

WIRE EDMs

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1. GENERAL SYSTEM DESCRIPTION

The purpose of this equipment is to replace existing equipment that has exceeded its useful life at Rock Island Arsenal Joint Manufacturing and Technology Center (RIA-JMTC). The current workload is supported by an AgieCharmille 640 and (3) AgieCharmille 440 machines. The new equipment is intended to be located with the existing equipment to support a common workload. There shall be two units, one of which is an AgieCharmille CUT P 800 and the other shall be an AgieCharmille CUT P 550. The CUT P 800 Pro shall include but not be limited to the following options:

Large Spool Unit
DIEBSCO-SPW Ebbco Deionization System
DX2-2400GP-C Wire EDM Tension System
M1-2A-CH-460 Chiller, 3-Ton
Wire Chopper
3D Setup

2. STANDARDS AND PUBLICATIONS

2.1 Clarification

Any ambiguities, questions, requests for clarification or discrepancies between sections of this purchase description, drawings, national or industry standards discovered by the contractor in reviewing this purchase description shall be reported by the bidder in writing to the contracting officer BEFORE THE DATE SCHEDULED FOR CLOSE OF BIDDING/receipt of proposal. Submission of a proposal or bid shall be construed as evidence that such examination has been made. Therefore, later claims for labor, material, or equipment required, or for difficulties encountered, which could have been foreseen had such reasonable examination been made, may be denied.

2.2 National Standards and Specifications

The following specifications in effect on the Date of Invitation for Bid/Request for Proposal form a part of this purchase description. In the case of conflicting requirements, the more stringent shall apply.

- 2.2.1 Occupational Safety and Health Act of 1970 (OSHA).
- 2.2.2 American Society of Testing and Materials (ASTM).
- 2.2.3 American Society of Mechanical Engineers (ASME).
- 2.2.4 American National Standards Institute (ANSI).
- 2.2.5 National Electrical Manufacturers Association Standards (NEMA).
- 2.2.6 Electronic Industries Association (EIA).
- 2.2.7 Institute of Electrical and Electronics Engineers (IEEE).
- 2.2.8 American Code for Information Exchange (ASCII).
- 2.2.9 American Welding Society (AWS).

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- 2.2.10 American Gear Manufacturers Association (AGMA).
- 2.2.11 National Fire Protection Association (NFPA).
 - 2.2.11.1 NFPA-70 National Electrical Code
 - 2.2.11.2 NFPA-79 Electrical Standard for Industrial Machinery.
- 2.2.12 International Standards Organization (ISO).

3. DESIGN

3.1 Ownership

3.1.1 This equipment is a standard product of the manufacturer and shall require either no change or minor design changes to meet requirements of these specifications. Therefore, ownership of the design will remain with the manufacturer.

3.2 General Design Standards

3.2.1 **DEVIATION FROM PRODUCT:** Modifications to the manufacturer's standard design to achieve requirements as specified in this document are only permissible as dictated by good design practice. For example, mounting a 20-hp motor in a power train designed and normally using a 10-hp motor would not be acceptable.

3.2.2 **UNITS OF MEASURE:** Dimensions and capacities in this purchase description are given in the English-US (in-lb) system. All dials, gauges, and drawings shall be in the English-US system or both the English-US and the metric systems, unless otherwise specified in this document.

3.2.3 **ID DATA PLATE:** The equipment shall include a main data plate which will include the following data as a minimum requirement (additional information is acceptable): Manufacturer Name, Manufacturer's Dunns and Bradstreet Number, Manufacturer's Model Number, Manufacturer's Serial Number, Year of Manufacture, Contract Number, Machine Weight. This information is necessary for compliance with the governments Unique Identification Program (UID).

3.2.4 **DATA PLATES:** All instruction, data, and identification plates and labels attached to this equipment and its controls shall be manufactured of corrosion and oil resistant metal or plastic material. All wording shall be in the English language using plain, bold face lettering. Lettering shall be permanent and have a contrasting background.

3.2.5 **ITEM UNIQUE IDENTIFICATION (IUID) REGISTRATION:** The contractor shall register the equipment in the IUID Registry (as one single system). IUID registration requires the contractor to input Cage Code, Model Number, and Serial Number into a Government Database to allow for asset and inventory tracking. IUID Registry of the equipment shall be performed at <http://dodprocurementtoolbox.com/site/uidregistry/>. Training for IUID is available in <https://wawftraining.eb.mil>. IUID registration of this equipment is required prior to final payment in the Wide Area Work Flow (WAWF). The contractor shall also affix a machine readable 2-dimensional (2-D) matrix representing the IUID registry to the machine. The IUID 2-D matrix may be included on the ID Data Plate outlined in paragraph 3.2.4.

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3.2.6 UTILITY CONNECTION: Equipment supplied to the Rock Island Arsenal will have single point shut-off for each utility supplied to a system. This means that equipment constituting a single system shall be wired to a single main electrical disconnect point, plumbed to a single pneumatic shut-off valve, etc... This will be referred to as the “point of first connection”. Each type of power source may have only one point of first connection. E.g. (1) pneumatic shut-off valve, (1) water supply shut-off valve, (1) electrical disconnect, etc... Each point of first connection shall be clearly labeled on the system and shown in the safety lockout portion of the documentation package. These points must be located on a stationary component and positioned such that they will not create a hazard to personnel during normal operation of the system. The first connection points shall be accessible from the shop floor without the use of ladders, steps, or stools. Access cannot be hampered by operation of the system.

3.2.7 UTILITY CONNECTION LABOR: Rock Island Arsenal shall provide only such labor and materials as will be needed to connect facility utilities to each point of first connection of the system. The supplier will be responsible for all connections beyond the point of first connection for each utility.

3.2.8 UTILITIES AVAILABLE: Rock Island Arsenal shall be responsible for providing the following:

3.2.8.1 Connection of 460-V, 60-Hz, 3-Ph AC electrical power to the fused or breaker type disconnect switch required in the ELECTRICAL DISCONNECT paragraph of this purchase description. Connection does not include filters, surge protection, or any peripheral equipment necessary to make the equipment functional.

