



Smart SPC helps improve quality, finances, and client relationships

Client background

A leading aerospace company faced significant challenges achieving throughput targets and controlling cost of quality for precision machining and manufacturing processes. Underperforming machining processes led to parts falling outside of specification tolerances, thus failing inspections and requiring rework. The client was losing more than \$20 million annually in scrap material and had a growing backlog after suffering several escape events, resulting in significant financial losses and strained customer relationships.

Solution

Deloitte partnered with the client to develop and implement a smart statistical process control (SPC) solution that collected data from different machine types, transformed the data into an extensible data model, and utilized advanced statistical models to monitor and evaluate the machining process. Smart SPC's cutting-edge technology could identify specific time intervals when the process and characteristics began to deviate and suggested programming improvements to reduce scrap and quality escape events. By creating the foundation for monitoring machine utilization consistently across lines with different production types, the client could scale across multiple sites.

- **People:** Equipped the workforce with real-time data and actionable insights from Smart SPC to empower them to make informed decisions, increase utilization, and troubleshoot quality issues. Supported adoption and scaling by training more than 600 workers and providing the client with critical tools and processes to train hundreds more.
- **Process:** Networked machines to constantly monitor and send real-time data to a cloud environment, enabling advanced statistical models to evaluate the machining process and identify necessary improvements.
- **Technology:** Leveraged SPC and predictive models and technology including machine sensors, cloud computing, and the edge, to identify and rectify deviations in the manufacturing process in real time.



Impact

20,000

labor hours saved annually

\$2.25M

scrap avoidance saved
per site annually

90%

reduction in annual root
cause analysis