

Survey 2024 Analysis

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Overview

[1] General information

[2] Currently used probes

[3] Challenges regarding probes

[4] Experiences about monitoring

[5] Summary



Survey Overview

Survey Topic: The usefulness of on- or in-line probes to live-monitor liquid processes within industry

Focus group: People working in industry that use on- or in-line probes

4 rounds of questions:

- general information about your industry
- currently used probes within your industry
- challenges regarding the use of on- or in-line probes
- your experiences and wishes regarding monitoring processes

Questionnaire time period: September to November 2024

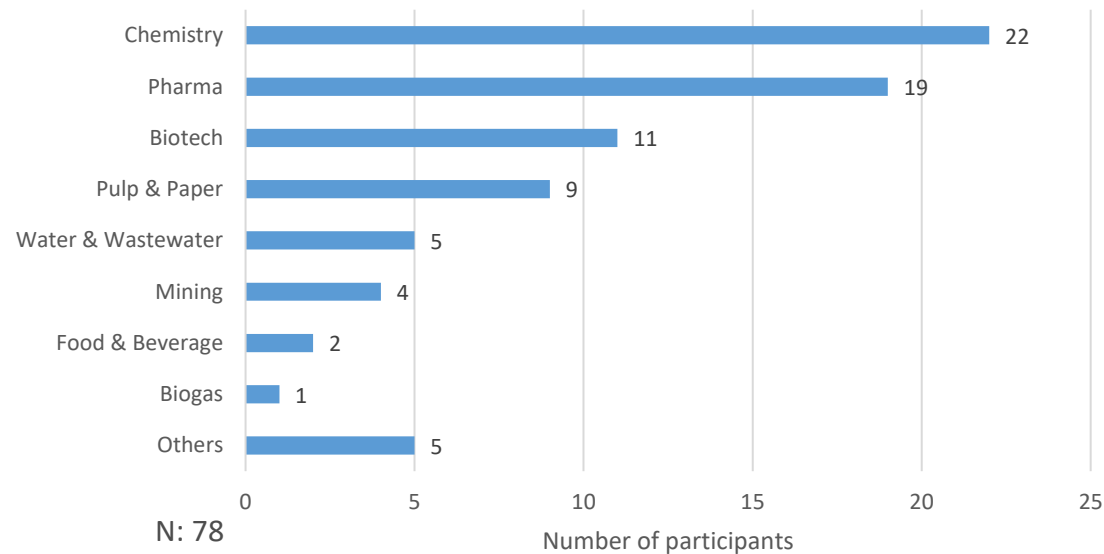
Total number of participants [N]: 78

All survey responses were voluntary and completely anonymous.

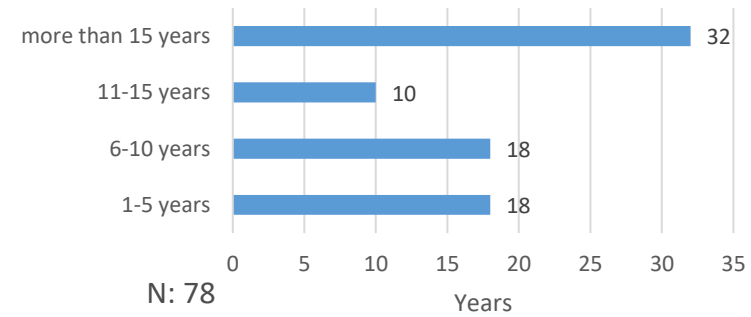


Questions: General information I

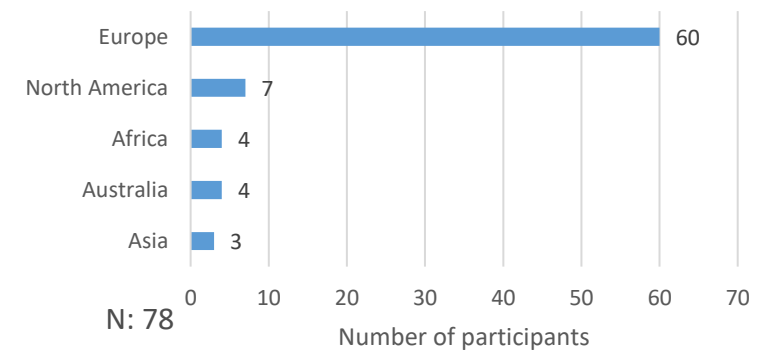
In what industry are you working in?