3.2.8.2 Connection of approximately 80-psi compressed air to a single point for each system, if needed. Connection does not include filters, dryers, or any peripheral equipment necessary to make the equipment functional.

3.2.9 ELECTRICAL DISCONNECT: The equipment shall be equipped with a manual, fused or breaker type disconnect switch, readily accessible to the operator, which will deactivate the entire equipment. It shall be located no more than 6-ft 7-in from the floor to the highest point the control device. It shall be capable of being locked in the de-energized state (OFF) only.

3.2.10 CONDUIT: Flexible conduit is not permitted in exposed areas. All wires, cables, and hoses will be enclosed by rigid, oil-proof protection, except where flexibility is necessary for operation of the equipment. Flexible wires, cables and hoses shall be arranged to prevent draping or tripping hazards.

3.2.11 SERVICE ACCESS: Components subject to periodic adjustment, replacement, or servicing shall be readily accessible. Meaning that experienced personnel can access the part after no more than 30-min of labor. If any special tools or equipment are necessary to access these components, said equipment will be supplied as part of the system and provided with a proper storage location within the system.

3.2.12 DEFLECTION: The system shall recover from distortion and deflection at no load. The machine and its components shall be sufficiently rigid that work piece finish and tolerances are not impaired by machine vibration.

3.2.13 NEW EQUIPMENT: The equipment furnished under this purchase description shall be new and unused.

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3.2.14 COMPONENT ENVIRONMENT: Under no circumstances shall a component be used in an application not recommended by the component manufacturer. Components shall not be subjected to conditions of operation beyond the recommendations of the manufacturer, such as excessive heat, lack of lubrication, over-loading.

3.2.15 REPLACEMENT COMPONENTS: All replaceable components shall be manufactured to definite standards for tolerance, clearance, and finish, enabling components to be field installed without further machining.

3.2.16 CASTINGS AND FORGINGS: All castings and forgings shall be free of defects, scale, and mismatching. No process such as welding, peening, plugging, or filling shall be used for reclaiming any defective part for use in this equipment without the prior written consent of the contracting officer.

3.2.17 SURFACE BUILDING AND COATINGS: Welding, brazing, soldering, coating or plating shall be employed only where specified in the original design. These operations may not be employed as a means of reclaiming a defective part.

3.2.18 FASTENING DEVICES: All screws, pins, bolts, and similar parts shall be installed in such a manner as to prevent change in tightness. Those devices subject to removal or adjustment shall not be swaged, peened, staked, or otherwise permanently deformed. They shall not be installed using permanent bonding adhesives.

3.2.19 CLEANING AND DEBURRING: All surfaces of castings, forgings, molded parts, stampings, and welded components shall be cleaned and free from sand, dirt, fins, flash, scale, flux, and other harmful or extraneous materials. All edges shall be either rounded or beveled unless sharpness is required to perform a necessary function. Except as specified herein, the condition and finish of all surfaces shall be commensurate with the manufacturer's commercial practice.

3.2.20 PAINTING: All unfinished surfaces of the equipment shall be painted with a lead free and chromium free commercial grade of metal primer and a minimum of one finish coat. The color shall be in accordance with the manufacturer's standard commercial practice, or as necessary to maintain compliance with OSHA regulations, as applicable.

3.2.21 FILTRATION/REGULATION: Equipment requiring filtered or regulated energy sources shall be supplied with the components necessary to perform this function. E.g. the equipment shall be supplied with a Filter, Regulator, Lubricator (FRL) device, if filtered, lubricated, regulated pressurized air is required for the efficient, proper operation of the equipment. These devices shall be located on the equipment side of the lockout devices at the points of first connections.

3.2.22 HYDRAULICS: No hydraulics systems allowed

3.2.23 MOTORS:

3.2.23.1 All motors shall be rated for continuous duty.

3.2.23.2 Motors shall not operate in an overload condition during normal operation of the equipment and shall be equipped with overload protection.

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3.2.23.3 Each motor shall bear an identification plate containing the identity of the manufacturer, model number, serial number, input voltage, amperage, horsepower, phase, frequency, duty cycle, and frame size or mounting identification.

3.2.23.4 Motor starters and controls shall operate at no greater than 120-VAC. It is preferred that they operate at 24-VDC.

3.2.23.5 Motor starters shall provide drop-out protection. This means that, in the event of a loss of power, the equipment shall be re-energized only by the deliberate action of the operator. Manual or mechanical motor starters shall not be deemed acceptable.

3.2.24 FOUNDATION: The requirement for a separate foundation or floor alteration is not permissible. The equipment may be located on the 4th floor of Bldg 220 with the existing EDM machines. The system shall be capable of being installed on an existing concrete floor without modification to the system or the floor, except for installation of anchor bolts.

3.3 Safety, Security and Environmental

3.3.1 SECURITY: The RIA-JMTC is an Army installation subject to Department of Defense safeguards, various precautions, and plant protection measures. All of the below requirements will be necessary of contractors visiting RIA to satisfy requirements of this purchase description; Additional requirements will be placed on contractors requiring access to the Army Network, or Common Access Card (CAC), as specifically detailed below. At all times during the execution of this work, contractor personnel will maintain adequate plant protection devices to minimize espionage, sabotage, and other malicious destruction and damage. The contractor shall comply with all security requirements of the Rock Island Arsenal. Rock Island Arsenal island-wide Force Protection levels may be adjusted/changed at any time, which may cause possible delays and will directly affect procedures for accessing the island.

3.3.1.1 Access and General Protection/Security Policy and Procedures: The contractor and any associated subcontractor employees shall provide all information required for background checks to meet installation access requirements to be accomplished by the installation Director of Emergency Services. All contractor employees must comply with all personal identity verification requirements (IAW FAR clause 52.204-9) as directed by Department of Defense (DoD), Headquarters Department of the Army (HQDA), and any local policy. If the Force Protection Condition (FPCON) changes, the Government may require changes in contractor installation access, security matters, or security processes.

