SARTORIUS

BIA
UK BioIndustry Association

Leveraging Data Analytics to Achieve Sustainability Goals

Summary of opportunity being addressed

- Biopharma operations face increasing pressure to reduce emissions, improve energy efficiency, and limit waste
- Many facilities already collect extensive process data but have yet to fully leverage it for sustainability impact
- This approach demonstrates how multivariate data analytics can be applied to support sustainability goals without major capital investment

Introduction to solution

- SIMCA® is a multivariate data analytics tool widely adopted in the biopharma industry for process optimization and quality control
- The same models can be extended to identify opportunities for reducing emissions, electricity demand, and production waste
- This approach builds on existing infrastructure, minimizing barriers to implementation

Impact of solution

- Scope 1 (Direct Emissions): Over $1.4M in annual fuel savings at Michigan State University – resulting in a reduction of more than 10,000 metric tons of CO_2 annually
- Scope 2 (Purchased Energy): 27% reduction in peak electricity use during high-demand periods -> $50,000 energy credit from utility at one plant; validated for broader adoption
- Scope 3 (Waste Reduction): Improved predictive maintenance and process efficiency & Avoided waste batches and minimized water

Considerations during implementation

- The implementation follows a three-phase approach (data gathering, model development, reporting) completed within ~10 days
- Built on existing process infrastructure (e.g. data historians), making the solution scalable and accessible