



GRECIAN MAGNESITE  
Mining Industrial Shipping & Commercial Co S.A.  
45 Michalakopoulou Str.  
115 28 Athens, Greece  
Tel.: +30 (210) 72 40 446-7, 72 16 176, 72 27 631  
Fax: +30 (210) 72 49 711  
V.A.T. No EL 094004975

## CALL FOR EXPRESSION OF INTEREST FOR THE PROCUREMENT OF EQUIPMENT & SERVICES

GRECIAN MAGNESITE Mining Industrial Shipping & Commercial Company S.A. (hereinafter referred to as the "Purchaser") is going to construct, install, and operate a magnesium-oxide-based dry/semi-dry Flue-Gas Desulfurization (FGD) full-scale pilot plant for its Rotary Kiln No 3 (RK-3). The implementation of the project in question will be co-financed by the European Union through the LIFE Programme (Project Code LIFEENV15/GR/000338). The current invitation for qualification and preselection relates to the procurement of specialized equipment and detailed engineering services concerning the above-mentioned FGD pilot plant. To this end, all interested Technical Companies specializing in the sector of air pollution control technologies (hereinafter referred to as the "Bidders") are invited to express their interest to supply the related goods and services based on the general information summarized in the following Clauses and the attached Technical Document.



## 1. Project Title

Design, construction, and test operation of a dry/semi-dry Flue-Gas Desulfurization (FGD) pilot plant using magnesium oxide (MgO) as sorbent

## 2. Assignment

Procurement of specialized electromechanical equipment and engineering services.

The procedure includes an open call to all interested Bidders for qualification and preselection. The preselected Bidders will be invited to submit their detailed Technical & Financial Offers.

## 3. Place of Provision of Services

Yerakini, Chalkidiki, 631 00 Polygyros, Greece

## 4. Call Issued

22 March 2017

## 5. Deadlines

The following deadlines shall be respected without exception by all interested Bidders:

- Expression of Interest to offer the supplies:  
**Ten (10) days** from publication
- Detailed Technical & Financial Offers from preselected Bidders:  
**Thirty (30) days** after the reception of the project's dossier
- Delivery time:  
**Max twenty (20) weeks** after the Contract award (i.e. within second half of May)

## 6. Background Information

Rotary Kiln No 3 (RK-3) is operated in the Purchaser's premises (Yerakini, Chalkidiki, Greece) for the production of both Calcined Caustic Magnesia (CCM) and Dead-Burned Magnesia (DBM).

The feed material to RK-3 is raw magnesite ( $\text{MgCO}_3$ ). When fired inside the kiln,  $\text{MgCO}_3$  undergoes thermal decomposition into MgO and  $\text{CO}_2$ . Chemically, both CCM and DBM are MgO, nonetheless they vary in physical characteristics and reactivity due to the different thermal treatment temperatures required for their production (i.e. approx. 1000°C and 1900°C for CCM and DBM, respectively). The RK-3 burner is fed with a mixture of petroleum coke (petcoke) and heavy fuel oil (mazut). The typical petcoke-to-mazut feed mass ratio employed is 9:1. The use of petcoke alone is also very frequent. Finally, biomass can be used as an alternative fuel.



The RK-3 combustion gases pass through an Electrostatic Precipitator (ESP-3) for dust control and are then directed up an exhaust chimney to the atmosphere.

## 7. Short Description of FGD Pilot Plant

The process scheme briefly described in the following lines was based on a Basic Engineering study carried out on behalf of the Purchaser. A simplified Process & Instrumentation Diagram (P&ID) can be found in the Technical Document attached.

A dry/semi-dry FGD pilot plant using reactive MgO as sorbent will be installed downstream of the existing ESP-3.

The pretreated RK-3 waste gases will be diverted from the existing exhaust chimney to a Gas Conditioning Tower (GCT) by means of a bifurcation duct. The purpose of the GCT will be dual, namely (a) to decrease the waste gas temperature down to approx. 160°C via evaporative cooling and (b) to increase its water vapor content. The use of MgO slurry instead of fresh water will be an alternative.

The preconditioned gas will then flow through an inverted U-shaped Reactor Pipe (RP) where fresh MgO in the form of dry powder will be dosed as needed by means of suitable injection equipment.

