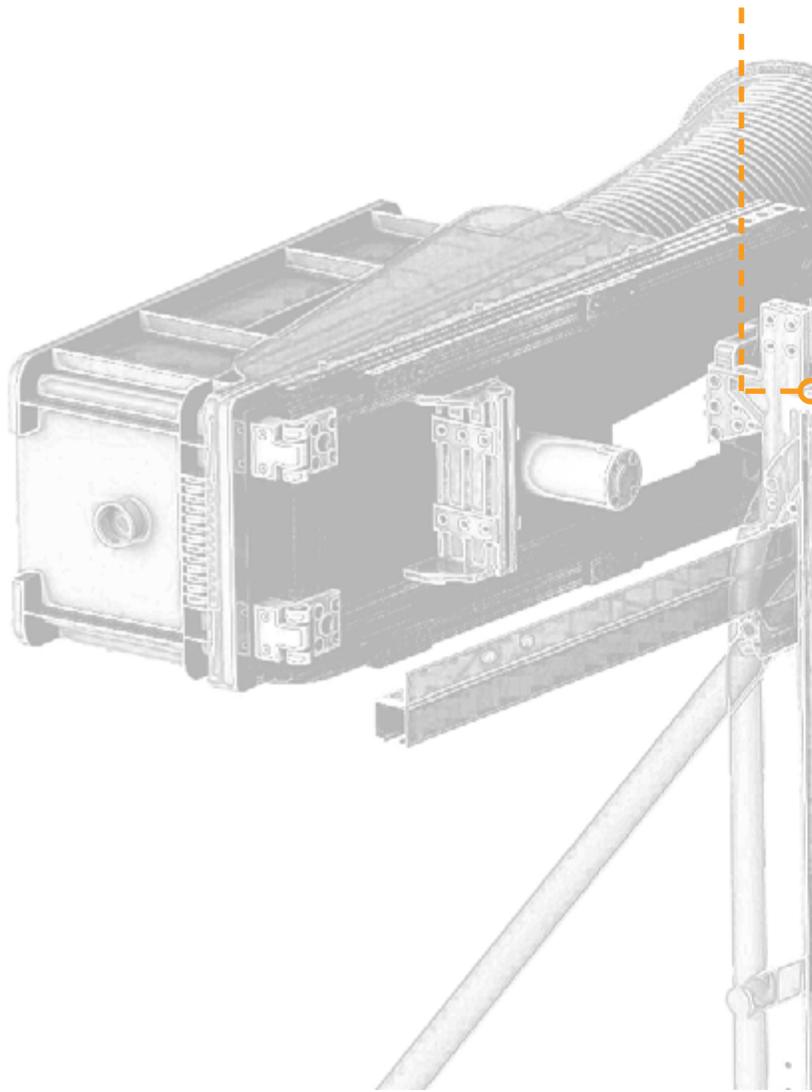


meet EMMA

[easily
manipulated
mechanical
arm]

Rail Deployed Systems



EMMA (Easily Manipulated Mechanical Arm) from Temple Allen Industries is a 100% pneumatic arm that can deliver a variety of surface preparation tools while effectively shielding artisans from the health and safety problems associated with manual sanding. All EMMA systems include the core technology- the EMMA module- combined with a deployment structure designed to best position the artisan and the End-Effector for a given application.

The EMMA Platform Systems are typically mounted on scissor lifts, boom lifts, and stacker platforms to access the sides, tail, and underwings of commercial and military aircraft.

The EMMA Overhead Rail Systems are typically suspended from the ceiling of a prep booth or shop, or supported from the floor. Ideal parts for Overhead Rail Systems can be large (wings, flight controls, engine cowlings) or relatively small (nose cones, radomes, doors, etc.).

