



**DEPARTMENT OF THE AIR FORCE
OKLAHOMA CITY AIR LOGISTICS COMPLEX (OC-ALC)
TINKER AIR FORCE BASE OKLAHOMA**

Statement of Requirement / Item Description

76 PMXG request the purchase of two (2) Collaborative Robots with the option of purchasing two (2) additional Collaborative Robots the following fiscal year (FY) 2024:

Two (2) Collaborative Robots with the following minimum requirements.

The collaborative robotic system must be able to work beside a mechanic outside of a safety fence and replace some of the more tedious tasks they we currently have an operator perform and be upgradable for future workloads and tasks at a later point. **The first function will be that of surface preparation and the ability to use force sensitive tools with different abrasives to prepare metal and composite surfaces. We also need a system that can be upgraded at a later time to laser welding. Many of the collaborative systems on the market can be upgraded through additional software to work with these new laser welding systems. We want to make sure that the system is open ended to be expandable.**

1. The robot must be collaborative with the operator and able to operate without a safety fence
2. The robotic arm should be able to support a minimum of 25lbs (12 Kg)
3. The robot must be able to maintain a constant force of +/- 2N of force measured through the robot.
 - The robot arm must have at-least a 45" reach when fully extended.
 - The robot must include the programming software included so that repairs can be developed internally.
 - the robotic arm must be able to have a programmable tool path that will keep a constant speed, feed and pressure.
 - The robotic arm must have a repeatability on position of less than $\pm 0.002''$ ($\pm 0.05\text{mm}$)
 - The robotic arm must be able to function normally in welding environments.
 - The robot must have the ability to be integrated with laser welding systems.
 - The robot must have a minimum of 10 digital inputs and 5 outputs that can be user configurable.
 - The robot must be upgradable to provide the laser welding.

4. The robotic arm should be able to support a multiple force compliance tools.
5. These tools must be able to apply a force as little as 1 lb-force to the part as measured through the tool.
6. Must be programmable to support both straight and non-linear program tool paths.
7. Must have an HMI(human machine interface) that is simple for the operator to use for program selection, fixture setup and running parts.
8. Must include a rotary table with a 10" diameter table minimum.
9. Must be able to support up to 200lbs of load applied virtually to the table to the table.
10. bi-directional repeatability must be under 60 arc-seconds.
11. Must include a closed loop positioning system capable of tracking the positioning under 60 arc-seconds
12. The rotary table motor must be programmable and positionable through the robot pendent.
13. The system must include the power supply and any necessary transformers necessary for the robot and rotary table to be powered by a 120V 60hz outlets.
14. The system must come with all necessary power and communication tables.
15. Any type of power supply or transformer must come with an enclosure approved for electrical connections.