

# SMART AUTOMATION EMMA SYSTEMS

DRAMATICALLY FASTER, MEASURABLY BETTER SANDING FOR COMMERCIAL AIRCRAFT

**SA EMMA SYSTEMS FOR  
SMART DOLLIES & SCISSOR LIFTS**



[TEMPLEALLEN.COM](http://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

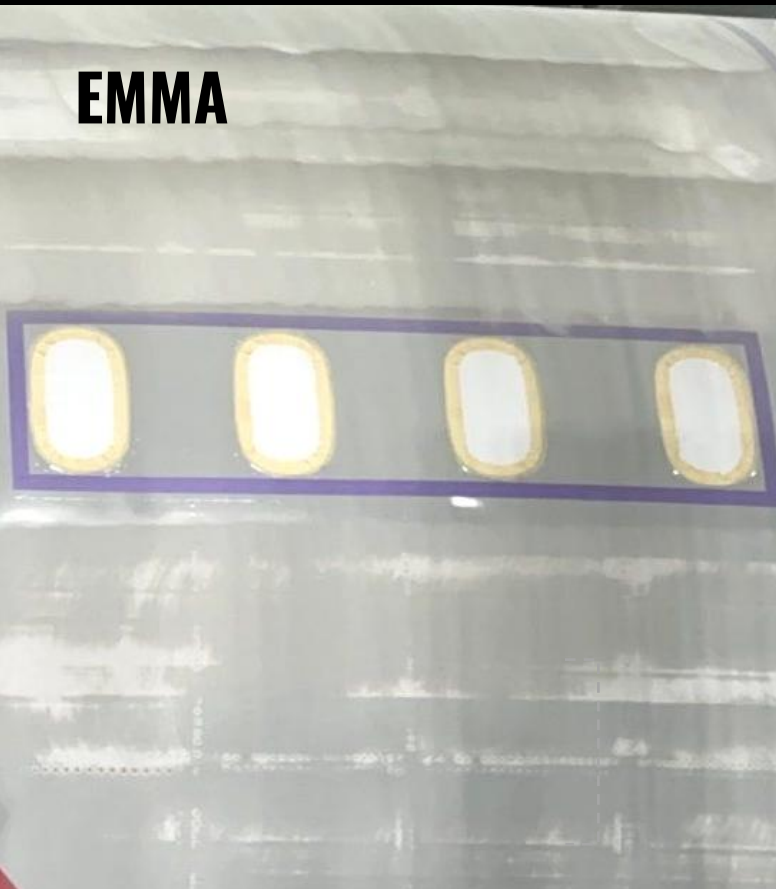
### DELIVERS CONSISTENT RESULTS

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

# MEASUREABLY HIGHER QUALITY

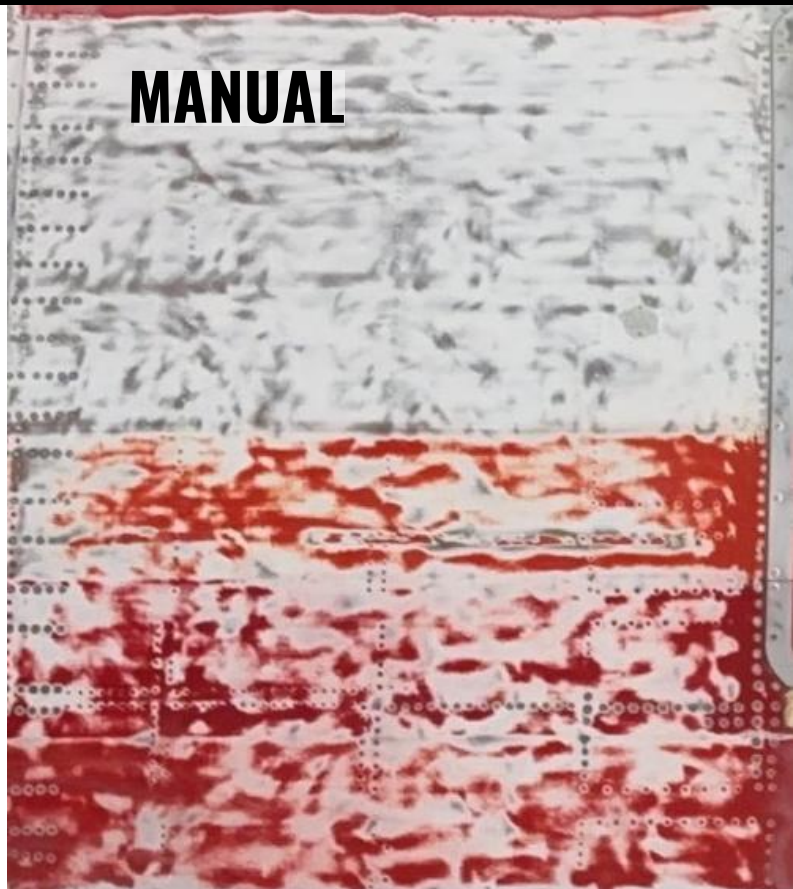
## BETTER SURFACE PREP YIELDS BETTER FINAL FINISH

