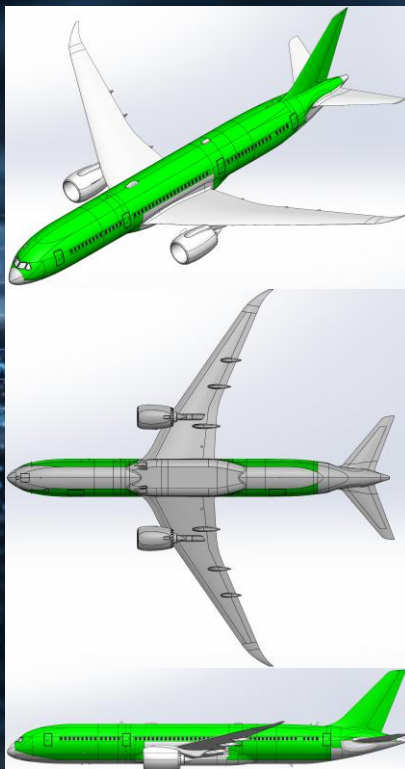# SMART AUTOMATION EMMA SYSTEMS

DRAMATICALLY FASTER, MEASURABLY BETTER SANDING FOR COMMERCIAL AIRCRAFT

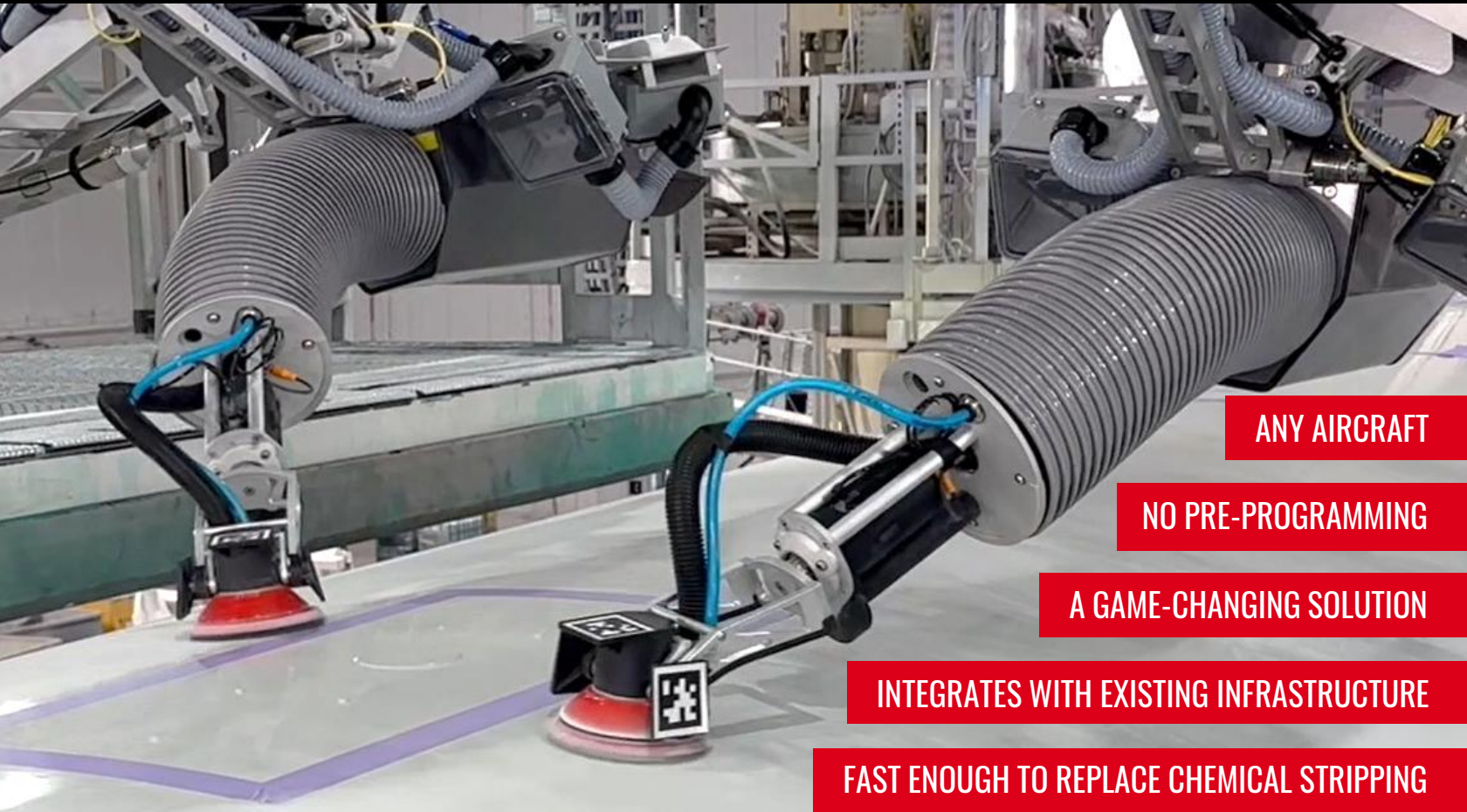## SA EMMA

FLOOR MOUNTED RAIL (FMR) SYSTEMS

TEMPLEALLEN.COM

NEXT-GEN SURFACE PREPARATION
A **NEW STANDARD** FOR WIDEBODY & NARROW BODY AIRCRAFT

ANY AIRCRAFT

NO PRE-PROGRAMMING

A GAME-CHANGING SOLUTION

INTEGRATES WITH EXISTING INFRASTRUCTURE

FAST ENOUGH TO REPLACE CHEMICAL STRIPPING

SPEED

ACCELERATES THE PRODUCTION SCHEDULE
Smart Automation EMMA systems have reduced the scheduled calendar time for a wide-body de-paint by 63%, and some planes are done sanding even faster