Subsequently, the gas-MgO mixture will enter a Recirculation Filter (RF) comprising a multi-compartment Pulse Jet Baghouse (PJBH) where most of the dust present in the influent stream will be effectively retained. The required SO<sub>x</sub> reduction will be obtained by maintaining a thick cake layer on the surface of the filter bags to ensure long contact times between the sorbent and the raw gas target components.

The dust collected in the RF will be evacuated into a special mixing device. A certain part of the collected dust will be reinjected into the GCT by means of a suitable recirculation circuit whereas the remaining dust will be periodically discharged and directed for further handling.

Ultimately, the treated gas will be directed to the atmosphere through an outlet duct connected to a radial fan and a new exhaust chimney.

The unit will treat the entire amount of flue gases produced by RK-3 designed as a prototype combining dry and semi-dry elements with a large operational capacity in order to allow the optimized use of MgO as desulfurization agent.

## 8. Key Performance Objectives of FGD Pilot Plant

The FGD plant must achieve the following treated gas pollutant concentrations at all times and under all operating conditions:

- Dust emissions below 35 mg/Nm<sup>3</sup> @ 10% O<sub>2</sub> dry basis
- SO<sub>x</sub> emissions below 1500 mg/Nm<sup>3</sup> @ 10% O<sub>2</sub> dry basis

Detailed flue gas compositional data under various operating conditions of RK-3 (i.e. production of different grades of CCM or DBM) are contained in the Technical Document attached.



## 9. Scope of Supply

The preselected Bidders shall consider the following in their detailed Technical & Financial Offers:

- Main equipment to be procured:
  - **Gas Conditioning Tower.** Size Ø3.000 mm x 12.000 mm evaporative way. All main equipment included (spray nozzles, ring pipe accessories, pump and valve skid pre-assembled and wired). Body shell, support structure, water ring pipes as engineering services for local manufacturing by the Purchaser.
  - **Dosing and injecting equipment for reagent.** One line for fresh additive under silo provided by the Purchaser. Second line for recycled additive under Recycling Bag Filter.
  - **Recirculation Filter.** Off-line, jet pulse, multi compartment filter. Inlet flow 51.000-82.000 Am<sup>3</sup>/h. Net filter area 1.300 m<sup>2</sup>. PPS filter clothes. Complete, with electronic control unit, filter dust screw conveyor and rotary valve. Support structure and insulation to be manufactured locally by the Purchaser.
  - **Main Radial Fan.** 82.000 Am<sup>3</sup>/h, 1.500 rpm, 160 kW installed power, max total pressure increase 4.600 Pa.
  - **Mixing device for reagent recirculation.** Mixing vessel with agitating device, dosing screw for extraction of the recycling portion and extraction screw for discharging the rest of the dust. To be installed under the bag filter.
  - **Duct equipment** (i.e. dampers and expansion joints)
- Engineering services for equipment to be manufactured or procured locally by the Purchaser:
  - Crude gas duct from existing chimney to GCT
  - GCT shell and support structure
  - Reactor Pipe and support structure
  - Recirculation Filter support structure
  - Clean gas duct from filter to fan and new stack
  - New stack
  - Reagent pneumatic transportation equipment.
- Delivery of goods to the Purchaser's premises in Yerakini, Chalkidiki, Greece
- Warranty for eleven (12) months starting from the date of equipment supply



## 10. Exclusion from Scope of Supply

The Purchaser shall be solely responsible for providing the following items to the limit of the FGD pilot plant:

- Concrete foundations
- Steel support structures (i.e. as per the detailed engineering of the awarded Bidder)
- Ductwork (i.e. as per the detailed engineering of the awarded Bidder)
- Assembly & erection works (i.e. as per the instructions of the awarded Bidder)
- Electrical panels, power distribution, and automation
- Required peripheral equipment (e.g. compressors, storage silos, etc.)

## 11. Total Maximum Budget

Seven hundred and twenty thousand euros (720,000 €)

## 12. Exclusion Criteria

Potential Bidders shall be excluded from participating in the tender procedure where they:

- Have been sentenced by final judgment on one or more of the following charges: participation in criminal organization, corruption, fraud, money laundering
- Are in situation of bankruptcy, liquidation, termination of activity, insolvency or arrangement with creditors or any like situation arising from a procedure of the same kind, or are subject to a procedure of the same kind
- Have received a judgment with res judicata force, finding an offence that affects their professional integrity or serious professional misconduct
- Do not comply with their obligations as regards payment of social security contributions, taxes and dues according to the statutory provisions of their country of incorporation

All Bidders shall deliver, when expressing their interest, a declaration on their honor certifying that they are not in any of the above-mentioned situations.

