

The perfect formula

Adapting chemical processing with autonomous systems



Chemical processing is a balance of competing variables and goals. Traditionally, plant operators calibrate chemical reactors manually over the course of months to adjust for changing production needs—testing and tweaking multiple settings to achieve their optimization goal for that period.

As a result, plant performance is significantly delayed while operators calibrate settings to changeover reactors and equipment to optimally produce new products. **Autonomous systems offer chemical processing facilities a powerful AI equipped to assist, advise, or execute any number of tasks.**

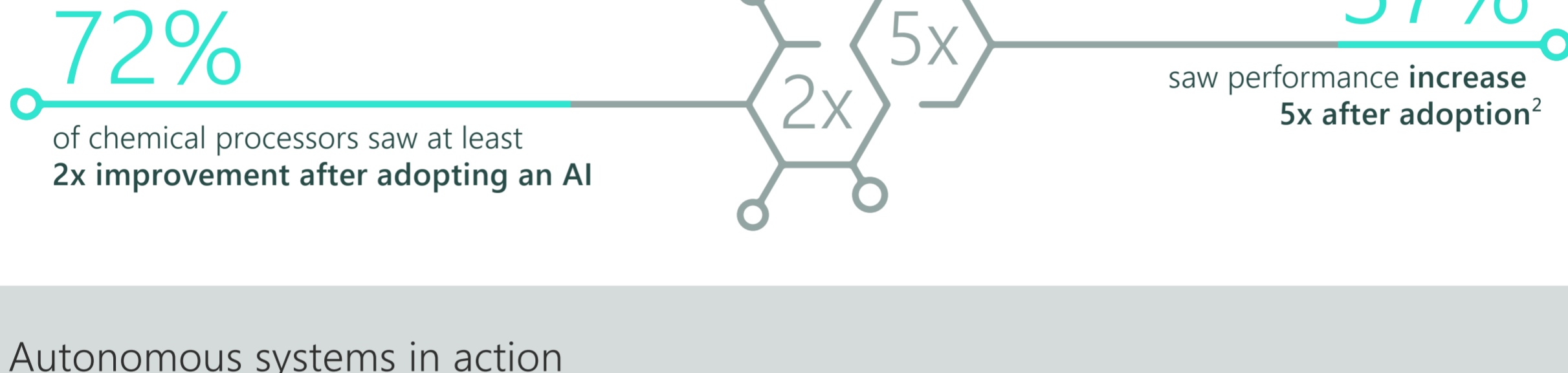
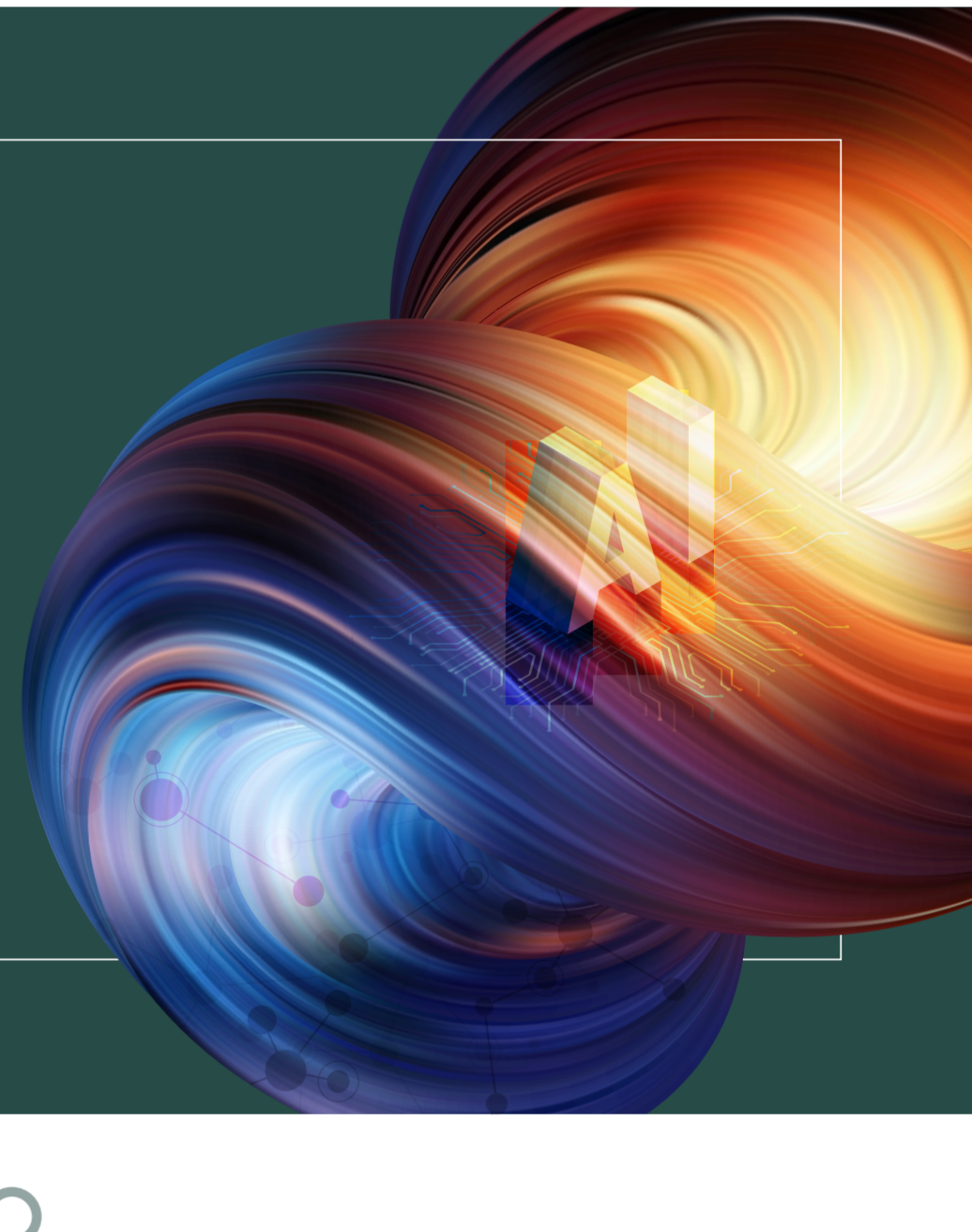
By testing reactor optimizations inside a simulated environment, an autonomous system can try millions of options in a single day so it can easily make decisions in the real world—drastically reducing calibration time and offering engineers, chemists, and operations managers a rapid and accurate solution for optimizing reactor performance.