PRECISION

TOTAL CONTROL OF MATERIAL REMOVED
Removes as much paint as possible while eliminating rework - with a degree of precision and consistency that is impossible to achieve with manual techniques. Safely creates a smooth, well-faired surface at unprecedented speeds

SAFETY

SAFETY FIRST
EMMA works safely alongside artisans wherever she is in the hangar. Able to see and react to the plane and environment in real time, EMMA avoids obstacles. Improved dust collection also reduces toxic dust released into the environment
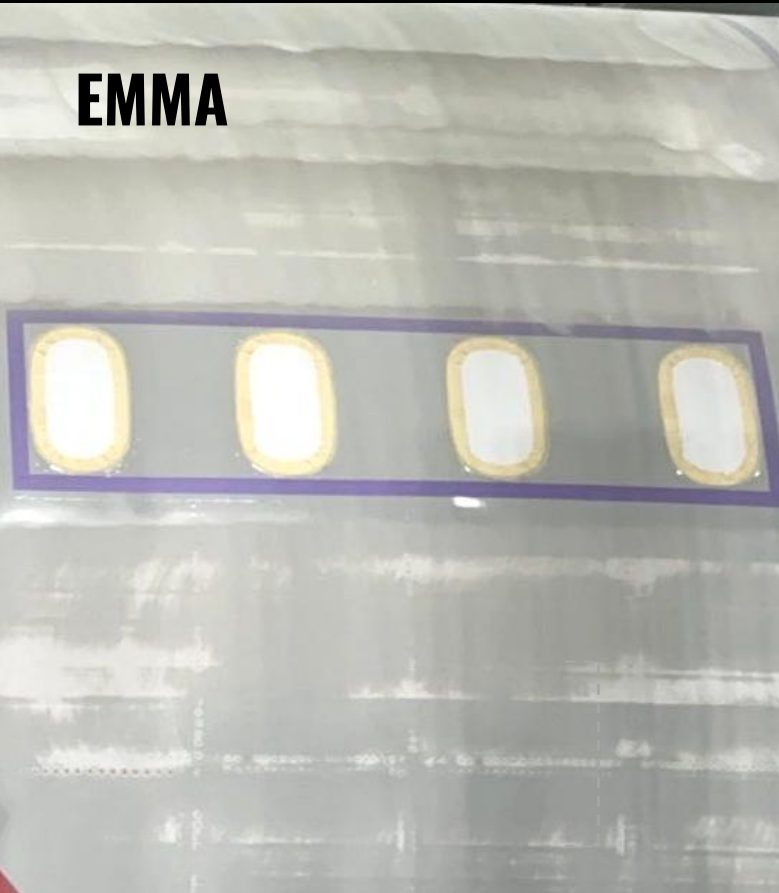
QUALITY