## 13. Eligibility Criteria

Only the Bidders who meet the following criteria are eligible to submit their Expression of Interest:

- Proven experience in the relevant field of engineering services and equipment (see Clause 14, Technical Criterion No 1)
- Provision of equipment that is CE marked (see Clause 14, Technical Criterion No 7)
- Ability to meet the project deadlines



## 14. Preselection Evaluation Criteria

The submitted Expressions of Interest shall be judged based on the evaluation criteria summarized in the following Table:

No	Technical Criterion	Score	Remarks
1.	Reference list of Flue Gas Treatment projects installed worldwide within the last five (5) years.	30%	The list details shall include type and size of equipment supplied, customer details, and year of supply. The presence within the list of large FGD projects in the mineral industry will be considered an advantage. The presence within the list of similar projects in Greece will be also considered an advantage.
2.	Use of subcontractors (Bidder's self-sufficiency)	15%	Indicate the amount of goods and services that will be delivered by the Bidder and his subcontractors, respectively
3.	Size and market position	5%	The Bidder should provide such information as his company's total workforce, the workforce distribution amongst the individual departments (e.g. engineering, manufacturing, R&D, sales, etc.), and the annual turnover for the last three (3) years
4.	Ability to provide service back-up in Greece and availability of spare parts in Greece and/or in the EU	15%	
5.	Previous successful collaboration with the Purchaser	10%	
6.	Financial viability	15%	<p>The Bidder should provide the overall results obtained from the so-called Financial Viability Self-Check or the company's evaluation from a domestic assessor or the company's balance sheets and income statements for the last three (3) years.</p> <p>The Financial Viability Self-Check can be found in the following address:</p> <p><a href="https://ec.europa.eu/research/participants/portal/desktop/en/organisations/lfv.html">https://ec.europa.eu/research/participants/portal/desktop/en/organisations/lfv.html</a></p>
7.	Quality certification, e.g. ISO 9000, CE marking, etc.	10%	All equipment supplied by the Bidder must be CE marked. Bidders who fail to comply with this requirement will be excluded from the preselection procedure.
	<b>TOTAL</b>	<b>100%</b>	



Upon completion of the evaluation procedure, a shortlist of three (3) preselected Bidders shall be announced by the Purchaser.

In both preselection and final selection steps, the "non-conflict of interest" principle will apply according to the EU rules.

## 15. Final Selection Evaluation Criteria

The Technical & Financial Offers submitted by the preselected Bidders shall be judged based on the following evaluation criteria:

- Technical specifications of the offered goods and degree of customization according to the basic design of the prototype
- Financial offer, i.e. prices & payment terms
- Delivery time, conditions, and warranties
- After sales service and technical support

## 16. Application Documents

Interested Bidders willing to apply should submit the following documents:

- Letter of Interest duly signed and stamped by the applicant
- Declaration on Honor on Exclusion Criteria
- All required information described in Clause 14 and in relation to the evaluation criteria for preselection

## 17. Bid Language

Bids and other relevant documentation related to the Bid should be written in the Greek or English language

## 18. Submission of Documents

**The deadline for the Expression of Interest is 04 April 2017, 6:00 p.m.**

The duly signed and stamped Expression of Interest comprising the documents described in Clause 16 should be submitted electronically to the following address:

[yerakini.mines@grecianmagnesite.com](mailto:yerakini.mines@grecianmagnesite.com)

Subject: LIFE15ENVGR000338/ prototype procurement



## 19. Contact

Should any additional technical information be required, please contact:

Mr. Pavlos Vayionas

Tel: +30 23710 51251-3

Email: [p.vayionas@grecianmagnesite.com](mailto:p.vayionas@grecianmagnesite.com)

General information on the FGD project under consideration can also be obtained from the following address:

<http://betterlife-withmgo.eu/en/the-project>

## 20. Attachments

The following documents are attached to the Call for Offers presented herewith:

- Letter of Interest
- Declaration on Honor on Exclusion Criteria
- Technical Document describing the equipment and engineering services to be supplied