

**RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:**

**Bid Receiving - PWGSC / Réception des
soumissions - TPSGC**
1550 D'Estimaerville Avenue
1550, Avenue d'Estimaerville
Québec
Québec
G1J 0C7
FAX pour soumissions: (418) 648-2209

**REQUEST FOR PROPOSAL
DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Title - Sujet Pulsed Laser Illumination System	
Solicitation No. - N° de l'invitation 31206-144PG1/A	Date 2014-09-29
Client Reference No. - N° de référence du client 31206-144PG1	
GETS Reference No. - N° de référence de SEAG PW-\$BAL-001-16117	
File No. - N° de dossier BAP-4-37176 (001)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2014-11-12	Time Zone Fuseau horaire Heure Normale du l'Est HNE
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Tremblay, Marial	Buyer Id - Id de l'acheteur bal001
Telephone No. - N° de téléphone (418) 677-4000 (4159)	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Conseil national de recherches Canada (CNRC) National Research Council Canada (NRC) Site Saguenay 501, boulevard de l'Université est Saguenay (Québec) G7H 8C3	

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address

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

Issuing Office - Bureau de distribution

TPSGC/PWGSC
BFC Bagotville, CP 380
CFB Bagotville, PO Box 380
Bâtiment 62, local 112
Building 62, Room 112
Alouette
Québec
G0V1A0

Delivery Required - Livraison exigée See Herein	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
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	

PULSED LASER ILLUMINATION SYSTEM

NATIONAL RESEARCH COUNCIL CANADA (NRC) SAGUENAY SITE

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PART 1 - GENERAL INFORMATION

1.1 Requirement

The requirement is detailed under Article 6.1 of the resulting contract clauses.

1.2 Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results.

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2014-09-25) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

2.2 Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

Your proposal can be transmitted by fax to # 418-648-2209 or by mail to the following address:

➔ Bid Receiving Unit
Public Works and Government Services Canada (PWGSC)
1550 D'Estimauville Avenue
Quebec City, Quebec, Canada, G1J 0C7

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted to the Contracting Authority no later than ten (10) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

2.4 Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the province of Quebec.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (1 hard copy)

Section II: Financial Bid (1 hard copy)

Section III: Certifications (1 hard copy)

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid.

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponding to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (

<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>).

To assist Canada in reaching its objectives, bidders are encouraged to:

- (1) use paper containing fibre certified as originating from a sustainably-managed forest and/or containing minimum 30% recycled content; and
- (2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

Section I: Technical Bid

In their technical bid, bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Basis of Payment. The total amount of Applicable Taxes must be shown separately.

Exchange Rate Fluctuation

SACC Manual Clause C3010T (2013-11-06) Exchange Rate Fluctuation.

Section III: Certifications

Bidders must submit the certifications required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

4.1.1 Technical Evaluation

4.1.1.1 Mandatory Technical Criteria

The bid must meet the mandatory technical criteria specified below. Bidders must provide the necessary documentation to support compliance with this requirement.

Bids which fail to meet the mandatory technical criteria will be declared non-responsive. Each mandatory technical criterion should be addressed separately.

Mandatory Technical Criteria	
(1)	<p>The pulsed laser illumination system proposed must have been successfully implemented for industrial or research applications in at least two (2) organizations / businesses / laboratories in the World in the past four (4) years. No prototype equipment will be accepted.</p> <p>➔ In order to demonstrate that the proposed system is a proven product, Bidders must submit with their bid, the following information for at least two (2) projects:</p> <ul style="list-style-type: none"> (a) the project # 1 implementation date: _____; and (b) the organization / business / laboratory information to which the equipment was sold; details which should include: <ul style="list-style-type: none"> (i) organization name: _____, (ii) contact: _____, (iii) telephone: _____, and (iv) e-mail: _____.

Mandatory Technical Criteria

continued of criterion 1....

