

Invitation for Proposals

CEATI International Inc. (CEATI)
1010 Sherbrooke Street West, Suite 2500
Montreal, Quebec, Canada H3A 2R7
Website: www.ceati.com

HYDRAULIC PLANT LIFE INTEREST GROUP (HPLIG)

CEATI PROJECT No. HPLIG-2010-04

**HYDRAULIC UNIT GOVERNOR UPGRADING GUIDE (INCLUDING THE
UPGRADING OF MECHANICAL GOVERNORS TO DIGITAL PLC CONTROL)**

CEATI International Inc. (CEATI) invites the submission of proposals to perform research work on the following topic:

TITLE

Hydraulic Unit Governor Upgrading Guide (Including the Upgrading of Mechanical Governors to Digital PLC Control)

INTRODUCTION

The average age of the HPLIG utility fleet of hydro plants is approximately sixty years. Many plants including their unit governor systems have been upgraded over the years as legacy mechanical systems have been advantageously replaced with analogue and digital governors. There are a number of advantages to upgrading, including less maintenance, more accurate and faster control responses, easier remote monitoring and the elimination of oil systems.

The purpose of the Governor Upgrade Guide will be to provide an outline of how to assess the current performance of an existing legacy system and to plan the migration to a state of the art governor system that will enhance unit performance, reliability, protection and minimize environmental risks especially where units are required to operate in a deregulated market and/or to accommodate the system integration of wind projects wind project.

PROJECT OBJECTIVES

The objectives of the Governor Upgrade Guide include:

- To provide a thorough understanding of the physics, working principles, performance and idiosyncrasies of hydraulic generation speed governors including their evolution from the original direct acting to the latest digital types.
- To provide an outline of how to undertake a condition assessment of an existing governor system.
- To indentify shortcomings and performance improvement opportunities.
- To provide a methodology to support the economic evaluation and cost benefit of upgrading a legacy system to a digital plc control.
- To highlight the leading edge technologies that can be incorporated into governor upgrades to improve performance reliability and communication.
- To provide a data resource of those companies that have leading edge expertise in this field.

SCOPE OF THE STUDY

The scope of the guide will cover all those governor systems currently in use across the HPLIG fleet (Woodward, American Gov, ABB, etc.) and comprehensively discuss areas related to unit governors such as: frequency control, AGC, system transients, governor testing, governor performance modeling, and performance simulation.

POTENTIAL BENEFITS

The purpose of the guide will be to provide a foundation for undertaking a governor upgrade program in a well planned and cost effective manner. The guide, through case study illustration, will also highlight the lessons learned from governor upgrades. Improvements in governor performance and reliability are of significant safety and cost performance benefit especially in the new environment of many start stops.

PROJECT STAGING

Although not a specific requirement, this project may be best performed in more than one stage. Such stages are to be clearly identified and laid out in tasks such that they can be used to monitor accomplishments, to identify project decision points, or preferred invoicing benchmarks. As an example, it may be desirable to undertake a survey of participating utilities to gain knowledge of governor upgrades that have been undertaken across the industry.

The staging and or milestones for the project should be identified as tasks against which budget milestones may also be indentified.

DELIVERABLES

A comprehensive governor upgrade guide that will include assessment methodologies, engineering criteria to support change, and most importantly successful case studies that will outline the technical and cost benefits of upgrading governor systems.

The guide will also contain information on testing and maintenance protocols to maintain reliability and meet relevant regulatory requirements.

It is expected that in addition to a literature review, use of contractor experience and working history, the guide will be supported by the inclusion of specific case histories illustrating best case studies of governor upgrading.

The successful proponent is expected to prepare a ready-to-publish report on the results of the investigation and present the results to funding consortium members. The completed report must be submitted for CEATI approval in editable, electronic format (Microsoft Word). In addition, the platform and version should be specified for any software or programs to be developed.

Progress reports will also be required on either a quarterly or milestone basis - normally these are scheduled to coincide with the completion of the identified tasks.

The successful proponent is also expected to provide the following:

- A ten to fifteen (10-15) slide Power Point Presentation. This should be composed of three main sections:

1. The factors motivating the initiation of the work;
2. A description of the main findings;
3. Summary of the conclusions and recommendations for future research.

- Contents for the Project's Technical Brief. This is a summary of the report (between 1,000 and 1,500 words), which is published separately by CEATI. Proponents are not responsible for the preparation of a ready-to-print Technical Brief, but solely to provide the contents for the following 4 sections: Background, Summary, Conclusions and Recommendations.

1. The Report Background section should be short (approximately 200 words) and should detail the reasons the work was conducted.
2. The Summary section should be approximately 700 words. It must provide a general description of the work program.
3. The Conclusions section should be about 150 words and should provide a general outline of the key results (do not include specifics).
4. The Recommendations section should be about 200 words and should include a description of the potential applications of the results.

Please note that all reporting must be submitted in English. If written English is not the author's strong suit, it is recommended that a technical writer be hired to review the document prior to submission.

BUDGET AND SCHEDULE

The proposal must contain a schedule and a quote of required remuneration for the work in US or Canadian dollars. All prices shall be presumed to be in Canadian dollars (CAD) unless explicitly specified otherwise in the proposal. Proponents' responses to this section must include a full breakdown of the budget and schedule, including an indication of rates and hours and the task allocation for the key personnel by task and must correspond to any phases or milestones outlined above. (Please refer to the Proposal Template for more information).

It is expected that this project can be completed (draft final report submitted for review and approval) within 10 months of initiation.

The proposal must include the names and qualifications of the key individuals who will be involved, as well as the name of the accountable manager.

CEATI is not bound to accept any proposal but any selection will take into account technical merit, qualifications, price and schedule. A proposal may be accepted in whole or in part. A commitment to proceed with the first phase of a multi-phase project does not automatically imply that the work of the subsequent phases will be undertaken.

ALTERNATIVE WORKS

Proponents shall generally follow the above description of work, but are encouraged to offer alternative works if these alternatives will meet the objectives and provide a better end product to the utilities sponsoring this work. Alternatives shall be fully described including logistics explaining why the alternate works are being offered and the benefits to be realized by the funding utilities. Where alternatives are proposed, separate budgets shall be calculated for each alternative.

SUBMISSION OF PROPOSALS

The consideration of proposals received will be limited to those who indicate their intent to employ a suitable experienced project team and who possess proper facilities to perform the work. Receipt of this “IFP” does not necessarily constitute a prior determination by CEATI that your organization has the requisite experience and facilities.

The proposal must be properly completed and executed in accordance with the CEATI guidelines available at <http://www.ceati.com/guidelines.php>, and shall be submitted to CEATI as an attachment in Microsoft Word at the following website: www.ceati.com/private/submissions. Be sure to indicate project number “**HPLIG-2010-04**” on the submission form. For assistance, please contact us at 514-866-5377 x 236.

CLOSING DATE FOR RECEIPT OF PROPOSALS

Thursday, March 18th, 2010, 4:00 pm EST