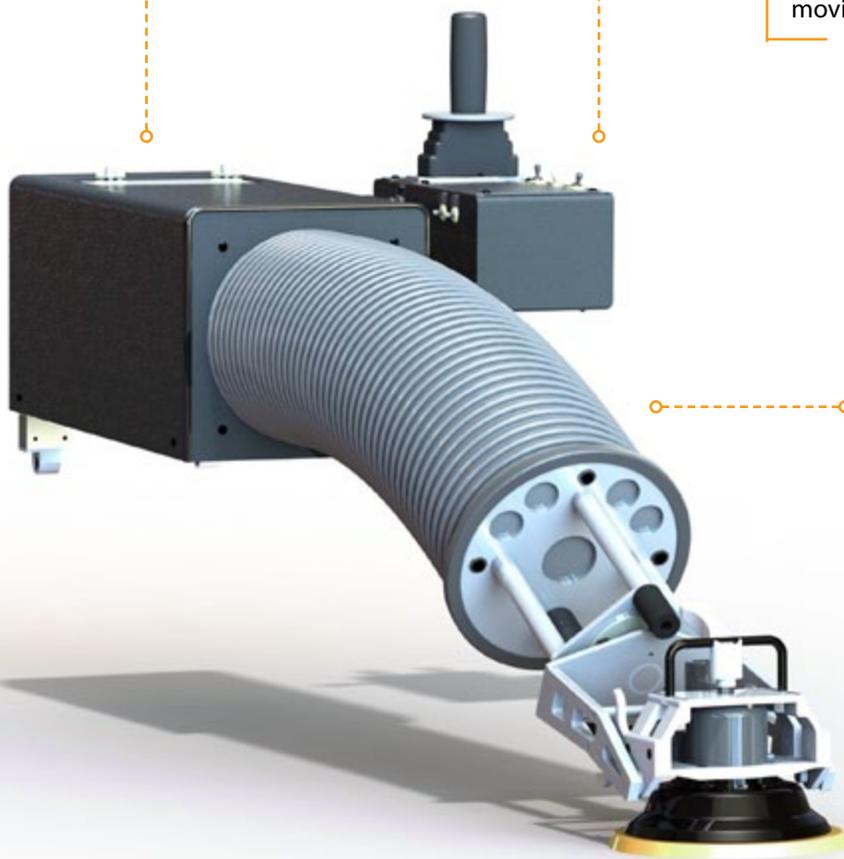
EMMA [technology]

ACTUATION PACKAGE

The Actuation Package houses the pneumatic circuitry and an array of cylinders that power the Arm.

JOYSTICK BOX

With intuitive joystick controls, an EMMA operator is always in full control of the sanding system and material removal rate. The Arm features proportional controls, which allow the artisan to vary the sweep rate by moving the joysticks more/less.



ARM

The Arm is a sheathed set of control cables and a polyurethane core that generates EMMA's smooth motion. In addition to absorbing all vibration generated by the sander(s), the core provides the necessary compliance to offer artisans the option to manually guide the End-effector by its handle to make micro-adjustments to increase/decrease contact pressure and navigate in/around areas requiring detail sanding.

AUTO-ADJUST

Each EMMA has an Auto-Adjust mechanism that accommodates both flat and curved surfaces, ensuring the consistent application of user-specified contact pressure over the skin of an aircraft.

END-EFFECTOR

The End-Effector is the mounting assembly that holds the sander(s) at the end of the Arm. In an EMMA End-Effector frame, the sander(s) independently pitch and roll and are balanced to allow abrasive discs to conform to the working surface. EMMA End-Effectors always hold sanders flat (normal) to the surface. EMMA's can be outfitted with a variety of End-effectors to tackle different surface preparation challenges.

EMMA

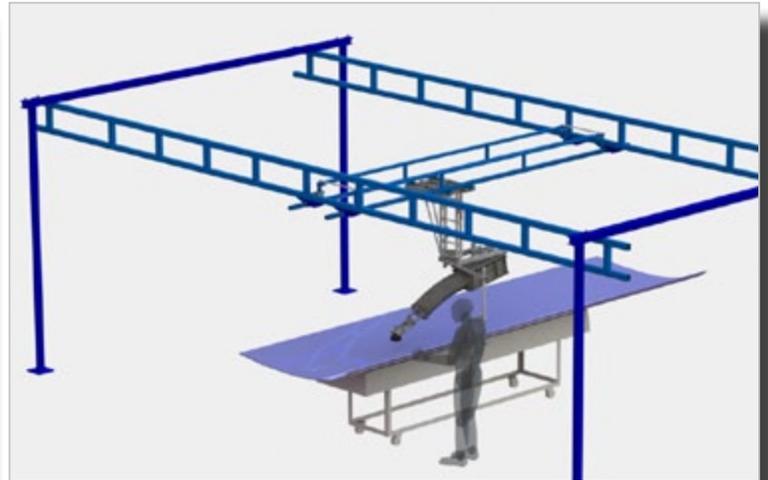
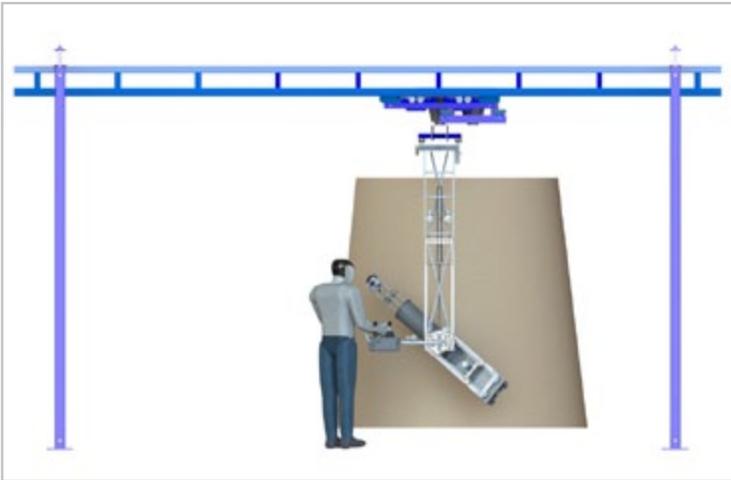
[overhead
deployment]



