

DEVELOPMENT AND PROJECT MANAGEMENT
LITHIUM UNIT

PROCEDURE FOR THE REQUEST FOR INFORMATION (RFI) OF
“TESTING TECHNOLOGICAL PROCESSES FOR LITHIUM
EXTRACTION”
ATACAMA REGION

FEBRUARY 2024

Santiago, 2024

RFI TESTING TECHNOLOGICAL PROCESSES FOR
LITHIUM EXTRACTION

ENAMI
EMPRESA NACIONAL DE MINERIA

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Within the framework of ENAMI's lithium project, an assessment of the state of the art in developing lithium extraction processes is being carried out. The objective is to understand and provide opportunities for ongoing innovative initiatives worldwide. Additionally, ENAMI needs to understand the behavior of brine in different contexts. To achieve the mentioned objectives, conducting laboratory-scale pilot tests is essential.

1. General Background

The National Mining Company – ENAMI (acronym by the name in Spanish), plays a predominant role in the development of the lithium industry in Chile. As a state-owned company, it is authorized to explore and exploit directly non-concession minerals within the country without prejudice to the role granted by the National Lithium Strategy.

To fulfill this commitment, ENAMI established a subsidiary whose mission is to execute the lithium projects of interest. This development is encapsulated in the "Salares Altoandinos" project. This project involves the technical/economic feasibility study for the exploitation of salt flats located in the northeastern sector of the Atacama Region, specifically in the Chañaral province, Diego de Almagro commune.

In the context of the National Lithium Strategy and in line with the country's needs, ENAMI is committed to meet the social and environmental requirements for sustainable development. We aim to promote new technologies that respect local communities and minimize environmental impact. This Request for Information (RFI) process stimulates innovation and supports projects that redefine the lithium extraction landscape. In this way, we align with the goals of the National Strategy, looking to meet the changing dynamics of the market.

Within the mentioned context, it is important to acquire a comprehensive understanding of the brines in the project as a first step to conduct engineering studies. Therefore, it is essential to carry out laboratory pilot tests to understand better our brine's behavior and various technologies and technological processes.



2. Objectives

2.1. General Objective of the RFI

The general objective of the RFI phase is to understand the capabilities available in the national and international markets for conducting pilot tests of lithium extraction technologies, allowing ENAMI to conduct a proper technological assessment and better understand its brine. Upon completion of the RFI stage and based on its results, ENAMI may consider the possibility of conducting tests with one or more institutions that have participated in this process. It is important to note that this RFI stage does not imply binding commitments.

2.2. Specific Objectives of the RFI

1. Identify interested companies that have conducted pilot tests to evaluate lithium extraction methodologies.
2. Explore initiatives in various stages of development capable of accurately assessing the behavior and efficiency of brine.
3. Recognize existing opportunities to conduct brine pilot tests with each company.
4. Facilitate the potential creation of industrial and commercial alliances between national and international companies to develop new lithium extraction technologies.

3. Requirements of the RFI stage

3.1. Present situation:

The stage consists of mapping institutions that offer lithium extraction technologies:

1. Description of the legal entity, whether national or foreign or a consortium of entities, submitting the proposal for the brine testing pilot in Chile, detailing its components and auxiliary systems. Provide legal name and tax identification number (RUT) if applicable. In the case of forming a consortium, please provide information about its members.
2. Identification of the counterpart, including the name, position, and corresponding email address.
3. summary of the trajectory of the proposing entity/entities, indicating the countries in which they operate and providing an insight into their potential expansion, if applicable. Include years of experience and the proponent's vision.

3.2. Laboratory Information:

The lithium extraction process will be understood as all stages, from brine reception to obtaining technical-grade or battery-grade lithium. A process may involve one or more technologies. To analyze the level of development, please provide the following information:

1. General description of the technological process used for lithium extraction, including the process stages and a flow diagram showing input and output flows for each stage. Additionally, mention how the system adapts to brine variability.
2. Description of potential pre-treatment and post-treatment stages, including potential temperature increases, pH modifications, use of chemical solutions, and/or filter utilization.
3. Information, if available, about a sampling protocol, storage, and transportation.
4. Information about pilot testing laboratories, including location, equipment, and characteristics. If there are partnerships with other laboratories, such as for brine characterization, mention it in this section.
5. Presentation of the team of professionals in charge, specifying functions and roles.
6. Information about the pilot testing process, including requirements, work time, time to obtain results, and the type of experiment conducted. Consider that ENAMI will have approximately one cubic meter (thousand liters) of brine for pilot testing.
7. The Technology Readiness Level (TRL) achieved according to the criteria mentioned in ANNEX 4.
8. Information about the existence of patents, including their duration, if applicable.
9. Information about laboratory accreditations. If none, mention the quality and transparency standards they adhere to. If using an external laboratory, include it in this point.
10. Description of current performance indicators and the level of achievement.
11. Information on which indicators will be provided upon completion of pilot testing. For example, once pilot testing is completed, there will be CAPEX, OPEX, required raw materials, energy consumption, water consumption, and recovery rate.
12. Indication of the lithium carbonate grade achieved with the process. Processes expected to reach technical or battery grade.
13. Estimation if the technological process allows the extraction of other minerals that may be present in the brine, justifying the response.
14. Information on interest and/or progress in brine reinjection. If deemed appropriate, mention if there is a plan to assess the environmental impact of reinjection.
15. Mention how the scalability of the technological process works and if it presents comparative advantages.

