



**RETURN BIDS TO:**

**RETOURNER LES SOUMISSIONS À:**

**Bid Receiving - PWGSC / Réception des soumissions  
- TPSGC**

**11 Laurier St. / 11, rue Laurier**

**Place du Portage, Phase III**

**Core 0B2 / Noyau 0B2**

**Gatineau, Québec K1A 0S5**

**Bid Fax: (819) 997-9776**

**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**

**Vendor/Firm Name and Address**

**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**

Electrical & Electronics Products Division  
11 Laurier St./11, rue Laurier  
7B3, Place du Portage, Phase III  
Gatineau, Québec K1A 0S5

<b>Title - Sujet</b> Battery Manufacturing Line	
<b>Solicitation No. - N° de l'invitation</b> 31026-171557/A	<b>Amendment No. - N° modif.</b> 001
<b>Client Reference No. - N° de référence du client</b> 31026-171557	<b>Date</b> 2017-03-13
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$HN-458-72439	
<b>File No. - N° de dossier</b> hn458.31026-171557	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2017-04-10</b>	<b>Time Zone</b> Fuseau horaire Eastern Daylight Saving Time EDT
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Lee, Carlos	<b>Buyer Id - Id de l'acheteur</b> hn458
<b>Telephone No. - N° de téléphone</b> (819) 420-0336 ( )	<b>FAX No. - N° de FAX</b> (819) 953-4944
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

Amendment 001 is raised to provide answers to the following questions and to extend the closing date as follows:

**Closing Date:**

**INSERT:** April 10, 2017

**DELETE:** March 27, 2017

Question 1: Will you accept a machine that is certified by a recognized organization in Japan?

Answer 1: No. The equipment has to be CSA (or ULC) certified as required. The potential supplier can do the CSA/ULC certification at their factory or after delivery, however they are responsible for the CSA/ULC approval and for any modification to the equipment that could be required to obtain the certification. Equipment that are not approved will not be accepted.

Question 2: Does the entire custom built unit need to be certified or can it be constructed using UL certified and/or UL compliant parts?

Answer #2: No the whole unit should be CSA (or ULC) approved.

Question 3: The specification requires that the High Speed Disperser operate at 1000-7500 RPM (section 3.2.2). Would a disperser operating at a lower RPM be acceptable?

Answer 3 : Yes. There was a mistake in the 3.2.2 specification : the range should be read 1000-5000 rpm (and not 1000-7500 rpm). This is a minimum range.

**The Answers to Questions 4 to 35 appear on the attached spreadsheet**

All other terms and conditions remain unchanged.

Specification	Comment/question/request	Answer
<b>2.1 Overall dimensions</b>		
2.1.1 The overall length of the machine must not exceed 4 meters.	Are these dimensions flexible to accommodate a larger machine? If so, what are the maximum dimensions?	The dimensions correspond to the maximum available space for the machine. The height specification refers to the door height. These are mandatory specifications.
2.1.4 The overall height of the machine must not exceed 2.1 meters.		
<b>3.1 Coating machine</b>		
3.1.1 The machine must include the following sections: unwind roll, splice table, ink feeding station, die coater, drying oven, chill/pull roll and rewind roll.	Are these specifications mandatory?	Yes.
3.1.3 The machine must allow the use of aluminum, copper or nickel foil substrates with thicknesses ranging between 9 and 50 $\mu\text{m}$ .	Can a sample of Nickel foil be provided?	No. Typical is 20-30 $\mu\text{m}$ thick.
3.1.7 Equipment must be supplied on self-standing frame with safety enclosures.	Please clarify the meaning of safety enclosures	All means that allow for a safe operation of the machine : doors, guards, etc.
3.1.9 Any supporting steel plates must meet the level of flatness of a maximum total indicator run out (TIR) of 0.25 $\mu\text{m}$ .	This requirement is not clear. Please explain as TIR would typically apply to machine rollers.	This TIR specifically refers to the flatness of the plates (0.25 $\mu\text{m}$ maximum deviation).
3.1.11 All rolls of the machine must have an outside diameter (OD) of at least 100 mm.	We use 50mm OD rollers in dryer, 80mm OD web guide rollers, and 104mm OD rollers most other locations. Would this be acceptable?	This would be acceptable only if the web path in the dryer is horizontal. Chill roll must have a OD of at least 150 mm (cf. 3.3.13).
<b>3.3 Roll-to-roll system</b>		
3.3.4 Both unwind and rewind must have an OD capacity of at least 300mm.	Would a reel max dia is 250mm be acceptable?	No.
3.3.7 The machine must have the capability of working with a web tension ranging between at least 0.2 to 1 PLI (pounds per lineal inch).	Does this tension range apply to 50mm foil width? If so, would a higher tension range be acceptable?	This tension range is for all foil widths. Wider tension ranges are acceptable (as soon as they cover at least the specified range of 0.2 to 1 PLI).