DELIVERS CONSISTENT RESULTS
Higher quality and consistent results all day, every day. Meaningfully improves DOI (distinctiveness of image) – to the point where you can read a reflection off the newly painted fuselage

TEMPLE ALLEN
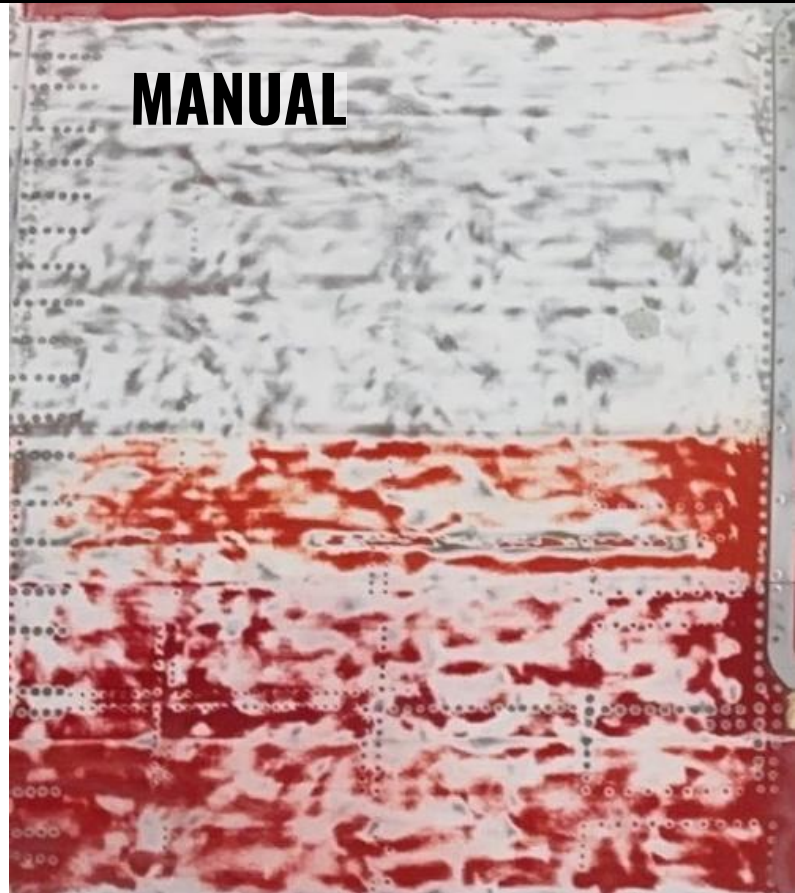## INDUSTRIES

MEASUREABLY HIGHER QUALITY
BETTER SURFACE PREP YIELDS BETTER FINAL FINISH

EMMA

MANUAL
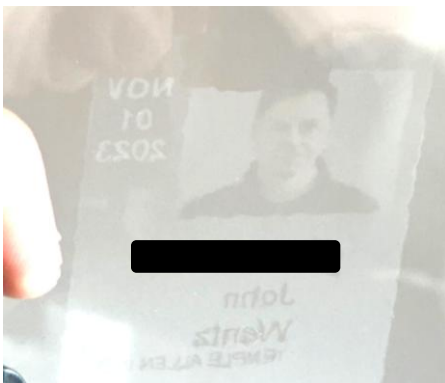
Note: these photos are from adjacent areas of the same aircraft

EMMA SUBSTANTIALLY REDUCES INSTANCES OF NON-CONFORMANCE ASSOCIATED WITH BOTH FINISH DAMAGE AND AIRPLANE DAMAGE

VASTLY IMPROVED DOI
(DISTINCTIVENESS OF IMAGE)