16. Estimation if the technological process requires specific environmental conditions for proper operation. Consider variables such as temperature change, rain, and snow.
17. Mention a differentiating element for why an institution should test the brine with the offered technological process.
18. Inclusion of other relevant complementary information that the proponent considers pertinent to incorporate.

Annex 1 provides the form that interested parties must use to provide the mentioned information. For this purpose, the form will be available on the website enami.cl.

Interested parties can submit more than one proposal if they have more than one pilot plant or use various technological processes for lithium extraction. Each proposal must be submitted on a separate form; therefore, if, for example, a company wishes to submit two alternative projects, each project must be presented on a different form.

All interested parties must complete the letter of expression of interest to participate according to the format included in Annex 2. All attached files must be sent to rfilitio@enami.cl.

4. Application method

The proposal, along with the required technical, budgetary, and legal documents, must be submitted through the form provided in Annex 1, and if necessary, send the attached documents to the email rfilitio@enami.cl. If this option is not available, paper submissions will be accepted. A USB drive or other digital storage device with the corresponding information must be attached in this case. This package must be labeled 'Procedure for the RFI (Request for Information) Testing technological processes for lithium extraction' and delivered to the ENAMI Parts Office, located at Enrique Maclver Street No. 459, 1st floor, Santiago commune, and city of Santiago. The attached documents in the electronic system and on the USB drive or other digital storage medium must be presented in the document text, spreadsheet, or other compatible file formats, such as doc, xls, jpg, or pdf.

5. Deadlines

Event	Deadline
Period of Inquiries and Clarifications	Until April 5, 2024
Response Period for Inquiries	Maximum of 10 business days from receipt
Submission of Information Documents	April 20th
Publication of Results.	April 30th

Santiago, 2024

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Monday to Friday are considered business days. The time zone is Santiago: GMT-3.

6. Participants

Foreign and local entities are eligible to participate in this RFI stage. Applicants must provide the required information mentioned in item 3 through a form. The link is provided in Annex 1; information can be found in the publication on ENAMI's website.

7. More information

The opening of the RFI process will be announced on the website www.enami.cl, where all details about the program of activities and instructions for participation will be provided. This includes the designated email address for submitting applications, inquiries, and clarifications.

Those interested in participating in the process may submit their inquiries in Spanish through the email indicated in the prior communication. Inquiries must include a name and a contact email. Any inquiry made through another means or after the established deadline will not be accepted or answered.

Inquiries received will be answered within ten business days from their receipt and sent directly to the email from which they were formulated. ENAMI will publish a summary every fifteen days on its website, with the received questions and the respective answers. These documents will remain available for review, maintaining the confidentiality of the senders.

ENAMI may voluntarily provide clarifications to the Procedure to specify the scope or interpret elements that they consider unclear and could hinder the application. They may also modify the content of this document and its annexes. The modifications will be announced on the website www.enami.cl and will take effect from that announcement.

Together with the publication of the modifications, a new reasonable deadline will be established for the closure or reception of proposals, allowing potential proponents to adjust their responses or exercise their right to withdraw from the process.

In all cases, it is the responsibility of the applicant to periodically review the process on the ENAMI website and be aware of any modifications that may be made to the Procedure.

8. General Aspects

8.1. Form, Language, Publicity, and Interpretation

- a) Proposals must include the detailed information outlined in the previous section using the form available in Annex 1, accessible at www.enami.cl. Additionally, interested parties can attach files (in formats such as doc, xls, pdf, jpg) to their proposal via email to rfilitio@enami.cl. It is important to note that, in the RFI, the essential information is found in the form, and the attached files are optional.
- b) Since this procedure has been written in Spanish, in case of contradictions with a version translated into English, which may eventually be made available to interested parties, the Spanish version will prevail for all purposes. Both the proposal and all official communications must be conducted in Spanish. Additional annexes that form part of a proposal in another language must be accompanied by their respective translation into Spanish, with the Spanish version prevailing.
- c) The evaluation of proposals does not follow criteria for admissibility or award, as the central objective of the RFI is to understand different lithium extraction technologies and the possibility of testing brine in these processes.
- d) The results of the RFI stage will be published on the www.enami.cl website, focusing on the level of participation.
- e) No information submitted in a proposal in the RFI stage will be disclosed unless these institutions express in writing, completing Annex 3, that they have no objections to such information being published.
- f) ENAMI reserves the right to resolve any dispute or doubt regarding the correct meaning and scope, form, and timing of application, as well as any other interpretative conflict that may arise from the application of this instrument. The preceding, without prejudice to the remedies established by law.

8.2. Responsibilities of the parties in the RFI stage

When participating in the RFI process, it is important for interested parties to consider the following:

- a) The fact that they submit their proposal does not commit ENAMI in any way.
- b) By responding to and submitting the form in Annex 1, interested parties do not assume commitments in any way with ENAMI.