- (a) the **project # 2** implementation date: _____; and
- (b) the organization / business / laboratory information to which the equipment was sold; details which should include:
- (i) organization name: _____,
- (ii) contact: _____,
- (iii) telephone: _____, and
- (iv) e-mail: _____.

The information may be verified with the user to check and certify the accuracy of the information.

If the user is not available or the information contained in the list do not match the above requirements, the bid will be declared non-responsive.

- (2) Although bidders must propose products meeting all technical specifications outlined in Annex "A"; at the bid closing date, bids will be evaluated on the preselected technical specifications hereafter.

➔ To demonstrate that your products meet all technical specifications outlined in Annex "A", Bidders must submit with their bid, a copy of complete specifications and descriptive literature (technical documents) of the products offered. The technical documents must be already existing standards documents. The technical documents must not be written specially drafted to this Request For Proposal.

Canada will evaluate only the documentation provided with a bidder's bid. Canada **will not evaluate** information such as references to Web site addresses where additional information can be found, or technical manuals or brochures not submitted with the bid.

Mandatory Technical Criteria	
------------------------------	--

	continued - criteron (2)...
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	In the last column of the following table, bidders should indicate where in their technical documents we can find information on the preselected technical specifications:
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Preselected Technical Specifications from Annex A		Pages and/or lines of bidder's technical documents
➔ The illumination system must:		
1	be a laser or a laser diode;	
2	have a wavelength between 750 and 900 nm.	
3	operate in two pulse emission modes: <ul style="list-style-type: none"> continuous pulse emission; and emission of bursts of a set number of pulses. 	
4	be capable of producing pulses with a duty cycle of at least 1% in continuous mode.	
5	emit pulses with a minimum peak power of 220 watts per pulse at the light guide output.	
6	emit pulses in continuous mode at a repetition frequency adjustable from 10 Hz to 10 kHz.	
7	emit pulses of adjustable duration between 0.5 and 80 microseconds	
8	operate with external and internal synchronization for laser pulse emission.	
9	operate as a stand-alone unit with no need for an external computer.	

4.1.2 Financial Evaluation

The total price of each bid will be established using the following criteria:

- (a) Bidders must submit firm prices, Canadian customs duties and excise taxes included, and Applicable Taxes excluded. For evaluation purposes, bids received in a foreign currency will be converted to Canadian funds using the appropriate rate of exchange using the rate quoted by the Bank of Canada as being in effect on date of bid closing.
- (b) Bidders must submit their prices DDP destination; Delivered Duty Paid.

4.2 Basis of Selection - Mandatory Technical Criteria

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

PART 5 - CERTIFICATIONS

Bidders must provide the required certifications to be awarded a contract. Canada will declare a bid non-responsive if the required certifications are not completed and submitted as requested.

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after award of a contract. The Contracting Authority will have the right to ask for additional information to verify the bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications or to comply with the request of the Contracting Authority for additional information will also render the bid non-responsive.

5.1 Mandatory Certifications Required Precedent to Contract Award

5.1.1 Code of Conduct and Certifications - Related documentation

By submitting a bid, the Bidder certifies that the Bidder and its affiliates are in compliance with the provisions as stated in Section 01 Code of Conduct and Certifications - Bid of Standard Instructions 2003. The related documentation therein required will assist Canada in confirming that the certifications are true.

5.1.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available from Human Resources and Skills Development Canada (HRSDC) - Labour's website.

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

PART 6 - RESULTING CONTRACT CLAUSES

Notice: Numbering will be revised at contract award

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

6.1 Requirement

The Contractor must supply one (1) pulsed laser illumination system, in accordance with the requirement at Annex "A".

6.2 Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

6.2.1 General Conditions

2010A (2014-09-25), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

6.2.2 Supplemental General Conditions

4001 (2013-01-28), Supplemental General Conditions - Hardware Purchase, Lease and Maintenance”, apply to and form part of the Contract.