3.3.1.1.1 Access to RIA: Contractor and all subcontractor employees performing work at RIA shall comply with adjudication standards and procedures using the National Crime Information Center Interstate Identification Index (NCIC-III) and Terrorist Screening Database (TSDB) and any applicable installation, facility access screening and local security policies and procedures. The POC shall provide guidance to complete the Access Control Records Check request Form through the Rock Island Arsenal Directorate of Emergency Services.

3.3.1.1.2 Random Antiterrorist Measures Program (RAMP) participation: Contractor personnel are subject to RAMP security program (i.e. vehicle searches, wearing of ID badges, etc.). Contractor shall comply with any, and all instructions issued by the Rock

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Island Arsenal Police Department. The RAMP is discussed in the RIA-JMTC Anti-Terrorism Training.

3.3.1.1.3 During FPCONs levels of Charlie or Delta, services may be discontinued/postponed due to a higher National or local security threat. Services will resume when FPCON Level is reduced to Bravo, or lower. FPCON levels are described in Anti-Terrorism Level I Training.

3.3.1.1.4 Contractor personnel shall return all Installation Badges and access passes as soon as possible prior to contract completion. RIA-JMTC electronic keys and access passes are accountable items, shall be returned within 24-hours of no longer being needed. Items will be returned to the POC, or placed in a drop box at a RIA-JMTC access point.

3.3.1.2 Security Training: The contractor shall complete the following training:

3.3.1.2.1 Anti-Terrorism, Level I: All contractor employees, including subcontractor employees, requiring access to Army installations, facilities, or controlled access areas shall complete Anti-Terrorism (AT) Level I Awareness training. The POC will be provided a copy of the Rock Island Arsenal –Joint Manufacturing and Technology Center (RIA-JMTC) AT Level I Awareness Training and assure that the training is complete. The contractor shall sign a memorandum of record for each contractor employees and subcontractor employee to the RIA-JMTC Operations Center prior issuing any electronic keys, or access pass being authorized.

3.3.1.2.2 iWatch (See Something, Say Something) Training: The Contractor and all associated subcontractors shall complete iWatch Training. iWatch Training shall be provided during the Anti-Terrorism Training.

3.3.1.3 No Common Access Card (CAC) will be issued in support of this project.

3.3.2 FEDERAL MARIJUANA LAWS REMAIN UNCHANGED: Note: Rock Island Arsenal is under the exclusive federal jurisdiction of the United States. Under federal law, marijuana is still defined as a Schedule I drug, and possession and use of marijuana is still illegal. Any person using or in possession of marijuana on Rock Island Arsenal may be criminally prosecuted in federal district court. In addition, such individuals may be permanently barred from entering Rock Island Arsenal.

3.3.3 REAL ID: Starting 03-May-2023 all personnel entering Rock Island Arsenal will be required to show a Real ID form of identification.

3.3.4 INDUSTRY AND REGULATIONS: The equipment shall comply with the most current of all local, state, and federal laws and regulations listed in Standards and Publications.

3.3.5 MATERIAL EXCLUSIONS: The equipment shall not contain polychlorinated biphenyl (PCB), ozone depleting substances (Class I or Class II), or asbestos materials.

3.3.6 SAFETY REGULATION COMPLIANCE: The contractor shall comply with standard OSHA and RIA safety standards, including conforming to confined space work requirements when applicable.

3.3.7 SAFETY LOCKOUTS: Each point of first connection shall be designed and constructed to allow the utility to be completely isolated from the equipment. This isolation

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shall be insured by application of a standard key locking padlock. The device(s) shall only be lockable in the de-energized (OFF) condition.

3.3.8 LOSS OF PRESSURE: Hydraulic and pneumatic circuits shall be designed such that loss of pressure, or pressure surges, shall not cause a hazard. Means shall be provided to prevent operation of the equipment with insufficient pressure, if such operation could cause a hazard.

3.3.9 TRAPPED ENERGY: Means shall be provided for the controlled release of stored energy. This energy may be in the form of, but not limited to, air and hydraulic pressure accumulators, capacitors, springs, counter balances and flywheels. When appropriate, a label shall be affixed to the stored energy source to identify the hazard.

3.3.10 WORKING RANGE: Hydraulic and pneumatic components shall be selected, which cannot be adjusted outside the safe working range of the circuit and/or equipment.

3.3.11 ACCUMULATORS: Gas charged accumulators operating above 200-psi charging pressure shall be charged with inert gas.

3.3.12 BRAKES: Braking systems shall be designed to “fail-on”. This means, energy supplied to the brake shall be used to disengage the brake. Loss of energy shall therefore cause the brake to activate.

3.3.13 EMERGENCY STOP: The system will incorporate a clearly identified, red, mushroomed, control button with a yellow backing plate at every operator work station. Upon momentary operation, any emergency stop button shall de-energize all machine motions and override all other controls without creating additional hazards. All motion stopped shall be restarted by the deliberate action of the operator (requiring manual reset). No other red mushroomed buttons shall be allowed on the equipment. It is preferred that there is no other red buttons of any type.

3.3.14 CONTROL GUARDS: Controls shall be guarded against accidental operation.

3.3.15 OPERATOR REACH: Controls shall be within reach and located such that the operator, when in the normal operating position, is not required to reach past moving parts, which may cause injury.

4. CLIN 0001- AGIECHARMILLES CUT P 800 (1)

This CLIN represents quantity (1) AgieCharmilles Cut P 800 Wire type EDM machine. The machine shall be of bridge type construction and consist of not less than a base and frame, work table, upper and lower machining heads, wire feed mechanism, wire guides, ways, safety stops, drives, dielectric system, power supply, chiller and CNC system. The wire electrical discharge machine (EDM) covered by this specification shall be designed to and be capable of machining to tolerances specified herein on all materials normally encountered in the machining industry. It shall be possible to machine tapered and straight cuts, external and internal diameters, and rotary faces in one set-up. The supplier shall furnish all equipment normally considered by him to be standard for his machine unless identified in this requirement to be of specific manufacture. The following equipment shall be provided in addition to the equipment specified in other sections of this purchase description, which may not be standard. The inclusion of standard equipment in this paragraph is inadvertent and should not be construed to allow duplication.

