



R.F.P
for AGV Project

Doc. Code: 1800/01/02/01

Ver. B



SAIPA Expansion Engineering Company

**R.F.P
For AGV Project**

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Ver. B

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Table of Contents:

1. Instructions to Bidders:	3
1.1. Introduction:	3
1.2. Eligible Bidders:	3
1.3. Site Visits:	3
1.4. Clarification of Tender Documents:	4
1.5. Amendment of Tender Documents	4
1.6. Alternative Proposals by Bidders:	4
1.7. Pre-Tender Meeting:	4
1.8. Deadline for Submission of Tenders:	4
1.9. Late Tenders:	5
1.10. Clarification of Tenders:	5
1.11. Confidentiality:	5
1.12. Commercial:	5
2. Production Data:	6
2.1. The route of AGV system:	6
2.2. The pallet characteristics:	6
2.3. The aim of project:	7
3. Technical and Engineering Issues:	7
3.1. General Requirements:	7
3.2. Control System:	7
3.3. The AGV's Specifications:	8
3.4. Commissioning:	10
3.5. Delivery Items:	10
3.6. Spare Parts:	10
3.7. Documentations:	11
3.11. Engineering Services:	11
3.12. Guaranty and Warranty:	11
4. Contact Persons:	12



R.F.P
for AGV Project

Doc. Code: 1800/01/02/01

Ver. B

1. Instructions to Bidders:

1.1. Introduction:

- 1.1.1. The SEECO Company, affiliated to SAIPA car manufacturing complex, is going to install an AGV (Automated Guided Vehicle) system in one of car Manufacturer Company affiliated to SAIPA group, through the qualified bidder. In this respect, the SEECO wishes to bid for supplying of a complete requirements in this project, consist of all engineering design, supply of all equipment, commissioning, documentation, training and other related issues to the project.
- 1.1.2. The SAIPA Expansion Engineering Co. (SEECO), affiliated to SAIPA car manufacturing complex, as MC (Management Contractive) will be the responsible of procurement and selection procedure of the winner of tender. Besides, the SEECO will oversee the good work at all stages of the project. Hereinafter SEECO are referred to as 'purchaser'.
- 1.1.3. All information in the tender documents are believed to be true and accurate as at the date of this document, however purchaser accepts no responsibility for the accuracy of the information.
- 1.1.5. The information provided in these tender documents shall in no way limit the bidders responsibility to quote, whether mentioned in these tender documents or not. All equipment, materials, services and works necessary to provide a complete AGV system in full compliance with the specifications delineated in the tender documents must be guaranteed by bidder.
- 1.1.6. The winner of tender will be expected to complete the project within the time period stated in the tendering data.
- 1.1.7. The bidders would be able to quote with the contact persons, introduced at the term of 4, in case of encountered with any questions.
- 1.1.8. The bidders expected to propose their technical proposal in accompany with their best price simultaneously.

1.2. Eligible Bidders:

This invitation to tender is open to any bidder (including all members of a joint venture/consortium and all subcontractors of a bidder).

1.3. Site Visits:

- 1.3.1. In case of the bidder feel the need to visit the Site of project so as to obtain for itself additional information, then such Bidder is encouraged to contact the purchaser in order to coordinate site visit.
- 1.3.2. During the bid evaluation period, purchaser reserves the right to visit and inspect the premises, facilities, equipment and other resources of bidder and any of its proposed sub-contractors or vendors, and to carry out a technical and commercial



R.F.P
for AGV Project

Doc. Code: 1800/01/02/01

Ver. B

appraisal prior to entering into a contract. In such event, the bidder, if requested, shall help facilitate such visits by rendering proper assistance towards visa issuance.

1.4. Clarification of Tender Documents:

A prospective bidder requiring any clarification of the tender documents may notify the purchaser in writing or by facsimile at the purchaser's address indicated in the tendering data. The purchaser will respond to any request for clarification which he receives earlier than ten (10) days prior to the deadline for submission of tenders. Copies of the purchaser's response will be forwarded to all bidders, including a description of the inquiry but without identifying its source.

1.5. Amendment of Tender Documents

At any time prior to the deadline for submission of tenders, the purchaser may amend the tender documents by the issue of a tender addendum.

1.6. Alternative Proposals by Bidders:

The tender shall be prepared in strict compliance with the tender documents, however, bidders wishing to offer technical alternatives, at first must price the purchaser's design as described in the tendering documents and then, shall provide all information necessary for a complete evaluation of the alternative offers.