3.3.8 The machine must have at least three independent zones of automatic tension control strategically placed in the web course: between unwind and die (unwinding zone), between die and chill-roll (drying zone) and between chill-roll and rewind (rewinding zone).	Would a machine with two tension zones be acceptable?	No.
3.3.10 The splice table must include clamps and knife guide slots.	Would splicing without a splice table directly at unwind and rewind be acceptable?	No.
3.3.12 The roll-to-roll system must include a chill/pull roll downstream of the drying oven, to cool the web and pull it prior to windup. 3.3.13 The chill roll must have a minimum external diameter of at least 150 mm with a wrap angle of at least 180 degrees to maximize heat transfer.	What is the required temperature at point of rewind? Is room temperature acceptable? If so, the coat electrode will cool to room temperature prior to rewind due to high rate of cooling and minimum 30 second travel time before rewinding.	Room temperature at rewind is acceptable.
<b>3.5 Slurry feeding system/station</b>		
3.5.2 The slurry feeding station must operate using a pressurized system.	what level of pressure is required?	This means that the slurry must be delivered to the slot die via a positive pressure system as opposed to gravity feed. Pressure required to be determined by vendor.
3.5.4 The slurry feeding station must be able to operate with slurry volumes as low as 1 L.	A system with 5 to 10 L tank could handle small volumes of slurry, the hold-up volume is ~0.5L. Would 2 different slurry feeding systems be preferred? One for small volume and one for typical volume?	This is to the supplier's appreciation.
3.5.6 The interior of the tank must be easily cleanable: equipped with tank liners chemically compatible with typical battery slurries or have an internal finish of 1-3 Ra.	We offer a different approach for slurry feeding. Our tank has exit port on bottom. The slurry is gravity fed to the progressive cavity pump. Would this approach be acceptable? We could polish the internal surfaces of the tank, but are concerned that the agitator	Slurry feeding must be properly controlled to the progressive cavity pump to ensure a constant flow and limit the lost volume, requiring a pressurized tank. Gravity feeding is not acceptable. The agitator do no need to have the same surface finish level.
3.5.9 The tank must include a pressure gauge for internal pressure monitoring.		