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4.1 Dimensions:

4.1.1 DOOR ACCESS: The equipment shall be shipped either assembled or disassembled to pass through a door 12-ft wide by 9-ft high, and shall not exceed 15-ft in length.

4.1.2 COMPONENT WEIGHT: The maximum weight of any one piece shall not exceed 16,000-lbs.

4.1.3 INSTALLED FLOORSPACE: When installed complete, the equipment shall be contained in an area 10-ft long and 9-ft long, excluding the operator's area. Maximum height shall not exceed 9-ft. Width is defined as front to back from the operator's normal operating position.

4.2 Base

4.2.1 The base or main frame of the machine shall be made of polymer composite material designed specifically for nonconductive vibration damping and resistance to sudden variations in temperature.

4.2.2 The machine shall be designed to rigidly support any load within the rated capacity of the machine without visible deflection.

4.3 Work Table

4.3.1 A fixed stainless steel work table shall be provided on the base that shall be capable of supporting the loads within the rated capacity of the machine. It shall be designed to allow the wire and lower wire guide support to pass through the range of their travels without interference. The work-piece shall rest directly on the fixed worktable which shall be integrated with the main frame.

4.3.2 The table surface shall be provided with threaded holes in a specific hole pattern to accept a Hirshmann or 3D work-piece clamping system. The table work surface shall be machined flat and parallel to the X and Y axes in order to maintain the positioning accuracy required.

4.3.3 Provisions shall be made around the table to collect and return dielectric fluid to the reservoir/filter.

4.4 Machining Heads

4.4.1 The upper machining head shall incorporate the closed wire guides without clearance to allow cylindrical and conical machining up to and including 30 degrees each side of vertical. It shall incorporate an annealing and stretching water jet type wire threading system both automatic and fully programmable.

4.4.2 The lower machining head shall incorporate a closed wire guide and a dielectric injection nozzle. The wire shall be chopped in the lower head and evacuated to a collection bin via high pressure water.

4.5 Axis Motion

4.5.1 Positioning of the wire to the work-piece shall be accomplished by movement of the guide heads to ensure a constant load on all axis movements.

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4.5.2 XY and UV axes shall be mounted on the bridge. Ways shall be designed with opposing preloaded “V” slides.

4.5.3 Measuring of position shall be accomplished with high accuracy linear glass scales with a resolution of .00002”, maximum, with true closed-loop feedback for guaranteed accuracy for the life of the machine.

4.5.4 All axes shall be equipped with software protection based on encoder and glass scale feedback that shall stop any movement when an unexpected force of between 65 to 70 lbs. is detected.

4.6 Safety Stops

4.6.1 All machine slide motions shall be provided with a means of over travel protection to prevent damage to the machine’s power feed and rapid traverse mechanisms in the event the machine is inadvertently fed or rapidly traversed into an over travel limit switch.

4.6.2 The machine shall have programmable X and Y limits and/or axis inhibit functions to be turned on or off at the control to prevent damage to the machine tool as a result of work-piece or fixture interference.

4.7 Drives

All axis slide motions shall be driven by independent, infinitely variable, AC servo type motors, coupled to a precision, anti-friction, recirculating ball screw and nut assembly.

4.8 Dielectric System

4.8.1 A coolant system shall be provided that will supply adequate demonized water to the cutting area. The system shall include a refrigeration unit to maintain thermal stability.

4.8.2 A flow meter shall be provided to ensure proper and uniform flow at the work area. Means shall be provided to circulate the water through pre-filters to remove solid particles.

4.8.3 The dielectric cooling system shall maintain peak performance in temperatures of up to at least 120°F and relative humidity of up to at least 90%.

4.8.4 The filters shall be capable of filtering eroded particles as small as 2-microns.

4.8.5 Provision shall be made to control the dielectric coolant level, automatically adding water and/or disconnecting power to the electrode should the coolant fall below a safe predetermined operating level.

4.9 Power Supply

4.9.1 A power supply shall be provided with the equipment capable of maintaining the optimum feed rate and current setting for various work thicknesses. Cutting conditions for various work-piece materials shall be resident in the power supply control.

4.9.2 It shall be a digital AC generator using digital controls to deliver repetitive and consistent pulses. The system shall incorporate a minimum of (6) different modes of operation, each for the following applications:

4.9.2.1 High speed cutting up to at least 40-in²/hr.

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4.9.2.2 Special materials such as polycrystalline (PCD).

4.9.2.3 General application of steel and carbide.

4.9.2.4 Fine finishes to at least 6-μin in carbide and tool steels.

4.9.2.5 Precision wire cutting mode for wire diameters of at least as small as .004-in.

4.9.3 The system shall be capable of automatic current control for automatic adjustment of the discharge to match the cutting condition.

4.10 Control System

4.10.1 The CNC system shall be capable of continuous path, 4-axis (X, Y, U, and V), linear and circular interpolation, with provisions for independent U-V programming to allow machining of work pieces with dissimilar shapes on top and bottom surfaces. The CNC system shall use a Windows based operating system and shall provide adaptive control of machining operations by monitoring the spark gap parameters and pulse width in response to machining conditions. A collision protection system shall be incorporated in the system. The controlled axes shall be identified in accordance with national standard EIA-267. The system shall provide simultaneous control of Z-axis motion.

4.10.2 The CNC system shall include, as a minimum the following hardware features:

4.10.2.1 19-in minimum touch-screen display terminal.

4.10.2.2 40-gigabyte hard disk drive.

4.10.2.3 USB Port.

4.10.2.4 EIA RS-232 interface or RJ45 Network interface

4.10.2.5 Alphanumeric PC Keyboard for manual data input.

4.10.3 The control panel shall include, as a minimum, the following features:

4.10.3.1 Emergency stop button.

4.10.3.2 Power on/off switches.

4.10.3.3 Jog and jog direction.

4.10.3.4 Feed hold.

4.10.4 There shall be provided a hand held remote control with the following features/controls:

4.10.4.1 Wire cut.

4.10.4.2 Wire feed.

4.10.4.3 Wire tension.

4.10.4.4 Drain/fill.

4.10.4.5 5-axis incremental jog.