EMMA PREVENTS:
DIVOTING – CUPPING – DISHING – SCALLOPING

EMMA FACILITATES PAINT SO SMOOTH YOU CAN READ A REFLECTION

EMMA REMOVES EXACTLY THE LAYERS YOU WANT

WHILE USING UP TO 80% LESS SANDPAPER

DECORATIVE COLORS (BMS10-125)
INITIAL TOPCOAT (BMS10-126)
INTERMEDIATE COATING (BMS10-120)
EXTERIOR PRIMER (BMS10-118)
09BR007 SPRAY SURFACER
SURFACING FILM (BMS8-341)
IWWF BRONZE WIRE
GRAPHITE SKIN (BMS8-276)

FROM THE BELLY TO THE CROWN
SMART AUTOMATION FMR EMMA SYSTEMS

FMR SYSTEMS SAND THE ENTIRE FUSELAGE & MORE

AIRCRAFT COVERAGE

FMR EMMA ADDRESSES
- Widebody fuselage from the bottom of the cargo door up to the crown and on the vertical fin
- Sands between windows and on doors
- Sands and avoids antennas and fins
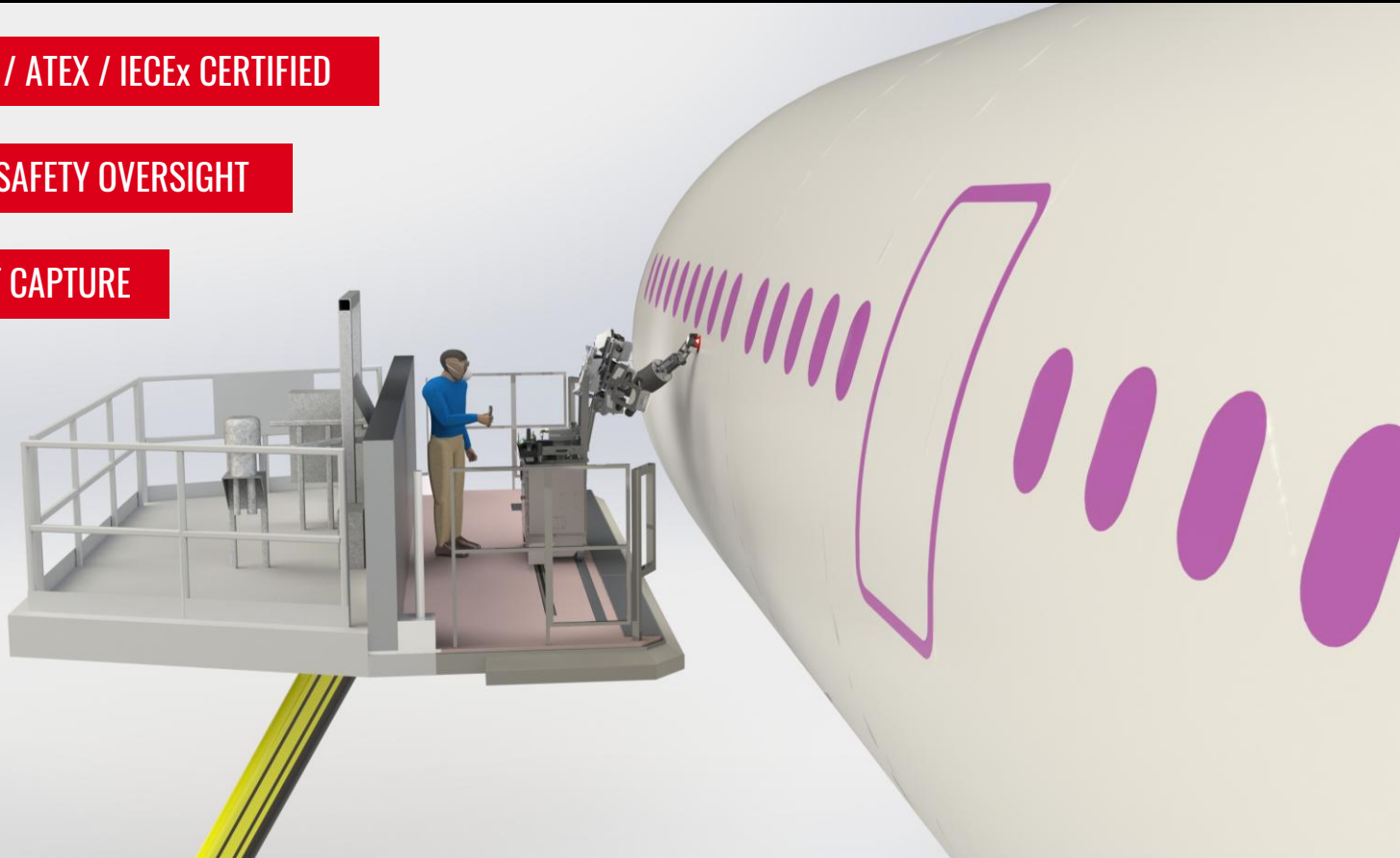- Sands the complex curves of the nose and tail sections

