body with a dead-leg free design, enabling sampling with minimum pre rinse and facilitate easy and fast cleaning in case of product change. Suitable for acid resistant applications mounted between flanges. (designed and manufactured by Raschka Engineering)

Sampling of solids in a completely closed system, flush mounted with process equipment inner surface with no product hold up

Modular built sampling system with membrane pump, PTFE lined piping and flexible PTFE connections for acid resistant applications enables sampling from circulation flow from reactor optionally with pH and conductivity measurement included in the loop. System can easily be cleaned in place. (Designed, installed, commissioned, validated and maintained by Raschka Engineering)



Process monitoring solutions (PAT)

Real-time information on key process variables is a prerequisite to greater manufacturing efficiency and improved process control. Without this information, quality and efficiency are hampered, resulting in product loss, rework and higher manufacturing costs. In order to control quality and process variables, one must accurately and continuously measure process conditions

Examples given below are process monitoring systems which have been evaluated, implemented into design, purchased, installed, regularly calibrated and maintained by Raschka Engineering.

Laser sensors and transmitters will accurately measure concentration in Off gas streams (O_2, NOx, CO, SO_2) and can be used in more critical environment. This is a safe, efficient, low-maintenance and reliable in-process control

Gas analyser for O_2, CO, NOx and SO_2 and other gases. One transmitter for 4 sensors, low investment, safe, efficient, low-maintenance and reliable process control

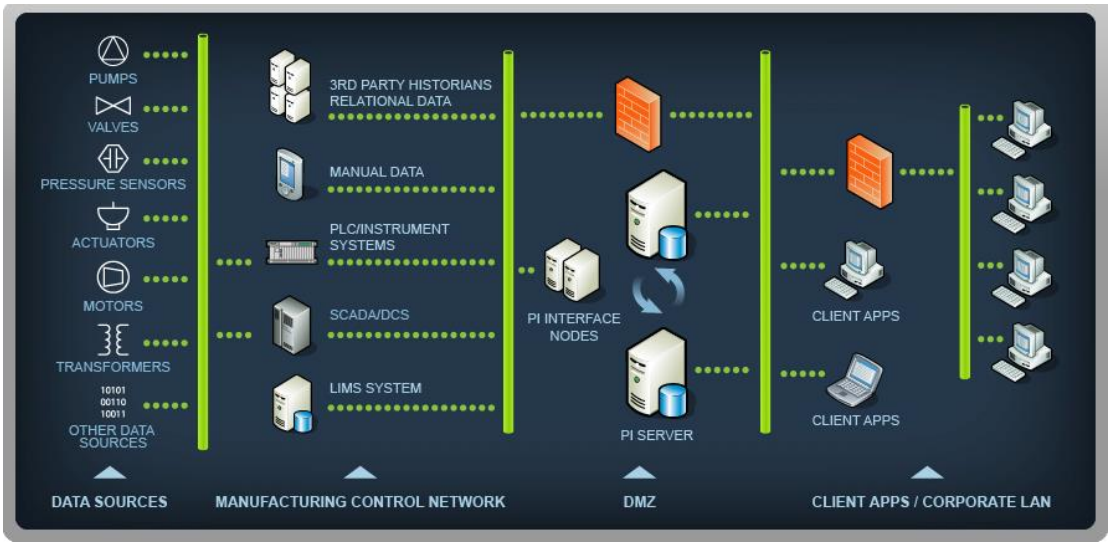
On-line Conductivity Analyser for liquid phase separation used in tanks and extraction columns, optionally with CIP connection to remove heavy boiler layer accumulation on transmitter. Designed by Raschka Engineering to achieve process control which is safe, accurate and reliable with minimum maintenance

Tight specifications for product quality and the need for real-time analysis to detect issues as quickly as possible have expanded the role and importance of online process analyzers. Process analytical equipment thoroughly integrates with process control and quality systems, allowing operations team to produce products that are of higher and more consistent quality, to better meet specifications, improve process yield, increase through put, and improve safety and environmental compliance.