4.10.4.6 Edge find.

4.10.4.7 Hold point return.

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- 4.10.4.8 Start point return.
- 4.10.5 The CNC system shall include, as a minimum, the following operating modes:
 - 4.10.5.1 Manual data input.
 - 4.10.5.2 Tutorial.
 - 4.10.5.3 Conversational/interactive mode to provide the operator the ability to load an existing program, create a new program, and edit an existing program by following on-screen prompts. As a minimum, the conversational mode shall include prompts for axis and tool management data and part geometry data for creating a part program.
 - 4.10.5.4 Machine diagnostics and monitoring.
 - 4.10.5.5 Dry run.
 - 4.10.5.6 Part program editing.
 - 4.10.5.7 Preparation Mode for the preparation of the next job to include such functions as text editor, file manager, table editor and other computer assisted EDM functions.
 - 4.10.5.8 Execution Mode to allow for simulation or machining of the geometry programs (ISO), measuring cycle operation with dynamic drawing for positioning of the work according to the work piece, and manual mode for rapid displacement of any of the axes.
 - 4.10.5.9 Information Mode for displaying position of axes, machining conditions, error messages and the current program.
 - 4.10.5.10 Graphic Mode displaying the programmed path before and during dry run and cutting operations. It shall allow the choice between two views during the machining—view of the tank and view of the part to machine.
 - 4.10.5.11 Operator Mode to include the following functions in case of the need for manual intervention during machining:
 - 4.10.5.11.1 Switch on/off break
 - 4.10.5.11.2 Wire cut and wire thread
 - 4.10.5.11.3 Wire feed start/stop
 - 4.10.5.11.4 Switch on/off threading jet
 - 4.10.5.11.5 Switch on/off top and bottom injections
 - 4.10.5.11.6 Filling/draining tank
- 4.10.6 The CNC system shall include, as a minimum, the following axis management features.
 - 4.10.6.1 Backlash compensation.
 - 4.10.6.2 Pitch error compensation.
 - 4.10.6.3 Offset machining.
 - 4.10.6.4 Automatic vertical wire alignment.
 - 4.10.6.5 Automatic hole center and edge positioning.

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4.10.7 The CNC system shall include, as a minimum, the following software features:

- 4.10.7.1 Linear and circular interpolation.
- 4.10.7.2 Inch/metric switchable programming.
- 4.10.7.3 Floating decimal point.
- 4.10.7.4 3-d graphic display.
- 4.10.7.5 Automatic zero point.
- 4.10.7.6 Standard G codes, M codes, and canned cycles.
- 4.10.7.7 Incremental and absolute coordinate positioning.
- 4.10.7.8 Scaling function for X, Y, and Z axes.
- 4.10.7.9 Axis rotation.
- 4.10.7.10 Axis transposing.

4.10.8 The control shall automatically select the following strategies during machining:

- 4.10.8.1 Advanced corner control to eliminate the drag of the wire when machining a sharp corner.
- 4.10.8.2 A protection strategy to ensure automatic machine, whatever the relief and shape of the work-piece, by adapting the parameters of the generator and flushing injection pressure.

4.11 Features

The following features shall be designed into the machine:

- 4.11.1 Achieved surface finishes of 4-μin or finer.
- 4.11.2 Electronic collision protection on all 5-axes. Note: Mechanical type protection is prohibited.
- 4.11.3 Wire chopper mechanism.
- 4.11.4 Wire tension meter.
- 4.11.5 Electrical magnetic glass windows.
- 4.11.6 A maintenance free threading system operation of 30-sec, maximum, from annealing to cut and to thread of wires .006-in to 0.13-in in diameter. The wire shall be cut under thermal heat using no moving parts. (.004 to 0.13-in diameter for smaller machine)
- 4.11.7 Automatic selection of machine sequences and calculation of offsets.
- 4.11.8 Automatic calculations and angle adjustments to angle variations during the cutting operation for geometry maintenance.
- 4.11.9 The system shall be capable of being programmed at the machine control or off-line. Off-line programming shall be performed by ESPRIT software already existing at RIA-JMTC.
- 4.11.10 On-board documentation (digital drawings of parts and sub-assemblies within the machine).

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4.11.11 Work piece Sensor: The system shall include a feature that will sense the location of the top surface of the work piece and (including height and angle of the plane) automatically adjust the cutting program to account for alignment of the wire perpendicular to the surface.

4.12 Ranges and Capacities (CUT P 800)

The following ranges and capacities are minimums unless otherwise specified.

4.12.1	X Travel	31.5-in
4.12.2	Y Travel	21.6-in
4.12.3	Z Travel	20.0-in
4.12.4	U Travel	31.5-in
4.12.5	V Travel	21.6-in
4.12.6	Taper Angle Capacity	±30° @ 15.75-in height, submerged
4.12.7	Work-Piece Size Capacity	51.1-in x 37.4-in x 20.0-in
4.12.8	Work-Piece Weight Capacity	6614-lbs
4.12.9	Wire Feed Rate	1.6-fpm to 50-fpm
4.12.10	Wire Spool Weight	up to and including 55-lbs
4.12.11	Minimum Threading Hole Diameter	0.023-in
4.12.12	Standard Wire Guide Diameter	0.010-in
4.12.13	Wire Guide Diameters Capabilities	0.004-in, 0.006-in, 0.008-in, 0.010-in, 0.012-in
4.12.14	Automatic Re-Thread Wire Diameters	0.008-in, 0.010-in, 0.012-in
4.12.15	Re-Thread After Wire Break	Standard
4.12.16	Flushing Pressure	0-psi to 290-psi
4.12.17	Machining Speed Capability	40-in ² /hr

4.13 Additional Equipment

The following equipment shall be furnished for the machine unless otherwise specified. Standard equipment shall not be duplicated.

4.13.1 (1) 3-Ton chiller unit consisting of a closed circuit dielectric cooling system cooling capacity of 22,000 BTU/hr.