6.3 Term of Contract

6.3.1 Delivery Period

All the deliverables except training must be received within a period ninety (90) calendar days after the contract is awarded.

6.4 Authorities

6.4.1 Contracting Authority

The Contracting Authority for the Contract is Marial Tremblay

Supply Specialist

Telephone: (418) 677-4000, Ext.: 4159

E-mail address: marial.tremblay@pwgsc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

6.4.2 Technical Authority

The Technical Authority for NRC is :

(to be completed at contract award by PWGSC)

Name:

Tel.:

Fax:

E-mail:

The Technical Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters related to technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

6.4.3 Contractor's Representatives

Name and telephone number of the person responsible for :

(a) Contract Manager:

Name: _____
 Title: _____
 Telephone No.: _____
 Facsimile No.: _____
 E-mail Address: _____

(b) Delivery Follow up:

Name: _____
 Title: _____
 Telephone No.: _____
 Facsimile No.: _____
 E-mail Address: _____

6.5 Payment

6.5.1 Basis of Payment - Firm Lot Prices

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid the firm lot prices, as specified in Annex " B " for a cost of \$_____ (to be completed at contract award by PWGSC).

Customs duties are subject to exemption, and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

6.5.2 SACC Manual Clauses

Number	Date	Title
C2000C	2007-11-30	Taxes - Foreign-based Contractor
C2602C	2008-05-12	Customs Duties Exempt (National Research Council of Canada)
H1000C	2008-05-12	Single Payment

6.6 Invoicing Instructions

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.
2. Invoices must be distributed as follows:

The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.

6.7 Certifications

6.7.1 Compliance

Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the entire contract period. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

6.8 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the province of Quebec.

6.9 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) 4001 (2013-01-28), Supplemental General Conditions - Hardware Purchase, Lease and Maintenance;
- (c) 2010A (2014-09-25), General Conditions - Goods (Medium Complexity);
- (d) Annex "A" - Requirement;
- (e) Annex "B" - Basis of Payment; and
- (f) the Contractor's bid dated _____, as amended _____ (to be completed at contract award by PWGSC).

6.10 Electrical Equipment

All electrical equipment supplied under the Contract must be certified or approved for use in accordance with the Canadian Electrical Code, Part 1, before delivery or before the start-up, by a certification organization accredited by the Standards Council of Canada.

6.11 Shipping Instructions - Delivery at Destination

Goods must be consigned to the destination specified in the Contract and delivered Delivered Duty Paid (DDP) NRC-Saguenay, Chicoutimi, Quebec, Canada, Incoterms 2000 for shipments from a commercial contractor.

Solicitation No. - N° de l'invitation

31206-144PG1/A

Client Ref. No. - N° de réf. du client

31206-144PG1

Amd. No. - N° de la modif.

File No. - N° du dossier

BAP-4-37176

Buyer ID - Id de l'acheteur

ba1001

CCC No./N° CCC - FMS No/ N° VME

ANNEX " A " - REQUIREMENT

A.1 Annex "A"

Annex " A " attached hereto is to be inserted at this point and forms part of this document.

ANNEX " B " - BASIS OF PAYMENT

B.1 Pricing

(a) Before submitting prices, please refer to clause **6.5 Payment**.

(b) Please complete the last column of the following table:

Item	Description	Qty	Unit	Firm Lot Price
1	Pulsed Laser Illumination System (including one pair of safety goggles suitable for safe laser use) <ul style="list-style-type: none"> according to Mandatory Technical Specifications of Annex A. ➔ Brand Name Offered: _____ ➔ Model Offered: _____ 	1	lot	\$
2	Documentation <ul style="list-style-type: none"> as per section 5. of Annex A. 	1	lot	\$
3	Electrical Equipment <ul style="list-style-type: none"> as per sub-section 6.1 of Annex A; and certified or approved under clause <u>6.10 Electrical Equipment</u> of this document. 	1	lot	\$
4	Delivery Charges - Delivery at Destination <ul style="list-style-type: none"> goods delivered to NRC-Saguenay, Chicoutimi, Quebec, Canada; according to clause <u>6.11 Shipping Instructions - Delivery at Destination</u> of this document. 	1	lot	\$
Total Value of the Contract:				\$