3.5.10 The tank must include a pressure relieve valve.	may not have same level of finish.	
3.5.11 The tank must be equipped with an agitator driven by an inherently safe motor, to maintain the homogeneity of the slurry.	What is definition of inherently safe? Could you provide a list of solvents that will be used for slurry?	Inherently safe means spark-resistant. Solvents will mainly comprise N-methyl-2-pyrrolidone (NMP), dimethylformamide (DMF) and water –based solutions, but other solvents could be used as well.
3.5.12 The rotational speed of the progressive cavity pump must be adjustable.	What is the range of expected flow rates? Each pump has a fixed range over which it will deliver accurate/consistent flow. Would 2 different slurry feeding systems be preferred? One for small volume and one for typical volume?	The typical flow rates are expected to be around 0.5 to 50 cm <sup>3</sup> /min, depending on the materials and conditions (not limiting). The design of the slurry feeding system is left to the appreciation of the vendor.
<b>3.6 Coating head</b>		
3.6.2 The coating head must be equipped with a vacuum box that will allow a better control and stabilization of the slurry flow during application onto the moving web. The vacuum flow must be adjustable via a vacuum gage.	What is purpose of vacuum box? If the purpose is to support intermittent coating, would the approach to move die out /in and stop/start slurry flow be acceptable?	As explained, the vacuum box serves to add a degree of control to the slurry flow, and not for intermittent coating purposes.
3.6.15 The die must be capable of operating with multiple types of slurries, with viscosities ranging from 5,000 to 10,000cPs.	Can a Rheology plot for each slurry be provided? This will allow us to confirm a single die is acceptable; or recommend multiple dies if needed	No. A range of slurries will be tested in different R&D projects. The system must be as flexible as possible.
3.6.16 A set of 4 stainless steel precision die-shims pre-punched to a perfect fit with the die must be included : 2 shims allowing a coating width of 60 mm and having thicknesses of 50 and 100 µm ; 2 shims allowing a coating width of 210 mm and having thicknesses of 50 and 100 µm ;	Are polymer shims acceptable?	No.

3.6.20 The left/right gap adjustment in the operating position must allow a fine adjustment via precision slide assemblies, with a precision of $\pm 1\mu\text{m}$ .	Would an alternate design be acceptable? The alternate design mounts the slot die on a plate. The slot die is aligned to the backing roll. The plate is moved in and out via motorized actuation	This design would not be accepted. An independent left/right adjustment is required no matter the die mounting design.
3.6.24 The coating head must be enclosed for safety reasons.	Would an enclosure around the entire coating station meet this requirement? We interpret the “coating head” to be the slot die area only.	Yes.
<b>4.0 Spare Parts</b>		
4.1.3 OEM Item Part Number;	What is meant by OEM part number?	OEM : Original Equipment Manufacturer.
<b>5.0 Deliverables</b>		
5.1 A set of tools specific to the equipment must be provided.	Does this mean only tools that are unique to the machine need to be provided?	It means that all specific tools (including those unique to the machine) that are needed to operate and maintain the machine must be provided.
<b>7.0 General Information and services provided by NRC</b>		
7.1 The equipment must be CSA or ULC-approved or certified by a recognized organization in Quebec. Certified or Approved for use in accordance with Canadian electrical code	The Enclosure is ULC; is this sufficient? Or is a 3rd party inspection required?  The whole equipment must be certified (including each electrical component of the machine). This is usually done by 3 <sup>rd</sup> party inspection. You can find a list of accredited organizations at the following website : <a href="https://www.rbq.gouv.qc.ca/?id=2521">https://www.rbq.gouv.qc.ca/?id=2521</a> The certification can be done at the factory or after delivery, but the supplier remains responsible for the CSA/ULC approval and for any modification to the equipment that could be required to obtain the certification. Equipment that are not approved will not be accepted.	
7.4 All measuring, monitoring, display and record must be in SI (System international) units.	What does record mean? Please give some examples	“Record” typically means storing the data into digital files (on a computer or a data logger).

<b>8.0 Items from General Section of Bid Document</b>		
8.1 Marking: The Contractor must ensure that the manufacturer's name and part number are clearly stamped or etched on each item for positive identification purposes.	Please clarify the meaning of this for machine like the drawing provided. Does one identification plate for the machine meet the requirement?	Yes, the machine name plate with serial number and equipment number shall suffice.
<b>9.0 General Enquiries</b>		
Coating Parameters	Please provide a set of coating parameters: Slurry % solids, wet coat weight per side, dry coat weight per side, and solvents for Anode and Cathode	Slurries will be typical for battery materials. As indicated, it is supposed to be an R&D machine, therefore maximum flexibility is required and new coating parameters will always be required.
Factory Acceptance Test (FAT)	Will the contract require a Factory Acceptance Test?	FAT is to be conducted at discretion of the supplier. NRC will not witness the test.
Site Acceptance Test (SAT)	Will the contract require a Site Acceptance Test after installation?	Yes, commissioning of the system (or SAT) is mandatory.