8.3. Responsibility of ENAMI and Applicants and Application Expenses

The participant will be responsible for verifying their ability to establish and submit their proposals in response to this RFI.

The applicant will assume full responsibility for complying with the regulations established by Law No. 17,336 on Intellectual Property or Law No. 19,039 on Industrial Property. They must respond to any claim or damage resulting from the unauthorized use of patents, trademarks, or property rights involved.

All expenses and costs of any kind incurred by the applicants will be their sole responsibility. They will not have the right to demand reimbursement or compensation from ENAMI for any reason derived from this Procedure, whether directly or indirectly.

8.4. Confidentiality

ENAMI will take all necessary measures to ensure the confidentiality of information provided by interested parties during the RFI process, the nature of which will be confidential or whose disclosure may affect their commercial or economic rights.

This will not affect ENAMI's obligation to provide information to its supervisory entities or to comply with resolutions and decisions of other state bodies with the authority to order its disclosure. This may occur in compliance with court resolutions issued by Ordinary Courts of Justice.

However, despite the aforementioned, ENAMI has the authority to freely and without restrictions disseminate any information that is not confidential or reserved in relation to the companies or proposals submitted. Additionally, the entity may publicly disclose statistical data related to the RFIs without mentioning or identifying the applicant or the content of the proposals.

8.5. Right of reservation

ENAMI reserves the right to reject one or more RFIs that do not conform to the terms and objectives of the Procedure. Likewise, it reserves the authority to modify deadlines or aspects of the Procedure, as well as to suspend or conclude the procedure at any stage, based on well-founded reasons.

8.6. Integrity Pact

By submitting their RFI, the proponent automatically commits to providing ENAMI with all the necessary information and documentation according to the Procedure. This commitment expressly entails the obligation to thoroughly review and verify all the information and documentation submitted and take all necessary measures to ensure its truthfulness and integrity.

Santiago, 2024

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ANNEX 1: RFI Proposal Form

The following online survey must provide all the information mentioned in section 3: <https://forms.office.com/r/AbGY3QycaS?origin=lprLink>. If you wish to send the attached documents, please mail them to rfilitio@enami.cl. Annex 2 letter should also be sent as an attachment.

As a courtesy, an English form is provided, which will not be evaluated but may assist those participating in the RFI:

QR code:



ANNEX 2: Letter of Declaration of Interest to Participate

Letter of declaration of interest to participate

Date:
Proposal name:
Commune:
City:

Dear Mr./Ms.,

As a representative of (Participant's Name),(CI/ID Number), I express the interest of the represented entity in participating in the 'Request For Information (RFI) for testing lithium extraction technological processes,' specifically in the proposal named (Proposal Name).

Likewise, through this letter, I confirm that I am aware of the terms of the proposal and the role assigned to me in it.

Representative of the entity
RUN Representative
Position
Name of the contracting entity

Santiago, 2024

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ANNEX 3: Letter of Authorization for the Disclosure of Information

LETTER OF AUTHORIZATION FOR DISCLOSURE OF INFORMATION

Date:
Proposal name:
Commune:
City:

Dear Mr./Ms.,

As a representative of (participant's name), CI / ID Number, I authorize the publication on the website www.enami.cl of the participation of the company I represent in the 'Request For Information (RFI) for testing lithium extraction technological processes.

Representative of the entity
RUN Representative
Position
Name of the contracting entity

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ANNEX 4: Technology Readiness Level (TRL)

The Technology Readiness Level (TRL) is used to assess the maturity of a technology, representing it on a numerical scale. Any technological process can be categorized according to a specific TRL, reflecting its level of maturity. In this inquiry, nine levels are considered, ranging from the initial concept to the full validation and development of technology in real operational conditions:

TRL 1 – Basic Research: Refers to an initial concept or idea, still in the basic research stage without commercial or industrial applications.

TRL 2 – Concept Formulation: Beginning of research with the formulation of hypotheses about technical feasibility. The potential application is considered, using analytical tools without tests to validate the technology.

TRL 3 – Experimental Concept: Innovation and development activities to validate hypotheses and assess technical feasibility. Includes laboratory tests to demonstrate technical feasibility, although not all components evaluated lead to the final technology.

TRL 4 – Technology Validation: Verification of the feasibility of components through the development of a prototype that integrates capabilities jointly.

TRL 5 – Technology Validated by a Prototype: Development of a laboratory prototype with operation and configuration similar to what is expected in industrial development.

TRL 6 – Prototype Demonstrated in a Relevant Environment: Development of prototypes capable of performing functions within a specific system, surpassing feasibility tests in real operating conditions.

TRL 7 – Complete Prototype in Operational Environment: Creation of a complete prototype in pre-commercial operational conditions. Allows evaluating economic and functional aspects as all functions are available and tested.

TRL 8 – Fully Validated System by Testing and Demonstrations: Technologies have been tested in their final form and under operational conditions.

TRL 9 – Technology Validated in a Real Operational Environment: Fully developed, validated technology ready for commercial implementation.