This approach can:

- Decrease** reactor calibration time
- Reduce** out-of-spec production
- Improve** training times
- Drive** facility performance

“Experience and skills of a plant’s operators usually determine profit margin and safety level of a plant Within a few weeks of training, [our autonomous system] could deliver a set of operational sequences equivalent to highly experienced operator’s know-how.”

Pitak Jongsuwat, Physics Model Technology Engineer for Chemicals Business, SCG¹

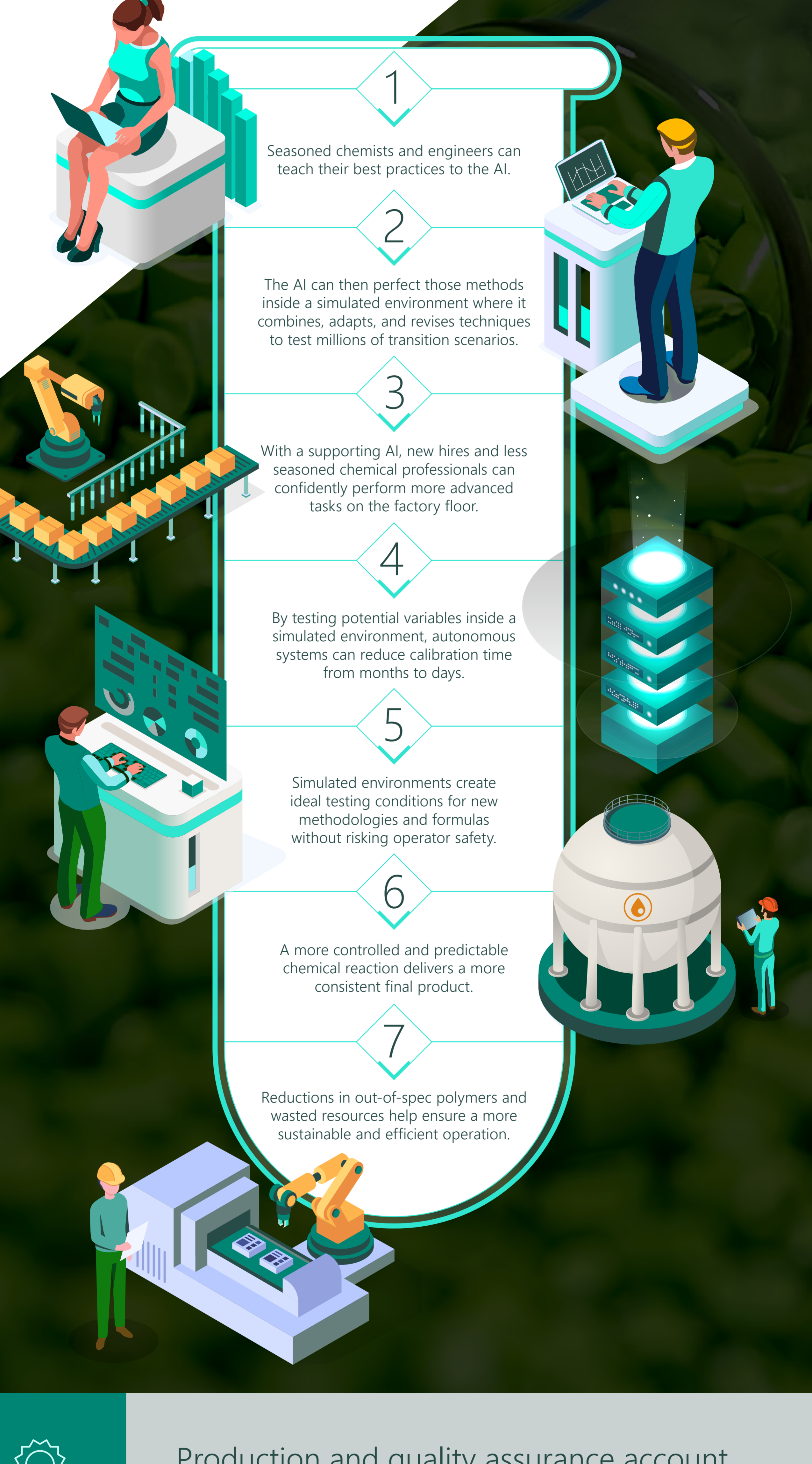


Autonomous systems in action

With a regular rotation of different oil-based products processing through its reactors, Fabrikam, Inc. must regularly adapt its reactors to create the correct synthetic polymers. Every product within Fabrikam’s wheelhouse requires a unique balance of chemicals to produce—a balance that, if not measured correctly, can cost the manufacturer millions in out-of-spec product and potential safety hazards.

With an autonomous system in place, Fabrikam, Inc. can quickly pivot its production needs to better meet shifts in demand while reducing unwanted chemical reactions.

Manufacturers that adopt autonomous systems can increase production by 20%.³



Production and quality assurance account for 47% of modern AI implementations.⁴

With improved autonomy measures in place, chemical manufacturers can transform their facilities to exceed production and safety goals.

To learn more about getting started, contact a Microsoft autonomous systems expert → or download our e-book: **Get started with autonomous systems: A manufacturer’s use case selection guide.**

[Get the e-book →](#)