4.13.2 (1) Ebbco deionization system with the following salient characteristics: One resin tank, two resin bags, and one installation kit. The system shall be constructed of 304 stainless steel with a distribution header and bottom grid to eliminate channeling. There shall be provided an internal 5 micron pre-filter. A polysateen bag shall allow for the convenient resin change-out without removing the vessel. The following specifications are minimum requirements:

4.13.2.1	Operating Pressure (maximum)	50-psi
4.13.2.2	Operating Temperature (maximum)	170°F

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- 4.13.2.3 Capacity 1-ft³
- 4.13.2.4 Flow rate 6-gpm
- 4.13.2.5 Dimensions 36-in high x 12-in diameter
- 4.13.3 Large wire spool feed mechanism with brake for 35-lb and 55-lb spool, located at rear of machine.
- 4.13.4 One work-light.

4.14 MT Connect

The units shall have capability to be compatible with MT Connect.

5. CLIN 0002- AGIECHARMILLES CUT P 550

This CLIN represents quantity (1) AgieCharmilles Cut P 550 Wire type EDM machine. The machine shall be of bridge type construction and consist of not less than a base and frame, work table, upper and lower machining heads, wire feed mechanism, wire guides, ways, safety stops, drives, dielectric system, power supply, chiller and CNC system. The wire electrical discharge machine (EDM) covered by this specification shall be designed to and be capable of machining to tolerances specified herein on all materials normally encountered in the machining industry. It shall be possible to machine tapered and straight cuts, external and internal diameters, and rotary faces in one set-up. The supplier shall furnish all equipment normally considered by him to be standard for his machine unless identified in this requirement to be of specific manufacture. The following equipment shall be provided in addition to the equipment specified in other sections of this purchase description, which may not be standard. The inclusion of standard equipment in this paragraph is inadvertent and should not be construed to allow duplication. The equipment shall meet all of the same specifications listed in previous sections of this document EXCEPT for the below ranges and capacities.

5.1 Ranges and Capacities (CUT P 550)

The following ranges and capacities are minimums unless otherwise specified.

- 5.1.1 X Travel 21.6-in
- 5.1.2 Y Travel 13.7-in
- 5.1.3 Z Travel 15.7-in
- 5.1.4 U Travel 21.6-in
- 5.1.5 V Travel 13.7-in
- 5.1.6 Taper Angle Capacity $\pm 30^\circ$ @ 15.75-in height, submerged
- 5.1.7 Work-Piece Size Capacity 47.2-in x 27.6-in x 15.7-in
- 5.1.8 Work-Piece Weight Capacity 3306-lbs
- 5.1.9 Wire Feed Rate 1.6-fpm to 50-fpm
- 5.1.10 Wire Spool Weight up to and including 55-lbs
- 5.1.11 Minimum Threading Hole Diameter 0.023-in

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5.1.12	Standard Wire Guide Diameter	0.010-in
5.1.13	Wire Guide Diameters Capabilities	0.004-in, 0.006-in, 0.008-in, 0.010-in, 0.012-in
5.1.14	Automatic Re-Thread Wire Diameters	0.008-in, 0.010-in, 0.012-in
5.1.15	Re-Thread After Wire Break	Standard
5.1.16	Flushing Pressure	0-psi to 290-psi
5.1.17	Machining Speed Capability	40-in ² /hr

6. CLIN 0003- HIRSCHMANN RAILS (OPTION)

This option represents purchasing a set of Hirschmann Rails for the CUT P 800 Machine. A full set of rails consists of quantity (2) of B4070L (B-BEAM) and quantity (2) of Q4287 (Q-BEAM). This is a rail set to allow for the use of the Hirschmann Tooling that RIA-JMTC currently has at our facility.

7. APPROVAL/SHIPPING

7.1 Performance Requirements

Cutting Speed: The machines shall cut 2-in thick D2 steel at a rate of not less than 17-in²/hr using 0.010-in uncoated brass wire.

7.2 Accuracy Requirements

The wire EDM shall meet the accuracy requirements listed below (in accordance with ISO 230-1, 2, 3 and 4).

7.2.1	Flatness of work-holding surface	0.0010-in
7.2.2	Straightness of X-axis Travel	0.0006-in
7.2.3	Straightness of Y-axis Travel	0.0006-in
7.2.4	Parallelism between work-holding frame and X-axis Travel	0.0006-in
7.2.5	Parallelism between work-holding frame and Y-axis Travel	0.0006-in
7.2.6	Parallelism between work-holding surface and X-axis Travel	0.0016-in
7.2.7	Parallelism between work-holding surface and Y-axis Travel	0.0016-in
7.2.8	Squareness between X-axis and Y-axis Travels	0.0006-in
7.2.9	Squareness between Z-axis and X-axis Travels	0.0008-in
7.2.10	Squareness between Z-axis and Y-axis Travels	0.0008-in
7.2.11	Parallelism between X-axis and U-axis Travels in ZX-plane	0.0010-in
7.2.12	Parallelism between X-axis and U-axis Travels in XY-plane	0.0006-in
7.2.13	Parallelism between Y-axis and V-axis Travels in YZ-plane	0.0010-in
7.2.14	Parallelism between Y-axis and V-axis Travels in XY-plane	0.0006-in

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7.2.15 Bidirectional accuracy of X, Y, and Z-axis Travels by numerical control for measured lengths of 19.7-in, 39.4-in, and 78.7-in	0.0006/0.0008/0.0010-in
7.2.16 Unidirectional accuracy of X, Y, and Z-axis Travels by numerical control for measured lengths of 19.7-in, 39.4-in, and 78.7-in	0.0003/0.0004/0.0005-in
7.2.17 Bidirectional accuracy of U and V-axis Travels by numerical control for measured lengths of 3.94-in and 7.87-in	0.0008-in/0.0010-in
7.2.18 Unidirectional accuracy of U and V-axis Travels by numerical control for measured lengths of 3.94-in and 7.87-in	0.0004-in/0.0005-in
7.2.19 Roundness and axial squareness of machined hole	0.0008-in/0.0004-in
7.2.20 Circular hysteresis and circular deviation	0.0008-in/0.0006-in

8. INFORMATION TECHNOLOGY SYSTEMS AND SUPPORT

8.1 Installation IT Support:

8.1.1 PERSONNEL: RIA-JMTC will not provide the technician credentials to access the workstation. Access to the workstation will be provided by the RIA-JMTC IT Support Staff escort. Removable Media e.g., CD/DVD/USB/SD/External hard drive will be scanned prior to use. Programs and software must be ran from RIA-JMTC approved/provided media or CD/DVD(s). Contractor Devices will not be allowed to connect to the RIA-JMTC network nor will they be allowed to connect to RIA-JMTC equipment other than to scan and transfer media.