**EMMA**



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

**MANUAL**



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

**VASTLY IMPROVED DOI  
(DISTINCTIVENESS OF IMAGE)**



**EMMA FACILITATES PAINT  
SO SMOOTH YOU CAN  
READ A REFLECTION**

**EMMA PREVENTS:**

**DIVOTING – CUPPING – DISHING – SCALLOPING**

**EMMA REMOVES EXACTLY  
THE LAYERS YOU WANT**

**WHILE USING UP TO 80%  
LESS SANDPAPER**



# FROM TOP OF WINDOW BELT DOWN

SMART DOLLY & SCISSOR LIFT SMART AUTOMATION EMMA SYSTEMS



**EMMA EASILY OPERATES FROM SMART DOLLY OR 26' SCISSOR LIFT**

**AIRCRAFT COVERAGE**

## SMART DOLLY AND SCISSOR LIFT EMMAS ADDRESS

- On Smart Dolly: underbelly of fuselage and wingbox up to cargo doors
- On scissor lift: fuselage sides from cargo door up to above window belt
- Sands between windows and on doors
- Sands the complex curves of the nose and tail sections



**DRIVES SMOOTHLY ON CONCRETE OR GRATED FLOOR**



# UNDERSIDE OF WINGS

SMART DOLLY & SCISSOR LIFT SMART AUTOMATION EMMA SYSTEMS

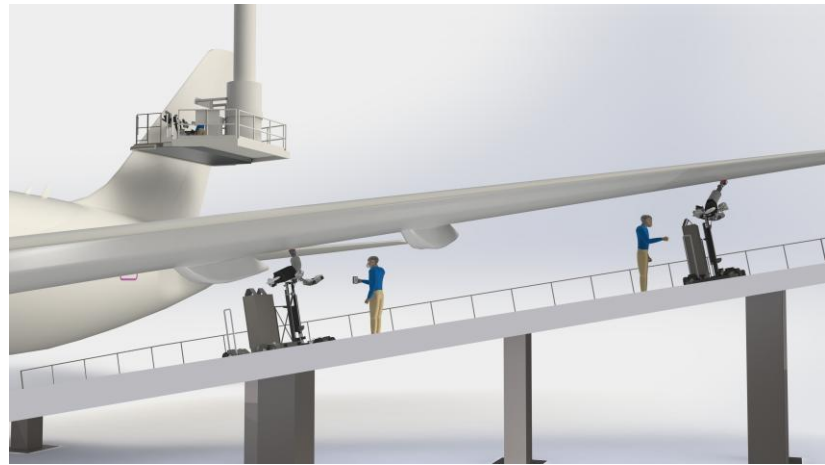


ADAPTS THE SANDING TO HANDLE MOVEMENT AND DEFLECTION OF THE SURFACE IN REAL TIME

AIRCRAFT COVERAGE

## SMART DOLLY AND SCISSOR LIFT EMMAS ADDRESS

- On Smart Dolly: underside of wings in hangars with wing stands, and portions of the engines
- On scissor lift: underside of wings and stabilizers and portions of the engines
- Sands inner-spar areas of wings and stabilizers as well as control surfaces of leading and trailing edges
- Sands sides and bottom of canoes along the underwing