SMART AUTOMATION EMMA SYSTEMS
SAFETY - FOR YOUR PEOPLE, YOUR PLANES, AND OUR PLANET

CAN BE C1D1 / ATEX / IECEx CERTIFIED

ALWAYS-ON SAFETY OVERSIGHT

BETTER DUST CAPTURE

ERGONOMIC

REMOVES ROOT CAUSE OF INJURIES / FATIGUE
All the ergonomic issues with manual sanding - high grip forces, vibration exposure, repetitive stress, awkward postures, and fatigue – go away when the artisan no longer wields the sander – EMMA does

CLEAN TECH

ENVIRONMENTALLY FRIENDLY
Our Smart Automation systems generate no wastewater, are cleaner than chemical stripping methods, and sand fast enough to replace chemical stripping methods. By reducing toxic emissions and hazardous waste, we help organizations implement sustainable production processes and achieve their environmental reporting targets

AOSO

ALWAYS ON SAFETY OVERSIGHT
EMMA sees her immediate environment and responds to the presence of personnel and the plane in real time – creating a completely safe opportunity for artisans to work right alongside

C1D1 CERTIFIED

SAFE IN HAZARDOUS ENVIRONMENTS
Smart Automation EMMA Systems are available configured and certified for safe operation in all types of hazardous aerospace environments – C1D1, ATEX, IECEx, etc. Temple Allen equipment has been safely operating in such environments for over 20 years

TEMPLE ALLEN
INDUSTRIES

A DAY IN THE LIFE
A MORE PRODUCTIVE DAY FOR ARTISANS, SUPERVISORS, & MANAGEMENT

COORDINATED SANDING STRATEGY LETS EVERYONE FINISH AT THE SAME TIME
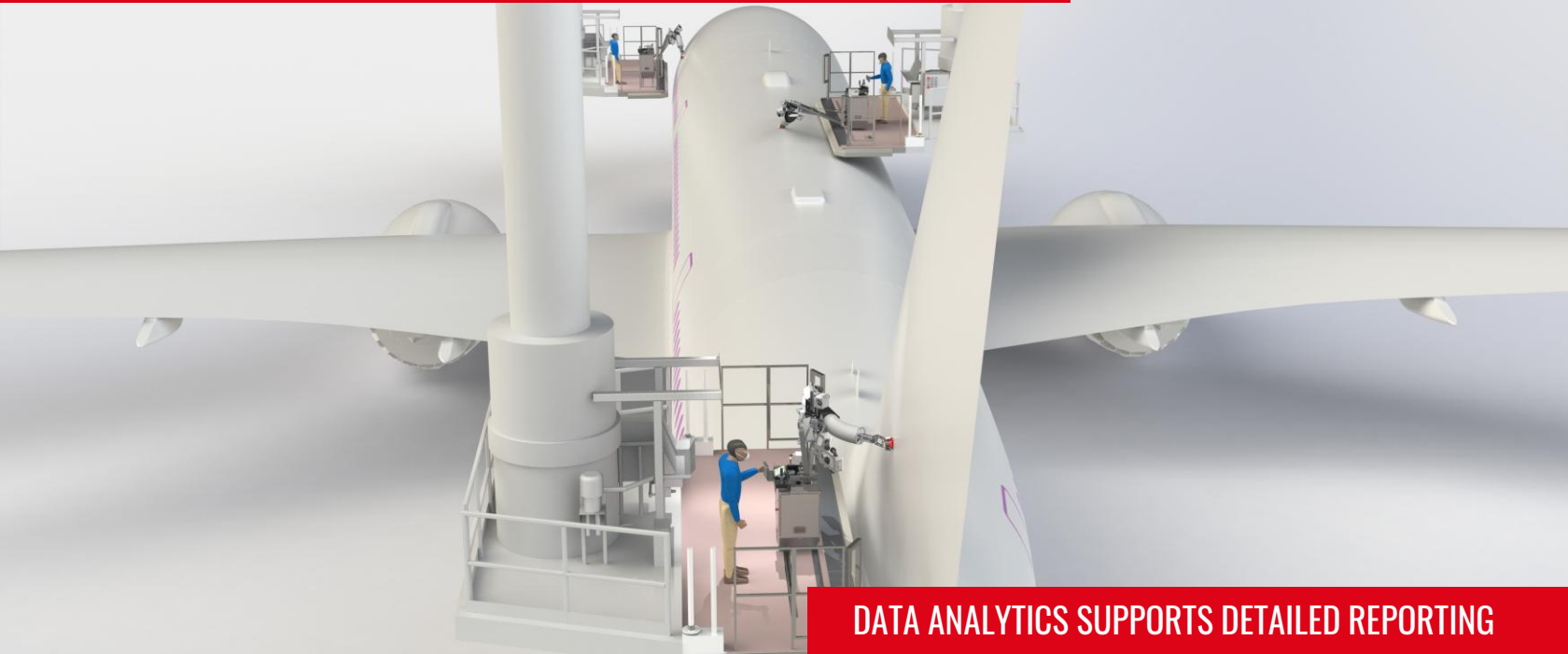
DATA ANALYTICS SUPPORTS DETAILED REPORTING