How many years are you active in your industry field?



In what region are you located?



[1]

[2]

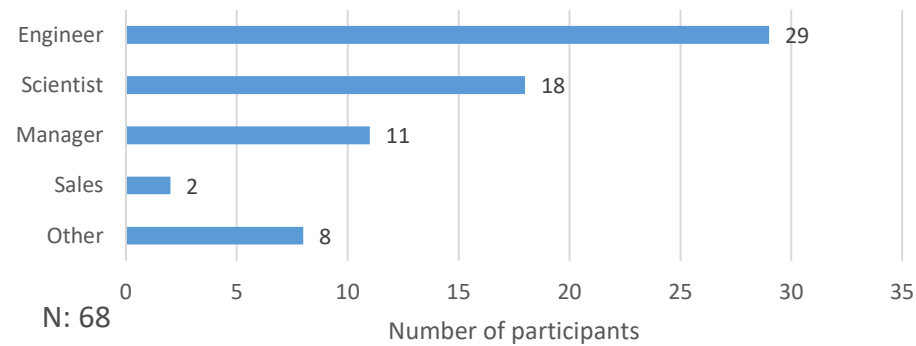
[3]

[4]

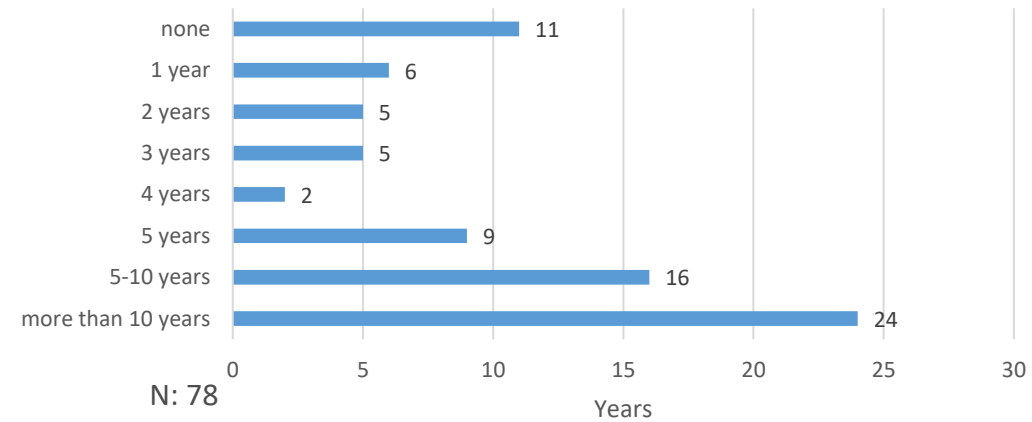
[5]

Questions: General information II

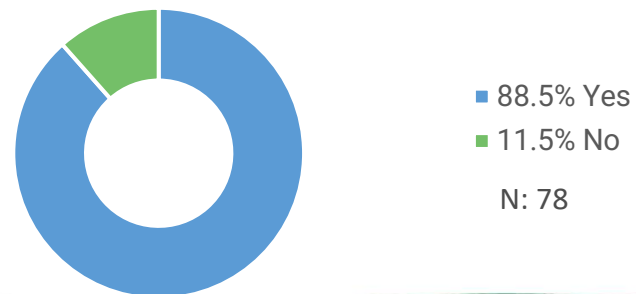
What is your job position?



How many years of experience do you have with PAT?



Are probes used for live monitoring within your company?



[1]

[2]

