Revised Specifications (on the basis of Pre bid conference held on 11-2-2015) for the Welding and Handling Robotics Cell

1. Welding cell comprising of Two Articulated type 6 axis robotic arms, Wherein One robotic arm with gripper assembly for holding the component and other robotic arm having a standard Metal Inert Gas (MIG) Welding apparatus.
2. Both Robots move/operate in synchronization with each other

The Welding cell should meet the following:

1. Two nos. Floor Mounted Robots ABB/ FANUC/ KUKA make.
2. Robot Controllers: Compatible with the Robots
3. Teach pendants with joy stick
4. Pedestals for Robots (height 200 mm to 300 mm)
5. Two finger Universal Gripper (Schunk make or equivalent with serrated base jaw, opening and closing force approximately 425 N ± 10%, stroke per finger >=8 mm.)
6. Welding Torch with MIG Welding equipment (As per detailed specifications attached)
7. Wire feeder with one wire roller
8. Extruded Aluminum (40mm x40mm) Tables (2 nos., Size Min 1 meter x 0.75 meter') for holding the Fixtures
9. Simulation Software minimum 20 nos of Network Licences
10. Electrical installation consisting of Line circuit breaker, Power Distribution box and Cables for Mains supply to the Robot Controller
11. Noiseless compressor (Noise Level <85 dB) with drier suitable for 5 bar continuous air supply.
12. Voltage stabilizer, Isolation Transformer and main cables for main voltage supply to the different units.
13. Powder Coated Mild Steel, Safety Fencing for Welding Cell (6m Length, 3m Width and 2.5 m Height) with door safety sensors/ switches.
14. Documentation for Teaching/ Learning of Robotics
15. One year comprehensive support for the Robot system and training.
16. CAMC for additional two years (after at least one year warranty) for support on training and routine maintenance.
17. Site preparation for Robots installation including foundation bolts, etc. and cable scheduling
18. Essential Spares, Consumables for functionality of the system.

A. Technical Specifications for Robots:

1. Minimum Pay Load on wrist >=5Kg (Should be able to hold components up to at least 2 kg with gripper)
2. Upper arm load minimum 10 kg or more
3. Maximum Reach >= 1.35 meter or more
4. Position Repeatability $\pm$ 0.05 mm or better
5. Mechanical Arm configuration
   - Articulated, Six axis, Floor mounted
6. Drive - AC Servo motor
7. Safety - Emergency stop and Enabling device in General mode, Auto mode and Test mode
8. Controller - compatible with the robot and support for synchronized motion
9. Remote Servicing feature.
10. Programming language - KRL / RAPID or compatible
11. Teaching - Through teach pendent with joy stick
12. Path type - Linear motion, Motion by joint, Motion in circle
13. Communication with
    "Three RS-232 Serial Channels, One RS-422 Serial Channel, Device net single channel, Ethernet 10/100 Mbits per second" or

    "USB3/Gb Ethernet/ DVI-I /Digital I/O 6/16/Interbus(optical fibre and copper communication)/ Profibus"

    or combination of both.

14. Input / Output - 24VDC digital signals
15. Power Specification for Controller - Rated power supply 400 V ± 10% 3 phase or 220 V ± 10% single phase
16. Programming unit - EExi protected, portable, joystick and key Board
17. Display - Graphical color touch screen showing Joystick position, emergency stop, Connector Plug
18. Types of motion -
    Axis 1 Rotation motion +170° to -170° (or better)
    Axis 2 Arm motion +60° to - 60° (or better)
    Axis 3 Arm motion +70° to -65° (or better)
    Axis 4 Wrist motion +150° to -150° (or better)
    Axis 5 Bend motion +115° to -115° (or better)
    Axis 6 Turn motion +300° to -300(or better)
19. In built anti-collision feature

B. Technical Specifications For Welding Power source

Robot interfaced MIG welding machine, having the following minimum technical specifications for welding power source

1. Current Range variable 30A (or less) to 320 A (or more)
2. Mains voltage 400 V ± 10% 3 phase/220 V ± 10%

single phase

C. Technical Specifications for Wire Feeder

1. Wire feed speed range: variable Up to 25 m/min or better
2. Wire Diameters (standard) : up to 1.2 mm or better
3. Driven wheel feed rolls: at least 4 nos.

D. Technical specification for welding Torch

1. Robotic welding torch with a capacity to weld at min 300 amps.
2. The torch should be fitted with the shock sensor
3. Cooling: Gas or Self-Cooling Type,
4. Shape: Strong swan neck

E. Complete package including Power source, wire feeder, interconnecting cables and their setup is required.

F. Technical specification for Torch Cleaning Station

Automatic Torch Cleaning station consisting of cleaning, cutting, reaming & spraying with pneumatic controls interfaced with robot.

G. Courseware for Instructor and Students to include –

1. Introduction to Robots,
2. Introduction to robot controller,
3. Familiarization with robot features,
4. Safety considerations,
5. Robot operation,
6. Robot programming,
7. Robot care & basic maintenance,
8. Application specific operation and programming,
9. Accessories for Robot Applications.

H. Desirable

1. A complete list of material/ parts with their make and model nos. and relevant catalogues/ photographs/ video clips (to be provided with the technical bid.)

2. Vendor must provide the detail of all the auxiliary apparatus (like safety fencing, electrical power equipment, tables, fixtures etc.) for full functioning of the equipment with Technical Details/ Drawings for the complete assembly/ functionality of the system along with a layout plan (to be specified in the technical part of the quote.)

3. Compliance Report (of the specifications, point wise) to be supplied along-with the Technical Bid.

4. Extensive training for Operation and Maintenance of the equipment to be provided at our Training Centre without any additional cost.

5. The Robots are required for educational purpose hence any educational discount on software or hardware must be provided with the offer

6. Any pre-requisite for installation, not included in the offer must be specified in the technical bid.

7. Installation at Indo- Swiss Training Centre without any additional cost.