8.2 INSPECTION/FINAL ACCEPTANCE:

8.2.1 LICENSING: The software/ hardware license shall not have an internet connection. A license dongle or license file must be provided for offline use.

8.3 Media/ Devices

8.3.1 REMOVABLE MEDIA: Removable media consists of the following: CD, DVD, USB, SD, and External Hard Drives. Removable media shall be scanned prior to use. Programs and software must be ran from RIA-JMTC approved/ provided media or CD/ DVD(s).

8.3.2 CONTRACTOR DEVICES: Contractor Devices will not be allowed to connect to the RIA-JMTC network and they will not be allowed to connect to RIA-JMTC equipment other than to scan and transfer media.

8.3.3 NON-GOVERNMENT OWNED SYSTEMS OR DEVICES: The contractor shall comply with AR 25-1 and AR 25-2. The contractor shall not install or connect non-Government-owned computing systems or devices to Government networks without the POC's coordination and obtaining the proper authorization from the appropriate Information System Security Manager (ISSM), ensuring that all software has a Government Assess Only Authorization. The non-Government-owned computing systems or devices include, but are not limited to, personal or Contractor-owned thumb drives e.g., memory sticks, flash drives, Universal Serial Bus (USB) drives, jump drives, pen drives, removable or external hard drives, Personal Digital Assistants (PDA), PC Cards/Express Cards, MP3 players, cell phones, digital

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media, floppy disks, compact disc (CD)/digital video disk (DVD) burners, optical recordings, photo flash cards, laptops, or any devices that can store data.

8.3 INFORMATION ASSURANCE AND ACCREDITATION:

8.3.1 Non-Government-Owned computing systems or devices: The Contractor shall comply with AR 25-1 and AR 25-2. The Contractor shall not install or connect non-Government-owned computing systems or devices to Government networks without a government representative coordinating and obtaining proper authorization from the appropriate Information System Security Manager (ISSM), ensuring that all software has a Government Assess Only Authorization. The non-Government-owned computing systems or devices include, but are not limited to, personal or Contractor-owned thumb drives e.g., memory sticks, flash drives, Universal Serial Bus (USB) drives, jump drives, pen drives, removable or external hard drives, Personal Digital Assistants (PDA), PC Cards/Express Cards, MP3 players, cell phones, digital media, floppy disks, compact disc (CD)/digital video disk (DVD) burners, optical recordings, photo flash cards, laptops, or any devices that can store data.

8.3.2 System Accreditation and Re-Accreditation: The Contractor shall assist in providing system accreditation documentation such as required artifacts and shall answer technical questions required for registration for accreditation. All documents shall be IAW Chapter 5, and Appendices D and E, AR 25-2, Information Systems Security (dated 3 August 2007) and DOD Instruction 8510.01, Risk Management Framework (RMF) Program or future DOD regulation that supersedes these regulations. The Contractor shall assist in performing yearly reviews of the accreditation, or whenever changes/additions are made to the system. The Contractor will assist in preparing risk assessments, as required.

9. APPROVAL/SHIPPING

9.1 Shipping

9.1.1 RESPONSIBILITY: The contractor is responsible for delivery of the equipment to the Rock Island Arsenal. Adequate preserving of equipment surfaces, packing, marking, and skidding of materials for shipment shall be the responsibility of the contractor. If special lifting devices, such as hooks or eyes, are required for ease of handling, they shall be supplied with the equipment. Any special devices shall be returned to the contractor upon request only if they will not be required for future movement of the equipment, and at the contractor's expense.

9.1.2 SHIPPING SCHEDULE: Be aware, the Rock Island Arsenal will only off-load equipment arriving between 6:00 am and 12:00 am (noon), local time on Mondays through Thursdays except holidays. For information concerning holidays, the contractor should consult the contracting officer. There is no place to stage transporting vehicles awaiting the arrival of contractors. All equipment shall be delivered at the same time, meaning the same day (multiple trucks are acceptable) unless pre-authorized to deliver on multiple days by the RIA-JMTC contracting officer.

9.1.3 RECEIVER: All shipments to Rock Island Arsenal including installation tools and/or replacement parts, as well as the original shipment of the equipment, shall be marked "ATTN: Mr. Robert McClure or Mr. Dave Holgorsen TARA-LGC". Items not correctly marked are subject to being returned at the vendor's expense.

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9.1.4 ARRIVAL INSPECTION: Upon receipt of equipment at Rock Island Arsenal, a preliminary inspection shall be performed to determine condition and/or count. This inspection shall be performed by Rock Island Arsenal personnel.

9.2 Installation

9.2.1 PREPARATION EXECUTION SUPPORT: Rock Island Arsenal will support the preparation portion of the installation by providing utilities to the points of first connection.

9.2.2 LABOR AND MATERIAL: The supplier is solely responsible for providing all labor, materials, hardware, tools, and equipment necessary for complete installation of this system except as specifically listed in this document as being provided by the Rock Island Arsenal.

9.2.3 SUPERVISION: Supervision of the installation process will be the responsibility of the contractor. Rock Island Arsenal shall retain the right to periodic inspection and evaluation of the process, as it deems necessary.

9.2.4 OFF-LOADING/PLACEMENT: Off-loading of the equipment from the delivery vehicle, and placement of the equipment in position for the installation is the responsibility of the contractor. The contractor shall not be allowed to use government equipment to accomplish this work.

9.2.5 OFF-LOADING/PLACEMENT OPTION: At the request of the contractor, Rock Island Arsenal will perform the off-loading and placement of the equipment.