ANNEX " C " - PRESENTATION OF YOUR BID

Below is a checklist of the contents of your bid. This list is not an exhaustive list, it remains the Bidder's responsibility to prepare its bid in accordance with the instructions contained in the Request For Proposal (RFP) and provide a comprehensible and sufficiently detailed bid, including all requested pricing details, that will permit a complete evaluation in accordance with the criteria set out in the RFP.

Page 1	Bidders should include with their bid, the first sheet of this RFP properly completed and signed. Refer to 2003 Standard Instructions mentioned in clause 2.1 Standard Instructions, Clauses and Conditions .
Page 5	Bidders must submit their bid only to the address indicated in clause 2.2 Submission of Bids .
Pages 9 to 11	Bids of Bidders must meet the mandatory technical criteria described in clause 4.1.1.1 Mandatory Technical Criteria . ➔ As required in clause 4.1.1.1, <u>join with your bid</u> , copy of complete specifications and descriptive literature (technical documents) of the products offered.
Page 13	Bidders who are incorporated, including those bidding as a joint venture, must provide with their bid or promptly thereafter a complete list of names of all individuals who are currently directors of the Bidder. Refer to clause 5.1.1 Code of Conduct and Certifications - Related documentation .
Page 16	Bidders should submit with their bid, clause 6.4.3 Contractor's Representatives properly completed.
Page 20	Bidders must include with their bid, Annex "B" - Basis of Payment duly completed.



Conseil national de recherches
Canada

National Research Council
Canada

Site Saguenay

Saguenay Site

Centre des technologies
de l'aluminium

Aluminium Technology
Centre



Annex “A” Requirement

Pulsed Laser Illumination System

Reference No.: REQ 0814PG001

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1 PURPOSE

The Aluminium Technology Centre (ATC), Saguenay Site, of the National Research Council of Canada (NRC) wants to purchase a powerful pulsed illumination system operating in the near-infrared to illuminate the fusion zone of metal welds (e.g., laser welds), mainly aluminium welds. The system must be able to illuminate in one direction (laser or laser diode type) the weld site with pulses of light radiation of duration controllable by the operator. The illumination system must also be synchronizable to allow image acquisition with a digital camera (e.g., CMOS or CCD).

The scope of work includes supply and delivery of the system to the address of the NRC – Saguenay.

2 DELIVERABLES

- 2.1. One pulsed laser illumination system as described in detail below;
- 2.2. One pair of safety goggles suitable for safe laser use;
- 2.3. Relevant documentation.

3 RESTRICTIONS

There are two (2) types of restrictions concerning the operating environment of the item to be purchased:

- 3.1. a restriction with respect to dimensions (encumbrance), and
- 3.2. a restriction with respect to the wavelength of the laser radiation.

These two restrictions are described in detail below.

4 MANDATORY TECHNICAL SPECIFICATIONS

4.1. Mandatory general requirements for illumination system

4.1.1. Requirements related to light radiation emission

The illumination system must:

- 4.1.1.1. be a laser or a laser diode;
- 4.1.1.2. have a wavelength between 750 and 900 nm;
- 4.1.1.3. be able to emit laser pulses of a duration and repetition frequency controllable by the operator;
- 4.1.1.4. operate in the following two pulse emission modes:
 - 4.1.1.4.1. continuous pulse emission, and

- 4.1.1.4.2. emission of bursts of a set number of pulses;
- 4.1.1.5. be able to produce pulses with a pulse emission duty cycle of at least 1% (values greater than 1% accepted) in both pulse emission modes (continuous and burst);
- 4.1.1.6. Provided that the parameters (pulse frequency and duration) are within the maximum limit of 1% of the duty cycle, the system must emit laser pulses:
 - 4.1.1.6.1. of a duration adjustable from half a microsecond (0.5 μ s) to 80 microseconds (80 μ s) irrespective of pulse frequency;
 - 4.1.1.6.2. with repetition frequency adjustable from 10 Hz to 10 kHz irrespective of pulse duration;
 - 4.1.1.6.3. with power at the illumination system output (after transmission by light guide) of at least 220 watts per pulse (peak power) irrespective of pulse duration and frequency.

