THE BOEING COMPANY – BDS
BDS 777X PAINT PROCESS OPTIMIZATION

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Boeing is a $90B aerospace company and is among the nation's top exporters, providing aerospace products and support services to consumers in 150 countries. The organization is comprised of two business units: Boeing Commercial Airplanes (BCA) and Boeing Defense, Space, and Security (BDS). Together, these business units design and manufacture worldwide commercial and military aircraft, satellites, missile defense systems, and space systems.

Boeing's most recent innovation, the 777X jetliner, is the largest and most efficient twin-engine jet on the market. To succeed in the launch of the 777X, Boeing embarked on the greatest cross-enterprise design-and-build project in the company's history. This BDS and BCA partnership enabled Boeing to leverage its renowned aviation resources, capabilities, and expertise to manufacture previously outsourced composite wing parts. To succeed in this endeavor, BDS began expanding its St. Louis footprint. This expansion incorporated a new 40,000 square-foot paint facility to abrade and prime composite wing parts prior to receiving final top-coat paint. Forecasting large paint shop throughput requirements, BDS recognized an opportunity to develop a business case for implementing robotics into the abrasion and priming process.

To optimize the facility through automation, the Tauber team conducted in-depth business-case analysis. First, the team benchmarked paint facilities that conducted manual and automated painting. Next, the team analyzed composite part throughput and process requirements, researched robotic system equipment costs, and calculated potential savings from reducing safety incidents, standard hour completion rates, and material use. Analysis results led the team to recommend procuring $7.4M in robotic sanding and painting equipment. Additionally, the team provided layout design solutions to increase flexibility and reduce assets within the paint facility, and identified further partnership and research opportunities to mitigate risk throughout Boeing's automation implementation.

The team projected that introducing sanding and painting robots would save Boeing $22.4M over the first five years of implementation. Moreover, robotics would reduce ergonomic incidents by 74% and rework issues by 67%. Ultimately, these significant effects provided a compelling business case to support the team's recommendation to implement automation in Boeing's 777X paint facility.