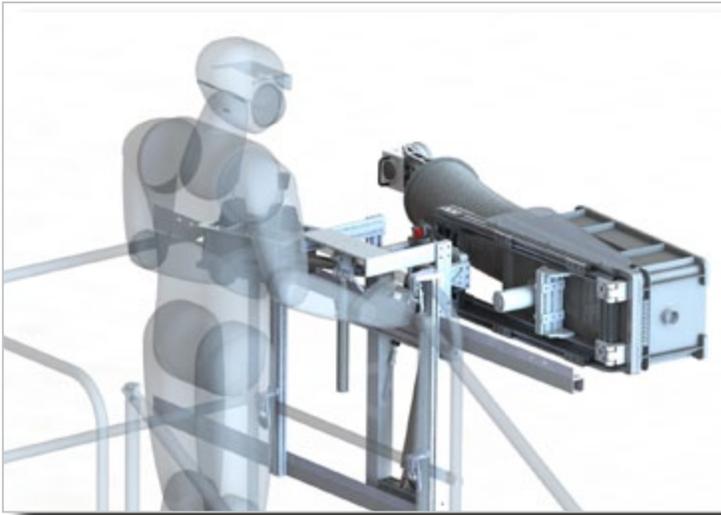
EMMA™ Overhead Rail System

The EMMA™ Overhead Rail System is designed to address geometrically complex parts. It is typically suspended from the ceiling of a prep booth or shop, or floor-supported gantry system. Standard installations include rotating turrets, straight rails, X-Y frames, and U-shaped tracks for accessing both sides of larger parts.

Ideal parts for Overhead Rail Systems can be large (wings, rudders, nacelles) or relatively small (panels, flight controls, doors, parts on a "table-top" fixture etc.).



EMMA Overhead Rail Systems integrate seamlessly with existing shop infrastructure. The Overhead EMMA Systems have degrees of freedom built in that extend the work envelope of the human operator, eliminating awkward postures while sanding complex or otherwise difficult to reach parts.



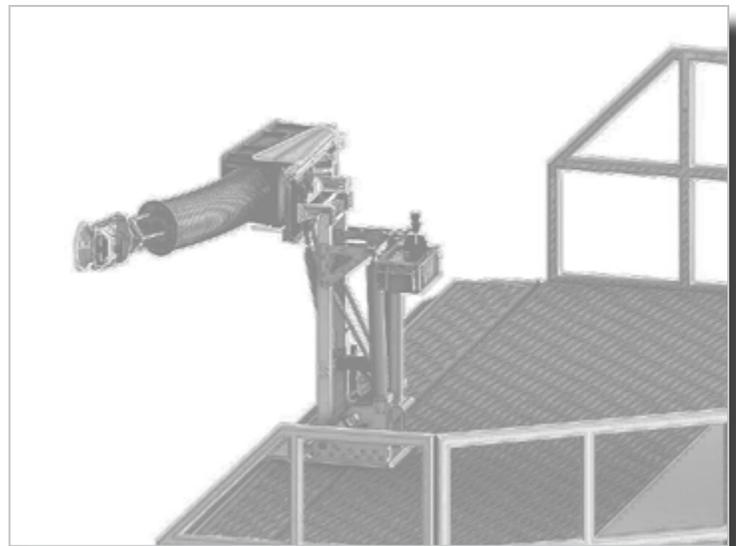
EMMA

[rail-mounted & floor-mounted systems]

EMMA™ Rail-mounted Systems

EMMA Rail-mounted Systems traverse laterally on a lift basket, with the full work envelope of the system dependent on the range of motion of the lift itself. EMMA's mobility and extended reach reduces the frequency of lift repositions required to prep a given surface area.

The EMMA Rail-Mounted, Floor-mounted Rail, and Overhead Rail Systems have a Turntable feature that grants the artisan freedom to lock the EMMA module in various positions in the yaw axis. Combined with other degrees of freedom built into the deployment frames, macro- and micro- positioning is easily achieved. Overall, EMMA deployments eliminate the need for the artisan to reach excessively, allowing the operator to maintain an optimal distance from the End-Effector.



EMMA™ Floor-mounted Rail System

The EMMA Floor-mounted Rail System is typically mounted on stacker platforms to access the sides, tail, wings, and crown of commercial and military aircraft, but is also suitable for rails embedded in the floor or on fixed or mobile platforms.