4.1.2. Requirements related to illumination optical system

The illumination system must:

- 4.1.2.1. be equipped with a light guide which must be:
 - 4.1.2.1.1. flexible, and
 - 4.1.2.1.2. at least two (2) metres long;
- 4.1.2.2. ensure the light guide transmitting the laser radiation is:
 - 4.1.2.2.1. connected at one end to the illumination system (laser emission module), and
 - 4.1.2.2.2. connected at the other end to an optical focus head measuring 180 mm x 60 mm x 60 mm or less;

4.1.3. Requirements related to light pulse synchronization

Pulse emission must:

- 4.1.3.1. be selectable by the operator for triggering:
 - 4.1.3.1.1. internally (system internal clock), or
 - 4.1.3.1.2. externally (TRIG IN electrical signal from another device);
- 4.1.3.2. ensure that, when pulses are synchronized by the illumination system internal clock, this clock signal is available for connection to other devices to synchronize them (e.g., to activate image acquisition with a digital camera).

4.2. Other operational requirements

- 4.2.1. When pulses are synchronized by an external signal (TRIG IN), the illumination system must be able to emit pulse bursts consisting of from 1 to 200 pulses for each TRIG signal.
- 4.2.2. Pulse emission must occur after a trigger delay adjustable from 1 μ s (or less) to 50 ms (or more) after triggering by an external signal.
- 4.2.3. The system must operate as a stand-alone unit with no need for an external computer. The system must allow all parameters controlling the mode of operation (e.g., pulse duration, pulse emission frequency, internal or external triggering, etc.) to be input by the operator using a control panel included with the illumination system.

5 DOCUMENTATION

The following documents must be delivered with the pulsed illumination system:

- 5.1. Electrical certification: CSA or other certification recognized in Canada for electrical apparatus of similar type. The cost of said certification must be included in the bid;
- 5.2. User manual including safety instructions;
- 5.3. Service and maintenance manuals, which must include:
 - 5.3.1. maintenance tasks (if required),
 - 5.3.2. instructions for starting up and operating,
 - 5.3.3. complete description of system characteristics (detailed specifications);
- 5.4. The documentation must be in print and/or electronic format.
- 5.5. The documentation must be supplied in French and/or English.

6 OTHER REQUIREMENTS

6.1. Electrical supply

The system must connect to the NRC electrical supply, i.e., 110 V, 15 A, single-phase, 60 Hz AC. If an electrical device (e.g., transformer) is required to connect the illumination system to the NRC electrical supply, it must be included in the bid.

6.2. Other

- 6.2.1. The system must operate continuously and as a stand-alone unit, that is, with no liquid or gas required for cooling or any other purpose;

6.2.2. An internal ventilation cooling system is acceptable if required to cool the illumination system and/or electronics. Any internal ventilation system must be included in the bid if required.

6.3. Technical support and service

The supplier must provide a technical support service by telephone and/or the Internet during working hours at NRC-Saguenay (8 a.m. to 4:30 p.m. Monday to Friday).

7 DELIVERY

The system must be delivered to:

National Research Council of Canada
Saguenay site, via Newton Street, Door No. 6
Aluminium Technology Centre
501 Université Est Boulevard
Chicoutimi QC
G7H 8C3 Canada

8 INSTALLATION AND COMMISSIONING

Installation and commissioning will be done by NRC.