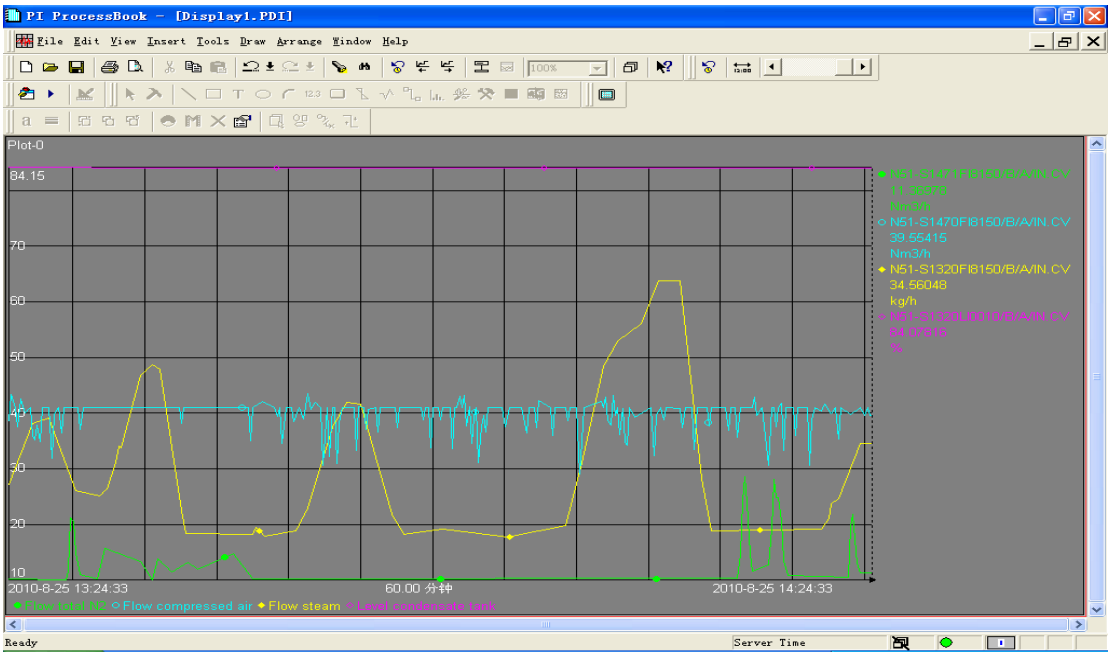
PI Server (remote process monitoring)

The Plant Information (PI) System is a set of software modules for plant-wide monitoring and analysis. The PI Server Applications are the foundation of this system. They handle the collection, storage, and retrieval of numerical and string data. They also act as a data server for Microsoft Windows-based client applications that operators, engineers, managers, and other experts use to view the plant data stored in the PI Data Archive. Such a system enables selected experts to monitor a production process remotely and support the local production team in all aspects, from start up to process improvement to trouble shooting.

PI system application structure diagram



A screen snapshot of PI process book that shows the on-line process information monitoring



In this context, Raschka Engineering's service could include:

- Engineering and design support
- Sourcing consultancy
- Supply of locally produced sampling systems
- Evaluation of technical solution for your specific in-process control requirement
- Installation supervision, calibration and maintenance of in-process monitoring systems
- Concept, design and implementation of PI server systems
- Qualification and validation of in-process monitoring systems
- Continuous improvement and optimization of existing systems

Please feel free to contact us in order to discuss your needs with Raschka Engineering's expert team, we would be very happy to share our experience in the field of sampling systems and process monitoring.

An extensive service list is available on our website:
http://www.raschka-engineering.com

Raschka Engineering Ltd

Raschka Engineering Ltd. Liestal, Switzerland (previously known as Lonza Engineering) now reflects the superior and well known Raschka FBI technology in its name together with its wholly owned subsidiary Raschka Engineering & Consulting Co., Ltd, China provides customer oriented services with a professional, experienced and highly motivated engineering team. We have 20 years of successful project management experience in China which makes us a perfect partner for the chemical, pharmaceutical and biopharmaceutical industry. A board range of services with a project reference list underlining our capabilities is available upon request.

Raschka Engineering has successful managed multiple complex projects such as continuous operating plants for the production of food and feed additives as well as active pharmaceutical ingredient plants including waste gas and liquid waste treatment facilities.

Contacts

Raschka Engineering Ltd
Dachsweg 12 CH-4410 Liestal, Switzerland
Tel: +41 61 534 9913
or +41 79 750 9845
Email: info@raschka-eng.com
Website: http://www.raschka-engineering.com

Raschka Guangzhou Engineering & Consulting Co. Ltd
Room 401, South Tower, Peace Business Centre, No. 898 of Guangzhou Avenue South, 510305, Guangzhou, China
Tel: +86 20 8966 4288
Fax: +86 20 8966 4278
Email: info@raschka-eng.com
Website: http://www.raschka-engineering.com