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**SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise
indicated, all other terms and conditions of the Solicitation
remain the same.

Ce document est par la présente révisé; sauf indication contraire,
les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

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86 Clarence Street, 2nd floor
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Title - Sujet Mobile Collaborative Robot Assembly	
Solicitation No. - N° de l'invitation 31184-199531/A	Amendment No. - N° modif. 003
Client Reference No. - N° de référence du client 31184-19-9531	Date 2018-12-05
GETS Reference No. - N° de référence de SEAG PW-\$KIN-555-7604	
File No. - N° de dossier KIN-8-50065 (555)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2018-12-12	
Time Zone Fuseau horaire Eastern Standard Time EST	
F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input checked="" type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Webster, Sean	Buyer Id - Id de l'acheteur kin555
Telephone No. - N° de téléphone (613) 545-8843 ()	FAX No. - N° de FAX (613) 545-8067
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

Instructions: See Herein

Instructions: Voir aux présentes

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Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

Amendment 003 – Mobile Collaborative Robot Assembly is being issued in response to Offeror's questions and Canada's responses.

Reference : Annex A, 4.1 a. Specification of Manipulator item i. Payload

Q1: Would alternate payloads of 14 kg, 12 kg, 6 kg, or 4 kg be acceptable?

A1: 14 kg and 12 kg are acceptable, less than 7 kg is not. The applications we have in mind require a minimum of 7 kg.

Delete: Payload : 7 – 10 kg

Insert: Payload : >=7 kg

Reference : Annex A, 4.1 a. Specification of Manipulator item ii. Reach

Q2: Would alternate reaches of 1100 mm, 1300 mm, 700 mm, or 900 mm be acceptable?

A2: Yes, all of these reaches are within the acceptable technical specifications.

Reference : Annex A, 4.1 a. Specification of Manipulator item xvi. Full color teach pendant

Q3: While a teach pendant is a requirement for conventional industrial robots, is it a practical requirement on a collaborative robot? Would alternate methods be considered, such as positioning the robot with compliant motor assisted human guidance, then setting vision activation, gripper, or tool functions, and assigning additional information for a given node through computer input?

A3: A teach pendant is the most commonly used interface in industry and we wish to best replicate an industrial environment, a teach pendant is required.

Reference : Annex A, 4.1 a. Specification of Manipulator item xvi. Full color teach pendant

Q4: Would using a teach pendant for tracing paths, e-stop, or switching from teach to auto-function mode in conjunction with alternative teaching methods be acceptable?

A4: A teach pendant is the most commonly used interface in industry and we wish to best replicate an industrial environment, a teach pendant is required.

Reference : Annex A, 4.1 a. Specification of Manipulator item xvii. Connection Cable

Q5: Why is this a requirement on a mounted mobile robot?

A5: A robot to controller connection cable is not required.

Delete: In its entirety

Reference : Annex A, 4.1 b. Specifications of Platform item i. Payload

Q6: Would a platform payload of 90kg be acceptable?

A6: Yes.

Delete: Payload: >=100kg

Insert: Payload: >=90kg

Reference : Annex A, 4.1 b. Specifications of Platform item ii. Max Speed

Q7: Would a maximum speed of 1.3 m/s be acceptable?

A7: Yes, this speed falls within the acceptable technical specifications.

Reference : Annex A, 4.1 b. Specifications of Platform item iv. Omnidirectional

Q8: Would a robot that is bidirectional and capable of turning 360 degrees on its own profile be acceptable?

A8: The intended application of the robot requires omnidirectional movement.

Reference : Annex A, 4.1 b. Specifications of Platform item v. Positioning Accuracy

Q9: We believe that +/- 2.5mm positioning accuracy is very difficult to achieve using a SLAM navigation system, a high accuracy positioning system has a tolerance of +/- 10mm, would this be acceptable?

A9: Yes, the positioning accuracy can be expanded to +/- 25 mm.

SEE QUESTION 10 FOR RELEVANT CHANGES TO THE RFP

Reference : Annex A, 4.1 b. Specifications of Platform item v. Positioning Accuracy

Q10: Why is the tight tolerance required? If it is required for collaborative arm performance, would it be acceptable to use a landmark 3-dimensional coordinate shifting tool that shifts the entire tool frame to correct for positional variance when the robot finds a defined landmark?

A10: We are looking for the tolerances provided to ensure sufficient position of the arm relative to our application. The additional calibration before work step to improve the accuracy would be a suitable solution.

Delete : <+/- 2.5 mm positioning accuracy

Insert : <=+/- 25 mm positioning accuracy of the platform itself, with a system to calibrate the tool frame of the robot to the process/application before the work step

Reference : Annex A, 4.1 b. Specifications of Platform item viii. 1 Utilizing APIs to integrate into MES systems

Q11: Would TCP, Telnet (low level) be acceptable?

A11: Our native communication is using OPC UA, HTTP services, MQTT and we can develop an interface for those protocols, otherwise we will require a wrapper to be made by the vendor to integrate into our systems.

Delete: 1. Utilizing API's to integrate into MES systems

Insert: 1. Capable of integrating machine operational planning into an MES system through websockets, opc ua, or HTTP services.

Reference : Annex A, 4.1 b. Specifications of Platform item viii. 3 Communicating process variables and status to DCS system

Q12: Would Wireless momentary I/O transfer or TCP telnet be acceptable?

A12: Our native communication is using OPC UA, HTTP services, MQTT and we can develop an interface for those protocols, otherwise we will require a wrapper to be made by the vendor to integrate into our systems.

Delete: 3 Communicating process variables and status to DCS system

Insert: 3. Capable of communicating important process variables and status to a DCS system through websockets or opc ua.

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED