



Three forces that will shape and reshape life science plants

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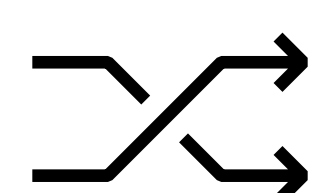
It's time to think beyond traditional facilities.

To date, most plants have produced a single drug for their whole lifetime. But medicine is now getting personal and time-to-market is getting tighter.

The answer? A new approach. One where plants might deliver several products from the same line. One where production can scale fast, and formulae can change. At the same time, we can't sacrifice the efficiency of large plants. In fact, pressure mounts to cut down on the process failures which hit profitability.

So, what's the solution?

Let's dig into three ways market shifts, and how plant managers can get new facilities ready to react.



CONTINUOUS FLOW AND HYBRID PLANTS

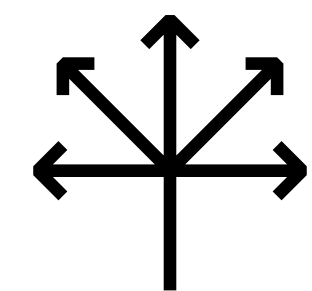
Whatever the future of plant design holds, continuous flow manufacturing will play a part. This innovative process increases yields, reduces waste and cuts energy use. Plus, it works within small plant footprints.

Most plants will need to use a hybrid of continuous and batch methods. After all, continuous flow works for some processes (like making Active Pharmaceutical Ingredients.) Others depend on batch manufacturing. For example, if your plant needs to produce different drugs – or different formulations.

So, how can you manage quality in a hybrid plant, and switch up processes whenever you want? The answer is a fully automated, digitalized facility. Only then can you measure and assure quality in different ways – and adapt quickly.

The best way to adapt quickly is to orchestrate processes with pre-automated building-blocks. Each part of the production process interlocks seamlessly and shares data. And when parts of the production line need to change, you can add or remove pre-automated modules quickly.

This way, you can manage production using either batch management systems or sequential function charts. Plus, you can switch between production methods incredibly quickly.



SMALL BATCHES AND NEW WAYS TO SCALE

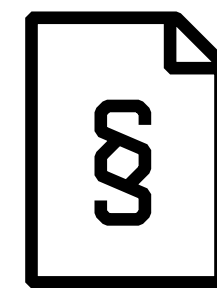
In the past, scaling was about size. You increase the size of your machinery, and your batch size. This is called 'scale-up.' But it means you need to make big changes to recipes, reworking for a bigger batch volume.

In the future, 'numbering-up' will play a bigger role in the process. Here, managers increase the number of production assets while limiting the size of batches. Smaller batches reduce recipe alteration after R&D. They also suit personalized products.

But to make this approach work, there are two essentials. Firstly, you need to find the right balance between numbering up and scaling up, to optimize efficiency for any given product. And secondly, you need to fine-tune multiple parts of production independently for smaller batches.

Again, automation and digital technologies will make this possible. Firstly, the right data improves the decisions we take about scaling and batch size. Deeper insights into the production process can answer the 'what ifs'. Secondly, digitalization can help optimize cost and quality for different batches faster.

To achieve both goals, every part of the plant needs to interconnect. Plug-and-produce automation should share data with enterprise resource planning and operation management.



NEW REGULATIONS ON THE HORIZON

The most recent regulations demand more production data, better analyzed. But what lies ahead?

Regulators race to keep pace with industry changes. Any given plant will tackle many new compliance requirements in its lifetime.

So, your systems will need to gather more data, analyze it faster, and mitigate potential regulatory issues before product is lost. If regulations change, they will need to do all of this for a whole new set of requirements. You might face new monitoring demands, new quality metrics, or track-and-trace changes.

Of course, monitoring systems will need to link up with regulatory data. This way, you can tackle compliance changes, at least in part, automatically.

But it's not just the production technology that will need to adapt. Staff members also need the right information at the right time – and it needs to update with every new regulation. Connected digital devices, linked to the right data and the right control systems, cut compliance risks.

A LIFE SCIENCES PLANT THAT'S MADE TO REACT

Tomorrow's plant will be automated, digitally monitored, and data driven. But it also needs to be flexible.

At ABB, we'll help you build a plant that's shaped for efficiency today – but can also react to new requirements tomorrow. A plant you can rearrange, to deliver a cure you haven't even discovered. That can make operations less volatile and catalyze new products into market.

We have solutions for the whole plant. From batch analysis to quality control, and from compliance to manual process management.

Do you want to discuss ideas for your new facility?