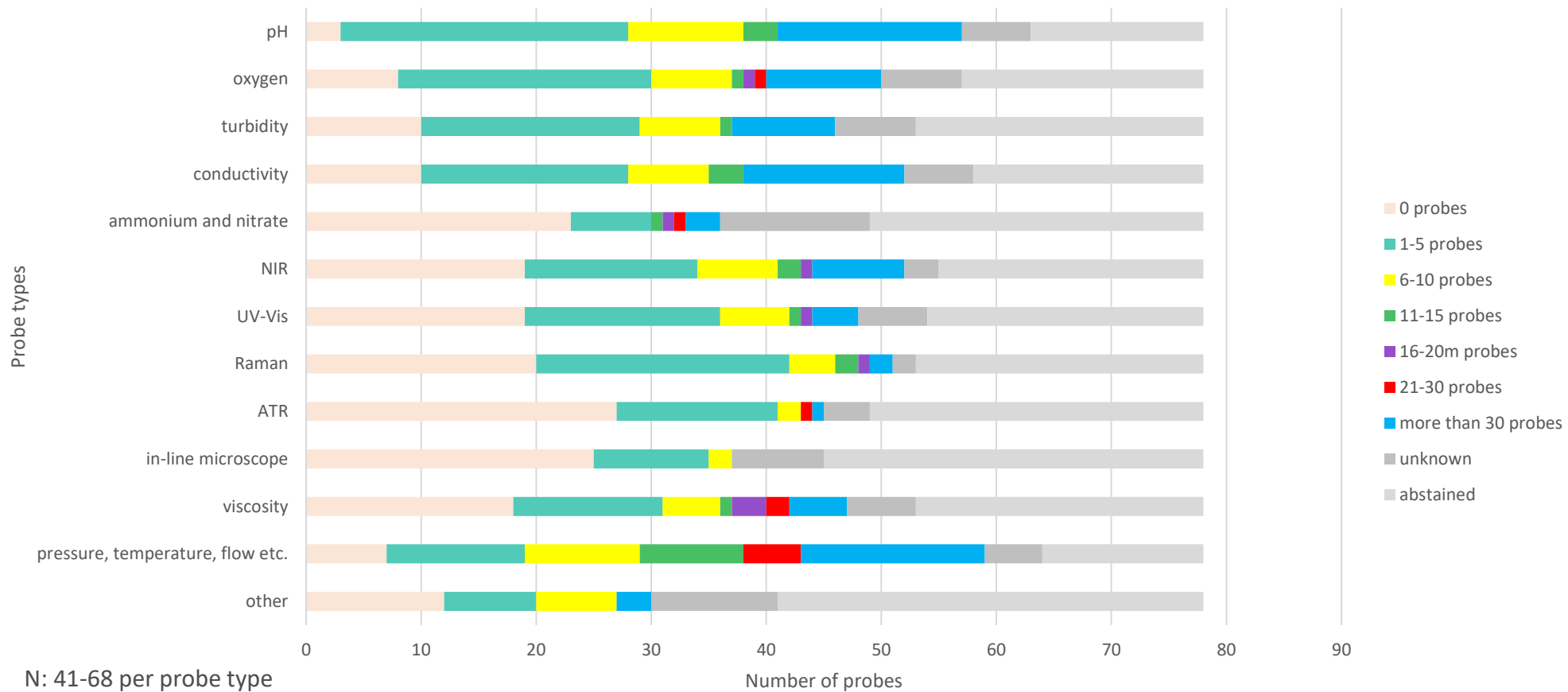
[3]

[4]

[5]

Questions: Currently used probes I

How many on- or in-line probe types are used within your processes?