DRIVES SMOOTHLY ON CONCRETE OR GRATED FLOOR



# 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 EMMAS need 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

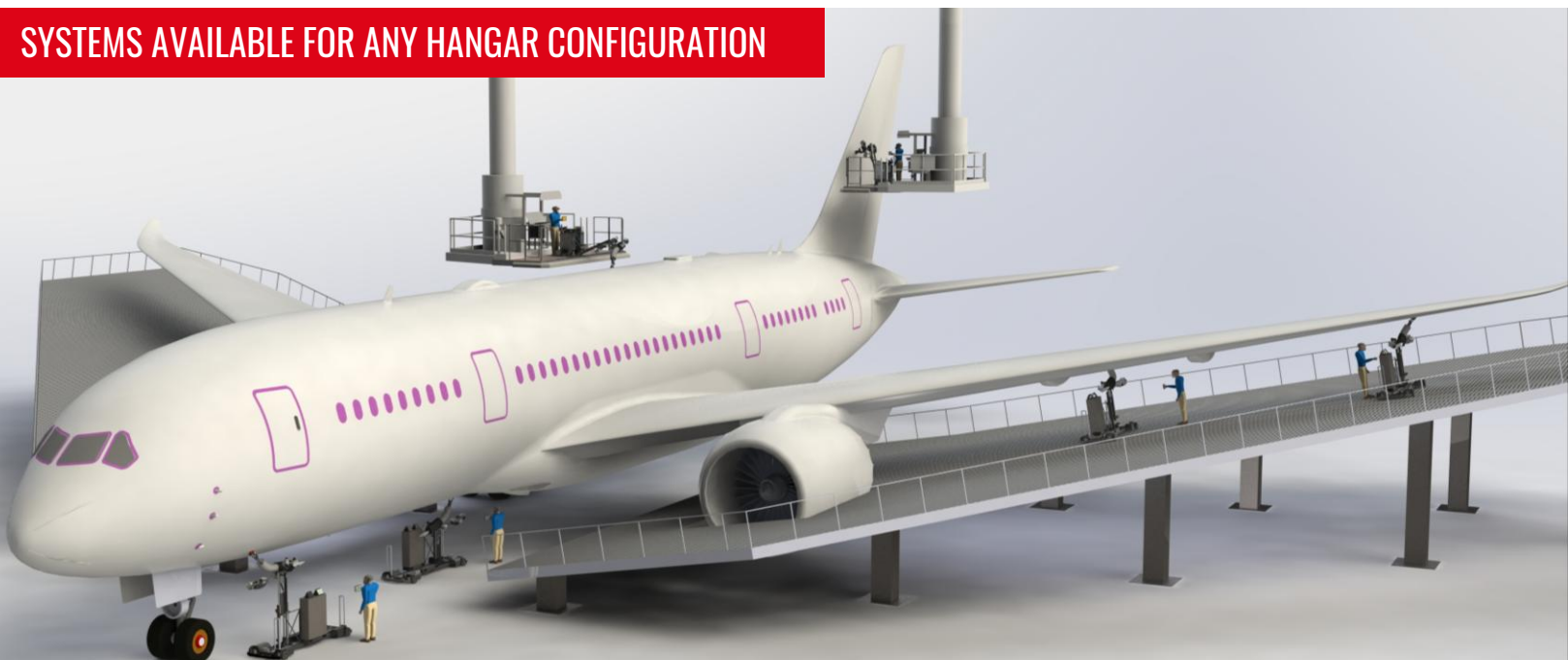
- No model-based programming required
- No pre-sand scanning required
- EMMA maintains alignment to surface, and can keep sanding while platform moves
- Abrasives last longer, reducing changes
- EMMA eliminates rework and the need to correct inconsistencies in hand sanding
- Without fatigue issues, Artisans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





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