ARTISAN MORALE

PAIN & FATIGUE-FREE ARTISANS PERFORM BETTER
- Artisans monitor EMMA progress and guide performance of system via tablet
- Artisans able to perform remaining hand sanding with more energy
- Experienced artisans stay healthy and able to work longer, postponing retirement
- Younger workers easier to recruit, as the job is no longer painful and dangerous

MANAGEMENT INSIGHTS

DATA ANALYTICS DOCUMENTS SANDING PROCESS
- Detailed tracking reports include abrasive consumption, sanding modes used, tool on time, and various crew performance metrics
- Compatible with facility digital documentation initiatives
- Above-the-shop-floor benefits include activity tracking, quality and production metric trending, and customer sanding status and quality report generation

SERVICES

AROUND THE CLOCK SUPPORT
Temple Allen offers support services tailored for artisans, maintenance, and management personnel

We also offer above-the-shop-floor support - an Optimized Sanding Strategy that can reduce the burden on planning and operations staff

UTILITIES

UTILITY REQUIREMENTS
Smart Automation EMMA needs just shop air & 110/120 or 220/240-volt AC power to operate, while an ethernet cable & Wi-Fi enable advanced features

HANGAR OPERATION ADVANTAGES
FASTER, SAFER, PREDICTABLE, AI, DIGITAL

ERGONOMIC & HEALTH

ELIMINATES SANDING INJURIES
- Artisan no longer holds the sander
- No exposure to vibration
- No poor postures, high grip forces, MSD issues, or fatigue
- EMMA control via tablet
- Artisans stay healthy, stay on job longer
- Easier to recruit new workers

SCHEDULE CONTROL

KNOW HOW LONG SANDING WILL TAKE
Sanding performance is so consistent that EMMA coverage areas can be adjusted so that all EMMA systems, and Artisans, finish at the same time