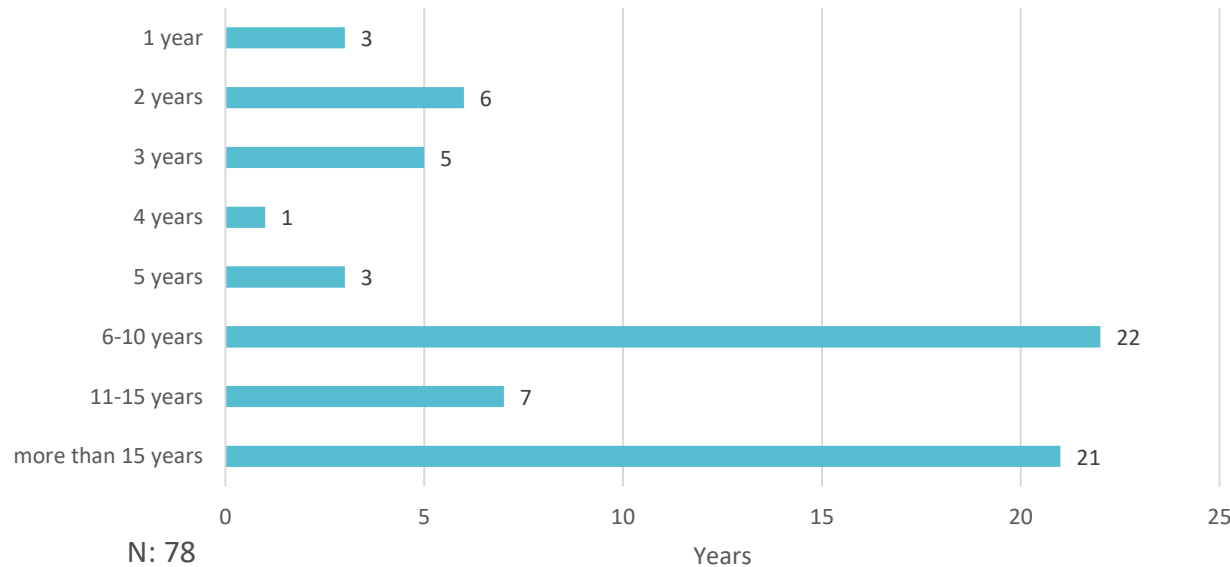


N: 41-68 per probe type

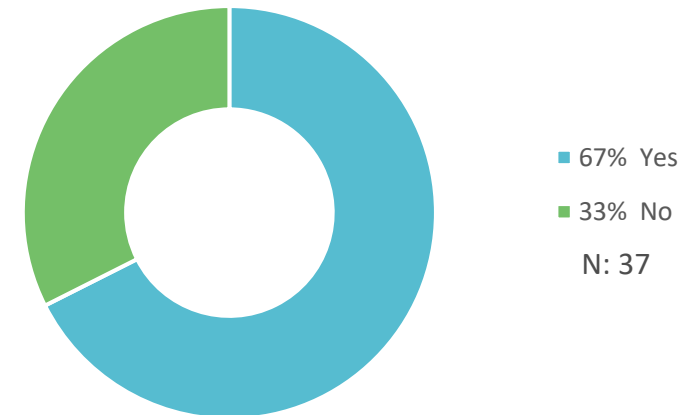
- [1]
- [2]
- [3]
- [4]
- [5]

Questions: Currently used probes II

Since when are probes used for live monitoring in your company?



Do you use any other probe types?



[1]

[2]

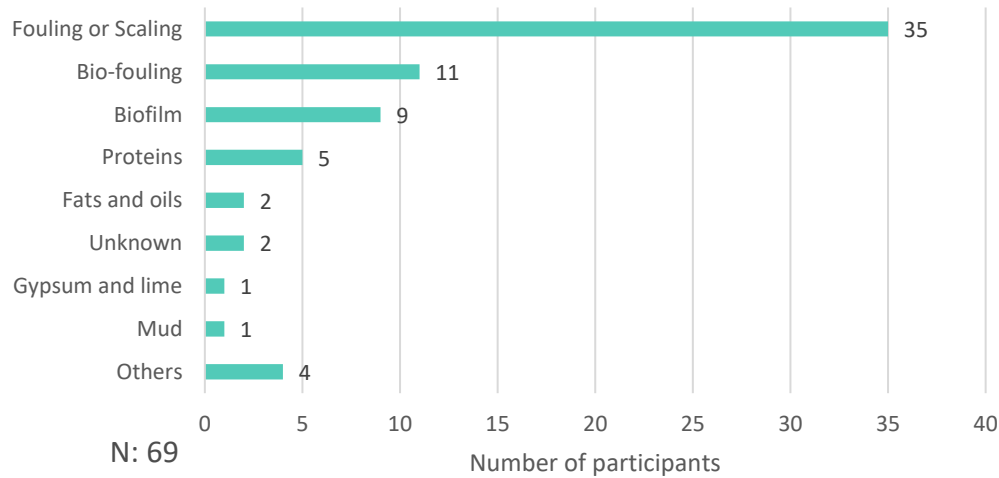
[3]

[4]

