ROBOT PROTECTIVE COVERS FOR EXTREME AEROSPACE FINISHING ENVIRONMENTS

Situation:
A leading Midwest aerospace manufacturer relies on highly specialized wheelabrator equipment to finish aircraft landing components with precision. However, during operation, high-velocity abrasive media and airborne metal particulates struck the robotic arm – eroding coatings, compromising seals and cabling, and increasing the risk of contamination. Over time, this exposure accelerated wear, drove up cleaning and maintenance needs, and threatened the consistency required to maintain aerospace-grade performance.

Challenge:
The facility needed a custom-engineered solution that could shield the robot from continuous abrasive impact without restricting movement, cycle performance, or reach. The protective solution had to:

- Withstand high-velocity particulate impact
- Maintain durability in a harsh production environment
- Protect critical joints, cabling, and components to prevent failure
- Support continuous uptime – essential to aerospace quality and timelines

This required not just a barrier, but robot jacket designed specifically for harsh environments.

Solution:
Roboworld engineered a fully customized Robosuit® protective cover for wheelabrator operations. The solution combined a high-abrasion-resistant Hypalon containment curtain with a close-tolerance robot jacket designed to protect the robot from constant particulate exposure.

The curtain system created a barrier between the blast media and the robot work zone, and the Robosuit protected the joints, cables, and sensitive mechanical interfaces. Together, these harsh environment covers formed long-lasting protection that prevented contamination, reduced high-impact wear, and kept the robot running.

Results:
Following installation, the manufacturer reported:

- Significantly reduced wear on the robotic arms and components
- Extended service intervals and reduced maintenance issues
- More consistent process reliability in a harsh environment

The customized Robosuits helped the facility safeguard robot lifespan, maintain precise motion control and integrity, and uphold strict aerospace quality standards — all while minimizing costly downtime and premature component failures.