It is also possible, in real time, to know how long it will take a crew to take off additional paint weight so customer can increase cargo or save on fuel costs
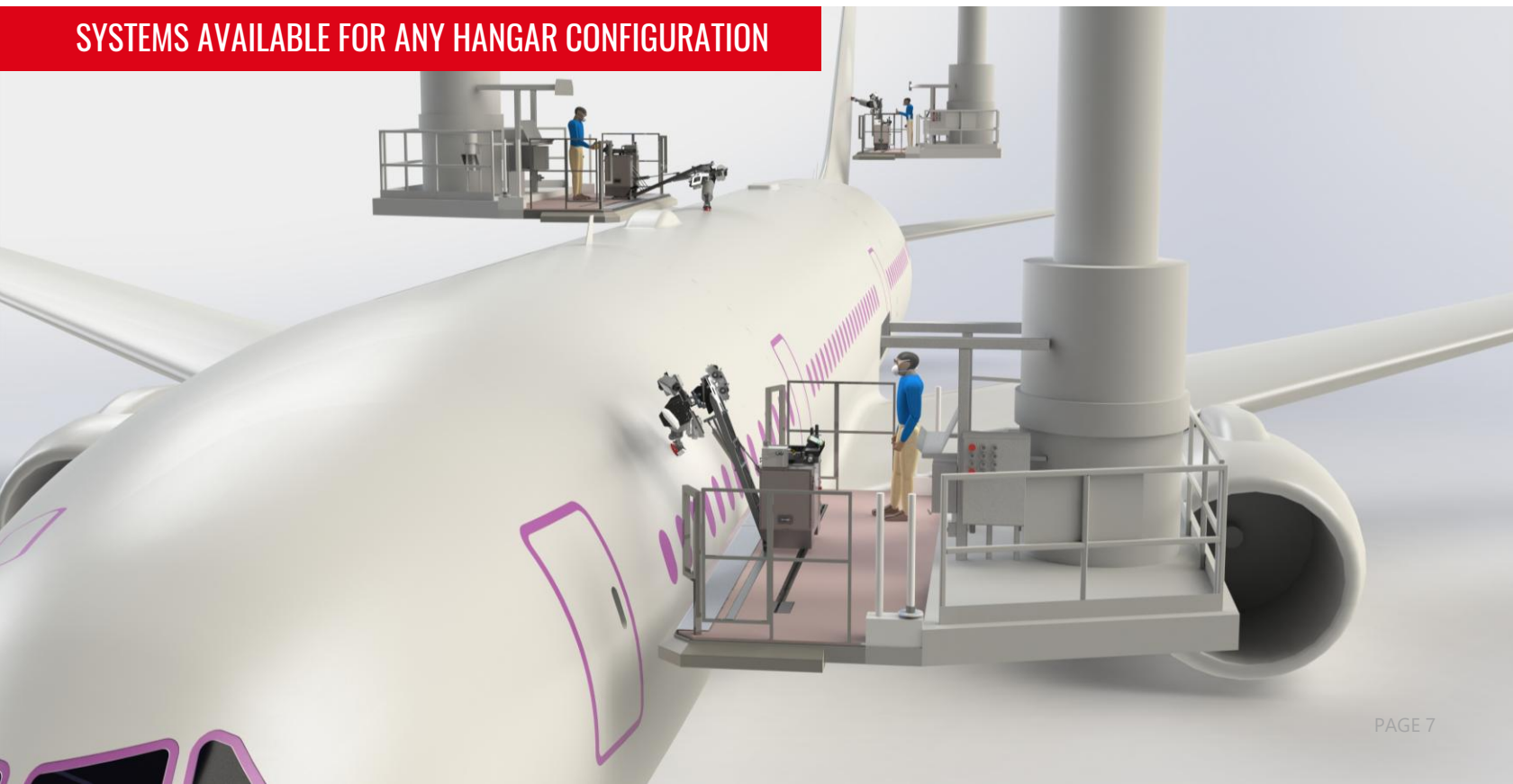
FLEXIBLE DEPLOYMENTS

FASTER BY DESIGN
- No model-based programming required
- No pre-sand scanning required
- EMMA maintains alignment to surface, and can keep sanding while platform moves
- Abrasives last longer, reducing changes
- EMMA eliminates rework and the need to correct inconsistencies in hand sanding
- Without fatigue issues, Artisans perform any remaining hand sanding more quickly

DIGITAL FUTURE READY

GENERATES DIGITAL TWIN DATA
Smart Automation EMMA Systems can touch nearly 90% of the fuselage surface – positioned perfectly to generate comprehensive surface condition information to provide useful analytics on paint removed, consumables, tool on time, crew performance, or to supplement or update an aircraft's digital twin data set

SYSTEMS AVAILABLE FOR ANY HANGAR CONFIGURATION