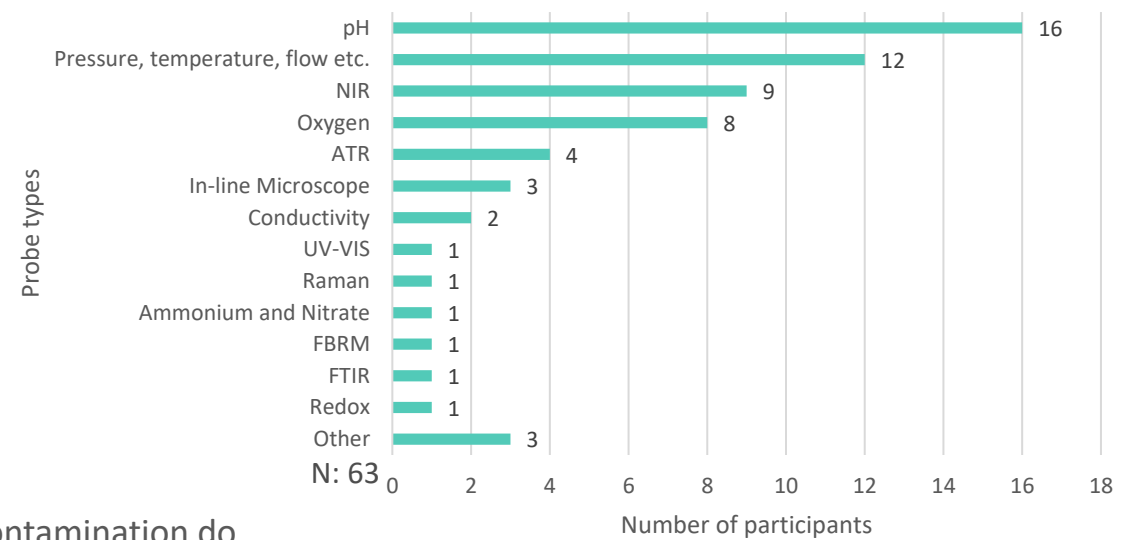
[5]

Questions: Challenges regarding probes

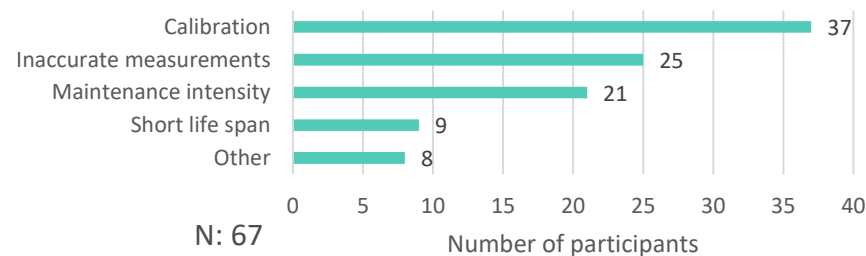
What is the most common probe contamination?



Which probe type has the most issues with contamination?



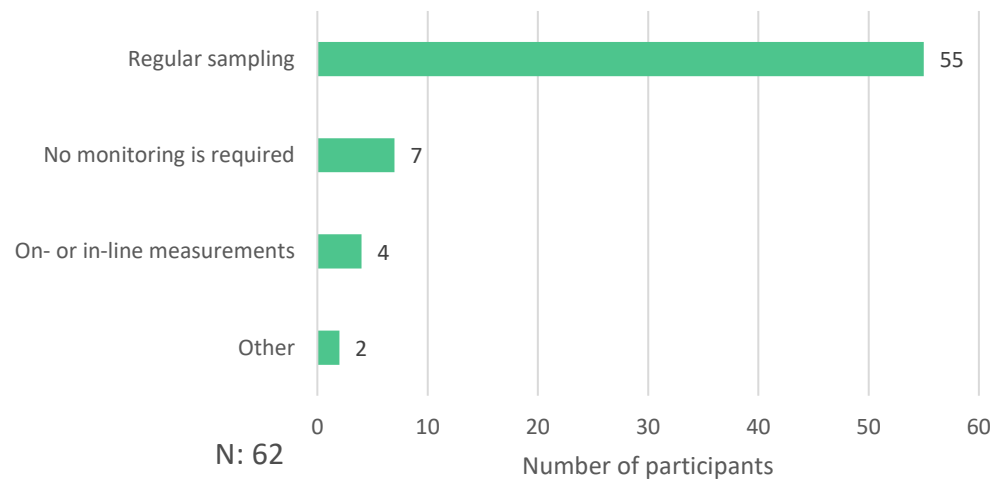
What challenges besides contamination do your probes encounter?



