



How three parts of your life sciences plant will need to react to new requirements

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Greenfield plants face a moving target. Current requirements will last months, not decades. How can you design a plant for processes (or even drugs) which don't exist yet?

It's not simple. But it is possible – with the right technology.

Three areas of your plant will need to adapt more than most. Here, we'll cover what could shift in each of these areas – now, or in the future. Then, we'll explain what that means for your automation and digitalization investments.



1 ACTIVE PHARMACEUTICAL INGREDIENT (API) AND BULK CHEMICAL PRODUCTION

The future is reconfigurable. Or at least, that's the future of API production.

Some plants will need to produce several APIs on the same line. Most will need to personalize medicines. And production volumes will vary, too.

Skid-mounted equipment makes all three challenges easier. As does continuous flow manufacturing, for parts of the process.

But to make rapid shifts in your production without paying the price on efficiency, you need more. You need modular digital systems. Otherwise, one change to your plant will mean a slow process to reconfigure the digital layer.

If you automate and digitalize different processes in self-contained 'modules', it's easier. These modules can cover everything from batch system management, to compliance, and beyond. You add and remove modules to cover new requirements. All the while, data gets shared smoothly between them.

2 QUALITY AND VALIDATION

We've mentioned that tomorrow's plants will blend different production methods. Each of these methods demands a different set of validation controls.

As drugs or formulations change, so will production methods. So, what will it take to future-proof your quality processes?

- **You need extensive real-time monitoring, but that's only the start.**

It's not just about adding sensors and adapting equipment. You also need to trace processes and analyze the root cause of quality issues. Then reconfigure dataflows quickly.

- **You'll also need quality prediction tools**

These allow you to compare the quality consequences of any change to production. This way, you'll make the best choices without lots of manual test-and-learn.

- **You need a digital way to manage the workforce**

When production or regulations change, so do manual processes. You need documents and instructions to update and deliver to the right person automatically. Smart workforce management systems need to integrate with quality monitoring, compliance and more.

3 FORMULATION AND FILL

Soon, you'll need to handle different formulations of the same drug within one plant. Plants will need to formulate and fill highly potent doses in small volumes.

How do experts predict this will change Life Sciences plants? ABB specialists have a few ideas.

Firstly, we'll see a trend towards more agile filling lines. That might mean a high number of smaller machines in the same floor space. It will certainly mean a very high degree of automation.

We'll see efforts to reduce manual intervention too – cutting contamination risks and making the process faster. Selfcleaning will allow facilities to move quickly from batch to batch. And digital twins will allow plants to spot and counteract small deviations automatically.

What links all these advances? Automation and digitalization. And again, we'll need to reconfigure and re-automate everything when we tweak formulae.

A LIFE SCIENCES PLANT THAT'S MADE TO REACT

It's no easy task, designing for changing requirements.

At ABB, we'll help you build a plant that's shaped for efficiency today – but can also react to new requirements tomorrow.

It's why our customers see such great results. To name a few examples: time to market is up to 40% faster with our Modular Automation solutions. Schedule completion is up to 25% faster with ABB as the Main Automation Coordination (MAC). We were the world's #1 DCS. And you can achieve up to 50% less downtime with ABB Ability™ Genix Industrial Analytics.

If you have any questions about your plant design, we'd love to hear them.