1.7. Pre-Tender Meeting:

- 1.7.1. The bidders are invited to attend a pre-tender meeting, which will take place at the venue and time to be announced to the bidders.
- 1.7.2. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 1.7.3. The bidder is requested, as far as possible, to submit any questions in writing or by facsimile, to reach the purchaser not later than 3 (three) days before the meeting. It may not be practicable at the meeting to answer questions received late.
- 1.7.4. Non-attendance at the pre-tender meeting will not be a cause for disqualification of the bidder.

1.8. Deadline for Submission of Tenders:

- 1.8.1. Tenders must be received by the purchaser at the address specified in the tendering data not later than the specified time and date.



R.F.P
for AGV Project

Doc. Code: 1800/01/02/01

Ver. B

1.8.2. The purchaser in exceptional circumstances and at his discretion may extend the deadline for submission of tenders by issuing an addendum, in which case all rights and obligation of the purchaser and the bidders previously subject to the original deadline shall thereafter be subject to the new deadline as extended.

1.9. Late Tenders:

Any tender received after the deadline for submission will be returned unopened to the bidder.

1.10. Clarification of Tenders:

To perform the examination, evaluation and comparison of bids, the purchaser may ask bidders individually for clarification of their bid. The request for clarification and the response shall be in writing.

1.11. Confidentiality:

This document contains information that is the confidential and proprietary property both to the purchaser and the partners of the purchaser. It constitutes information which may not be copied, published or disclosed to others except for the express purpose of this tender. By receipt of these tender documents, bidder hereby agrees that this tender document (including all attachments hereto) shall remain confidential for a period of three years from the date of its receipt by the bidder and none or part of terms and conditions may be divulged, communicated or disclosed to any unauthorized third party without the prior written agreement of the purchaser.

Note: Purchaser expressly reserves the right to request any further information deemed necessary to evaluate the bid.

1.12. Commercial:

1.12.1. The bidders shall provide a price list for all items as listed below in which each item should be broken down too:

- A) Engineering and training
- B) Main equipment
- C) The equipment that could be procured in local market
- D) Commissioning and start up supervisory

According to the above mentioned price break down, purchaser reserves the right to select and negotiate with bidders for the detailed scope of work.

1.12.2. Any request for clarification must be received by SEECO in writing before the deadline for submission of tenders. SEECO will reply to bidders' questions

before the deadline for submission of tenders. Consequently, all participants are invited to participate in the bid to attend a question and answer session at the Buyer's place. It is mandatory for the contractor to be present in the subjected meeting.

- 1.12.3. The Seller should prepare the offer separately including: unit price, training charge, commissioning and installation charge, spare parts, freight charge and etc.

2. Production Data:

2.1. The route of AGV system:

As primer phase of project, it is considered to install the AGV system at body shop for carrying the pallets from the station of dashboard frame (Point A) to the station of engine shield (Point B). The proposed route is clarified by red line in the below layout. The length of route is 25m while the width is 5m.

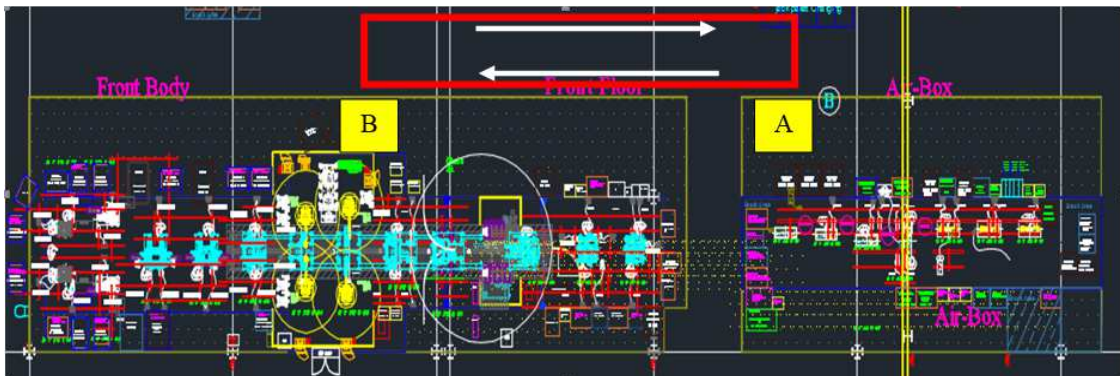


Fig.1. the Body shop layout

2.2. The pallet characteristics:

- The metal (iron) pallet's dimension is:
 - Length: 2000 mm
 - Width: 1500 mm
 - Height: 1000 mm
- The loaded pallet's weight is 450kg.
- The pallet's capacity is 16 unit.
- The active pallets between stations A and B are 3 units.