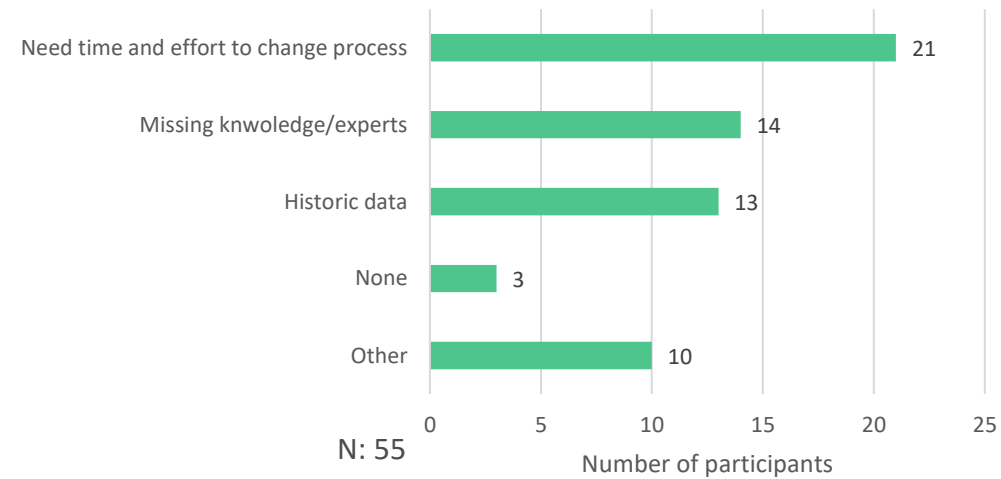
- [1]
- [2]
- [3]
- [4]
- [5]

Questions: Experiences about monitoring I

How are processes within your company monitored?



What prevents the use of in-line probes?



[1]

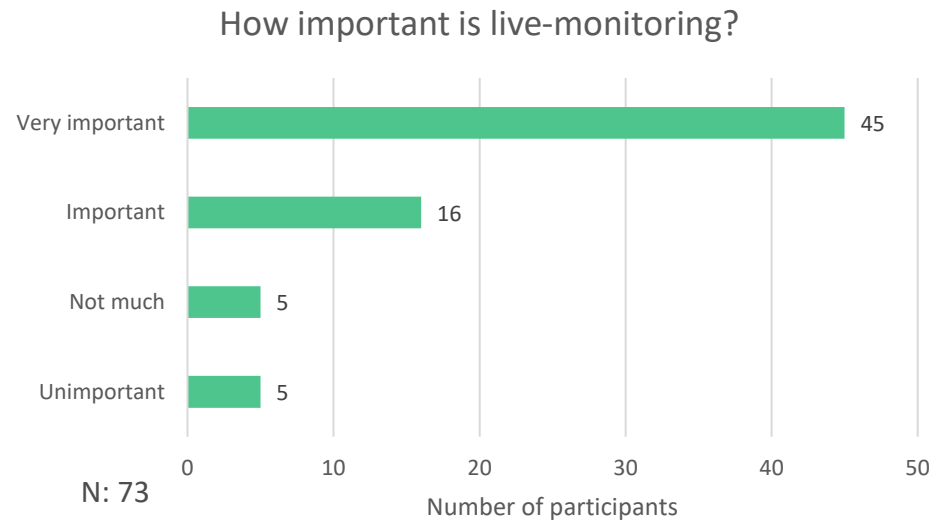
[2]

[3]

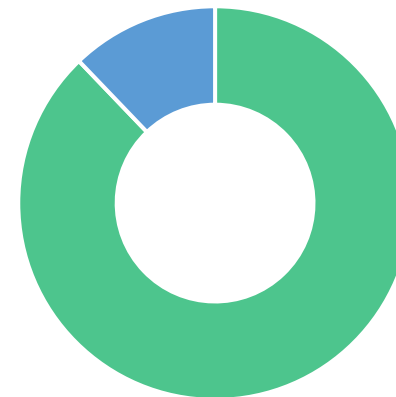
[4]

[5]

Questions: Experiences about monitoring II



Do you wish probes for monitor to optimize process control?



■ 88% Yes

■ 12% No

N: 74

[1]

[2]

[3]

[4]

[5]

Summary

As a first test, this survey was meant to get an idea about how many industries use sensors for live monitoring and what are the current challenges they encounter.

- Most responses are from the chemical and pharma industry with engineers mostly from Europe. [1]
- Over 51% have more than 5 years experience with PAT, where 88% use probes for live monitoring. [2]
- The most used probes are pH (69%) followed by oxygen (54%), conductivity (54%), and turbidity (46%), besides pressure, temperature, flow (67%) sensors. [3]
- Over 64% of the participants reported that probes are already used for in-line measurements, with fouling or scaling as the most encountered contamination type (51%). [4]
- Contamination influences most pH, pressure, temperature, flow as well as NIR and oxygen probes. [4]
- Also calibration is another factor that challenges the work with sensors, and presumably this is why over 88% of participants also use sampling to monitor processes, besides historically reasons. [5]
- However, since live monitoring is very important for 61% of participants, it will take time, effort as well as knowhow to migrate to real-time monitoring.

Want to know more?

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