9.2.5.1 Any special requirements or precautions to be observed shall be the responsibility of the contractor to provide.

9.2.5.2 The contractor or his representative may be present during this process; however, such person will be responsible for being present upon arrival of the equipment at Rock Island Arsenal. Off-loading and placement shall not be delayed to allow arrival of the contractor or his representative.

9.2.5.3 If, due to contractor caused difficulties, the equipment or components of the equipment must be moved, removed or replaced by Rock Island Arsenal after initial placement, the contractor shall be billed for such work at current Rock Island Arsenal labor and overhead rates.

9.2.6 LIABILITY: In any case, the equipment remains the property of the contractor, and the contractor shall assume all responsibility and liability for the equipment and the work performed upon it. The government shall be held harmless for any damage done to the equipment at any time up until final acceptance of the equipment by Rock Island Arsenal, except in the case of intentional damage and/or gross negligence on the part of Rock Island Arsenal personnel.

9.2.7 SET-UP: The contractor shall be responsible for set-up and connection of the equipment beyond connections of the utilities to the points of first connection.

9.2.8 SECURITY: The RIA-JMTC is an Army installation subject to Department of Defense safe guards, various precautions, and plant protection measures. At all times during the execution of this SOW, the contractor will maintain adequate plant protection devices to minimize espionage, sabotage, and other malicious destruction and damage. The contractor

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shall comply with all security requirements of the Rock Island Arsenal. Rock Island Arsenal Island-wide Force Protection levels may be adjusted/changed at any time, which may cause possible delays and will directly affect procedures for accessing the Island.

9.2.9 Delivery Hours or Service Hours: Service calls, equipment installation, training, and equipment delivery (where the contractor offloads) will only be allowed from 0600 – 1530, Monday through Thursday, except for Government Holidays. Deliveries of items where the contractor has opted for Government “off-loading option”, must be received before 1200 hours. These hours are subject to change, however, the Government will notify the contractor of such changes. The vendor will contact the designated POC to obtain an electronic key for their representative (i.e. delivery driver) in order to have access to the facility. Deliveries and service calls outside the normal hours stated above will be coordinated with the POC to address any emergency situations."

9.3 Completion

9.3.1 Final acceptance of the equipment shall occur after the following:

9.3.1.1 Set-up completion by the contractor.

9.3.1.2 Successful completion of performance testing at Rock Island Arsenal.

9.3.1.3 Final inspection approval by the government representative or inspector. This is to verify full compliance with this description to include amendments and modifications to the final contract. The government representative shall perform any and all tests he deems necessary to insure compliance with this description and industry standards to include, but not limited to ease of control, convenience of operation, safe operation, and adequacy of lubrication devices.

9.3.1.4 All required training is complete.

9.3.1.5 Complete documentation packages are delivered.

10. TRAINING

The contractor shall provide instruction in proper operation and maintenance of the equipment without additional cost to the government. Training shall be of sufficient duration that the recipients are able to demonstrate a reasonable level of competence as determined by the equipment installer and/or the inspector. Acceptance may be delayed as a result of inadequate training.

10.1 Schedule

Training shall training shall be coordinated with the Rock Island Arsenal. Daily training shall begin no later than 6:30 a.m. CST and shall continue until at least 2:15 p.m. CST. This is required to get full coverage of the 1st shift of operation at RIA-JMTC. If training does not begin until after the stated time, RIA-JMTC may at its option require additional training at a different time to compensate for the loss of training caused by the late start. This may include more time than what is represented by the delay (e.g. a 1-hr delay may require 2-hrs later to impart the knowledge lost).

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10.2 Location

All training shall be performed at the Rock Island Arsenal. It shall be performed using the equipment purchased in this description.

10.3 Type

Each type of training shall be given independently. Rock Island Arsenal shall coordinate with the contractor to provide the proper personnel for each type of training. The following types of training shall be provided by the contractor.

10.3.1 OPERATOR: Training shall be provided by the contractor for (5) operators. This shall include instruction on the safe, efficient operation of the equipment delivered. The trainees supplied by RIA-JMTC shall be familiar with machine operation, but not necessarily with the style or type of controls provided with the equipment. (E.g. for a new CNC lathe, the operator will be familiar with CNC lathe operation, but may have no experience with a Fanuc control system.)

10.3.2 PROGRAMMING: If the equipment includes a programmable controller, programmer training shall be provided, separate from the operator training for (2) personnel. If programming is normally performed by the operator only, then this training may be combined with the operator training.

10.3.3 MAINTENANCE: Mechanical and electrical control and diagnostic maintenance training shall be provided by the contractor. This shall include information on troubleshooting and preventive maintenance procedures. This shall be provided for (2) personnel.

10.3.4 METHODS: Methods Training shall be provided by the contractor. The Methods Division of JMTC traditionally workload parts across various machines within the JMTC factory. The contractor shall provide a general overview of the machine capabilities during this training. This training shall define basic information such as material capable of manufacture with the machine, maximum and/or minimum part size, speeds and feeds, and accuracies of the machine provided. It shall also provide overview of the controls, instructions for basic edit commands, and accessing histories. This training shall be no longer than 4 hours, and provide training for 4 students.

11. SERVICE

11.1 Service/Support Requirements

The contractor shall have as a minimum, a verifiable service/repair capability which meets or exceeds the following requirements:

11.1.1 STAFF: Staffed by qualified, English speaking personnel fully knowledgeable in the service/repair of the equipment offered.

11.1.2 TELEPHONE ACCESS: Telephone access to service/repair personnel shall be available for consultation during Rock Island Arsenal normal working hours. Rock Island Arsenal normal working hours are 8:00 am CST to 3:00 pm CST, Monday through Friday, except legal federal holidays.

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11.1.3 ON-SITE RESPONSE: Physical, on-site response shall be possible within 48-hrs of notification that service/repair of the equipment is necessary.

11.1.4 MAINTENANCE PARTS: Parts necessary for periodic replacement such as belts, hoses, filters, and other parts normally considered as spare parts, by the manufacturer, shall be stocked and available for shipment.

11.1.5 PRIOR HISTORY: Said service/repair capability shall have been available to the general public prior to the issue date of this purchase description. Adequate proof of prior availability shall be provided upon request.