R.F.P
for AGV Project

Doc. Code: 1800/01/02/01

Ver. B

more:

- The production rate of line is 40 u/h

2.3. The aim of project:

The available pallets at the end of dashboard production line (point A), which are filled up by workers manually, are transferred to the point B by the lift truck. So, the aim of installing of AGVs here is to replace them to the lift truck for keeping safe the workers from accident, reducing the pollution and increasing the efficiency.

3. Technical and Engineering Issues:

3.1. General Requirements:

- 3.1.1. All programs and software's menus and software comments drawings, engineering and documentations should be in English or Persian language and user friendly too.
- 3.1.2. The control system have to have the ability to be extended in the future.
- 3.1.3. The system should be utilized with proper monitoring system to monitor the system status, send the commands to control the AGVs in manual mode. The monitoring program should have the ability to monitor all error signals too. It has to show and log the errors that happened in the system and offer solutions for solving the problems. The monitoring program should have different access levels for operation and maintenance modes.
- 3.1.4. The control system have to have the ability to integrate with the available SCADA system.

3.2. Control System:

- 3.2.1. The standard industrial networks, are allowed to be used by the bidders.
- 3.2.2. By the end of project the last version of backups consist of all setups must be deliver to the purchaser. Definitely, the dongles and passwords must to be delivered to the purchaser by the bidders.



3.3. The AGV's Specifications:

AGV Specifications:

Mechanical	
Dimensions	2000mm x 1100 mm (1200mm, 1300mm and 1400mm Optional), L x W
Load	500 Kg (700 Kg Optional)
Driving System	Mechanum Wheel, 4 wheels independent
Wheel Dia.	15 cm
Max Driving Slope	1.50%
Max Speed	10 m/min
Start/Stop Acceleration	0.1 m/s ²
Lifting Mechanism	4 Lifting Jacks with Load Balance control, Add-In Lifting Brackets (Optional)
Weight	
Navigation	
RADAR	Accurate mmWave RADA Technology, 60-67GHz with Embedded Antenna, 360 View, 0.5 to 10m Monitoring Distance, No Light, Smokey and Dusty Climate Recognition, With Ability to Recognize Glass and Transparent Objects
TOF Sensor Array	High Accurate TOF Sensor Array with 5 to 50 CM accuracy for general Placement
Laser Sensors	Very High Accurate Laser Distance meter with 0.1mm to 50mm Accuracy
IPS Position Control	UWB (Ultra-Wide Band) Interior Positioning System for Positioning, Working Area, Fencing and Restricted Area Control
Moving Path Control	AI Deep Learning, Real Time Area Control and Path Finder System, Free Path Finding (No Need for any kind of floor Path Lines or Indicators)
Edge Control	AGV and Load Edge Control and Path Buffer Defining (2 Dimensional)
Camera	Image and Video Area Control System (Optional)
Control	
System Control	Full Automated AI Base Control
Manual Control	Manual Control Unit for Placing System Origins, Charging Stations and Path Training
Switches	Manual STOP/RUN switch
Incident Control	Incident Recognition and Alarming System
Alarms	Self-Test Reporting and Alarm
Communication	
Cable	Gigabit LAN, USB2, RS232 and CAN Connector



R.F.P
for AGV Project

Doc. Code: 1800/01/02/01

Ver. B

Wireless	Wi-Fi 2.45Ghz, Bluetooth
Communication Security	Security AES 256, SHA-2
Software	
OS	ROS (Robot Operating System), (Linux Optional)
Database	Global and Local My SQL Database Support, (Oracle or MS SQL Server Optional)
Customization	Software Customization Support
WEB Application	Webservice management and data transfer support
New Components	Support All New Components (Additional Robot Arms, Sensors, ... that support by ROS, Optional)
AGV Management	Fully Control of AGV Station Timing, Charging, Path and Working area and Traffic Management
Reporting	Wide Historical, Operational, Busy Time, Off Time, Charging Time Reporting Options, Power Condition, Power Quality and Functionality Reporting, Self-Test and Alarm Reports, Functional LOGs
AI Core	AI Edge Computing Core with Support TensorFlow, Coffee platforms and Yolo2/3/4 Networks support
Development	Full Software SDK, Sample Code, Development Tool chain Support (Optional)
Hardware	
Mother Board	ARM Cortex A72, 8 Core, Embedded 4GB RAM, 32GB Storage, (Intel Core i7 8th Generation Optional)
	Ultra-High-Speed AI Hardware Core, support TensorFlow and Coffee
Storage	128GB M.2 SSD, (Up to 1TB SSD, need Intel Core i7 MB, Optional)
Sensor HUB	Up to 16 USB2 Ports
Power	
Battery Power System	400AH, LFP Battery, 20,000 Cycle Charge and Discharge, Long Life
ACAM Power System	ACAM Power System (optional), Very Fast Charging (up to 100A in 10 to 15 min), up to 5 years service (No need to Change Batteries),
Power Control System	Batteries Cell Charging Balance, Current and Voltage Control, Battery Coulomb Control, Battery Life time Control
Charging Connector	Anti-Corrosion, Gold Plated, Long life Charging Connector
Safety	
Emergency Breaks	Intelligent and Manual
Incident Management	Real Time Incident recognition and Fast Stop system
Power Charging	Safe Power Charging Control and Fast Charging Brake system



R.F.P
for AGV Project

Doc. Code: 1800/01/02/01
Ver. B

Temperature Control	Battery Temperature Control, Climate Temperature and Humidity monitoring
Standards	
Safety and Protection	Adhere IR-ISNO 5233-1, IEC60950-1, ANSI/ITSDF B56.5-2012 (ITSDF, 2012), ISO12100:2010, ISO 13849-1:2015
Supporting Services	
Guarantee and Warranty	1 Year Full support by Local Office Daily Urgent Service. (5 Year Optional)
Spare parts and Repair	10 Years Fully Support by Local Office Daily Urgent Service (Optional)
Training Services	
Operation	60 hours AGV operation training Plan for 5 Technicians (Optional, Call for other Plans)
Software Development	120 hours Software Development Plan (Optional, Call for Other Plans)

3.4. Commissioning:

- 3.4.1. During startup period and after installation (SOP), the bidder’s supervisors should stay at the plant to solve upcoming problems that may occur after installation. The SOP should be included in the installation schedule.
- 3.4.2. The schedule must be confirmed by the purchaser before starting the project.

3.5. Delivery Items:

- 3.5.1. All equipment and tools using for troubleshooting, calibration, and maintenance issues.
- 3.5.2. Source and backup files of controlling and monitoring software
- 3.5.3. All passwords
- 3.5.4. All used comments in control program (English).
- 3.5.5. The registration form of the software used in programming of the system
- 3.5.6. All documentation & backups listed under the title of “Documentation” (article 3.10).
- 3.5.7. An original version of software with its authorization in a laptop with good capabilities to use for programming of the AGVs for future modifications.

3.6. Spare Parts:

- 3.6.1. The purchaser will buy the required spare parts of the system for 2 years. In this way the bidder should provide the recommended spare part list of the system with the documentation shows exploded view of elements and their ordering numbers.
- 3.6.2. The list will be checked and then confirmed by the purchaser.



R.F.P
for AGV Project

Doc. Code: 1800/01/02/01

Ver. B

3.7. Documentations:

- 3.10.1. All drawings, manuals, brochures, catalogs, training documentation, troubleshooting documents, software installation CDs and their keys and registration forms of user programs, system programs, program comments, system programs backup, all user and software passwords and the design drawings should be delivered to the purchaser in English language, two series, both soft-copy and hard-copy.
- 3.10.2. All the submitted documents by the bidder should be approved by him and stamped.

3.11. Engineering Services:

The winner of the bid is responsible to do and deliver the complete package of engineering. These activities (scope of project) are as following list, but not be limited to:

- Complete engineering design (basic and detailed design)
- Project management
- Supply of all equipment (except the ones are possible to supply from local suppliers)
- Supervision for local manufacturing activities
- Data sheets , specification and information of all purchasing items
- Fabrication drawings and specifications
- Installations drawings and specifications
- Commissioning
- Training
- Manuals and maintenance hand books
- Spare part lists

*All documentation shall be prepared in English/Persian.

3.12. Guaranty and Warranty:

The system should be guaranteed at least for one year after the start of production for a 16 hour / 6 day weekly operations. Also the bidder should provide spare parts and other requirement services of the system for a period of minimum 10 years.



R.F.P
for AGV Project

Doc. Code: 1800/01/02/01

Ver. B

4. Contact Persons:

- For technical Issues:

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