اتاق بازرگانی، صنایع، معادن و کشاورزی ایران
Iran Chamber of Commerce, Industries, Mines & Agriculture

به نام خدا

جناب آقای سید جواد زمانی

معاون محترم امور استان‌ها و تشکل‌ها

موضوع: ارسال پروپوزال همکاری مشترک در زمینه تولید مخازن کرایوژنیک و اطلاع‌رسانی به تشکل‌های ذی‌ربط

با سلام و احترام،

پیرواطلاعات واصله در خصوص اعلام آمادگی شرکت کروات برای همکاری با شرکت‌های ایرانی در زمینه تولید مشترک مخازن کرایوژنیک (Cryogenic) و انتقال دانش فنی مرتبط، بدین‌وسیله پروپوزال و اطلاعات تکمیلی ارائه‌شده از سوی طرف کروات جهت استحضار و بهره‌برداری ارسال می‌گردد.

با توجه به کاربرد گسترده این نوع مخازن در صنایع مختلف از جمله نفت و گاز، پتروشیمی، صنایع شیمیایی، پزشکی، صنایع غذایی و سایر بخش‌های صنعتی، خواهشمند است دستور فرمایید مراتب به تشکل‌ها، انجمن‌ها و اتحادیه‌های تخصصی ذی‌ربط و علاقه‌مند به همکاری و سرمایه‌گذاری در این حوزه اطلاع‌رسانی شود تا در صورت تمایل، نسبت به بررسی فرصت همکاری و برقراری ارتباط با طرف خارجی اقدام لازم به عمل آورند.

پیشاپیش از همکاری و مساعدت جنابعالی در این خصوص سپاسگزاریم.

سید حامد عسگری
معاون امور بین الملل

م.ر

[فاقد ارزش برون سازمانی است]

Croatia, 06.05.2026

EMBASSY OF THE ISLAMIC REPUBLIC OF IRAN

Dear Sirs,

We are an engineering team based in Croatia representing Rektor LNG. Our company specialises in the design and manufacture of 40 ft cryogenic tanks for the transportation and storage of various types of technical gases.

We would like to explore the possibility of establishing a technical cooperation with an Iranian company for the joint production of these containers at the facility in Iran, based on a know-how partnership model. We are prepared to provide full technical documentation and comprehensive training for your personnel to ensure the successful implementation of our manufacturing processes.

We believe that demand for cryogenic containers in your region and the surrounding countries is expected to grow significantly in the near future, and we see strong potential for a mutually beneficial collaboration.

Should you be interested in discussing this opportunity further, we would be pleased to arrange a call or meeting at your convenience.

We look forward to your response.

Sincerely yours,

CRIOGENIC LNG ISO CONTAINER 40 ft

1. Foreword

Rektor d.o.o. developed a heavy-duty 40 ft Cryogenic LNG Container that sustains all possible loads in its life cycle and can carry 35 m3 of LNG or 21.000,00 m³ of natural gas. In addition to transportation, cryogenic containers are also used for gas distribution. For example, mini power plants from 0.5 to 5 MGW on LNG that can be connected to our containers, as well as hospitals, schools, factories, settlements... Many other technical gases can be transported, such as nitrogen, oxygen, argon, ammonia, and ethylene.

In addition, the Cryogenic LNG Container has been designed to satisfy all relevant well-known standards for such demanding applications, such as: TPED, ADR and EN 13530. Design has been approved by Classification Society Bureau Veritas, Paris and covered by their Certificates:

- Approval Certificate of Type of Portable Tank No. F/BV/13/082-T14
- RID/ADR Prototype Agreement Certificate of Portable Tank No. F/7219

On completion of the construction of the prototype Cryogenic LNG Container, the same has been exposed to rigorous testing in Piacenca Collaudi & Manutenzioni, under Test Report No. 348/13. Testing was successfully passed with no permanent plastic deformation (even allowed to some extent).

2. Technical Description

- **Assembly Description**

The subject of the project is a transportable LNG ISO container, length 40 ft. The type is a tank in a tank with a vacuumed annular space placed in the container frame. Intended for transport by sea, railway and road. The time period for keeping cryogenic liquid is minimal 55 days. The temperature of liquefied natural gas during loading into the tank is -156 °C. The span of the environmental temperature is from -40 to 50 °C. The tank is designed according to EN 13530 Cryogenic vessels - Large transportable vacuum insulated vessels.

- **Description of external vessel**

Vessel is made of steel P355 NL2, dimensions 11.260x2.416 mm, wall thickness 9 mm with dished end according to DIN 28013. The vessel is connected by continuous welding to a profile with a container frame, and together with the frame it serves as supporing element. As the strengthening for the passage of the pipe through the external head is designed with an inserted plate, 16 mm of the same material as the internal vessel. Required certificate for dished end: Type 3.2 in accordance with EN 10204:2004. Required certificate for shell material: Type 3.1 in accordance with EN 10204:2004.

- **Description of internal vessel**

Made of stainless steel X6CrNiTi18-10, dimensions 10.950x 2.112 mm, wall thickness 6mm with deep heads according to DIN 28013. Working pressure is 6 bars. Within the vessel are placed 5 breakwaters of the same material, thickness 2,5 mm, which are connected by intermittent welding around the internal diameter. Fixed through the securing system to the external vessel. The pipeline system of the same material as the tank comes out of the head and passes through the head of the external shell. Required certificate for dished end: Type 3.2 in accordance with EN 10204:2004. Required certificate for shell material and pipes: Type 3.1 in accordance with EN 10204:2004.

- **Description of the securing**

There are two suspension elements, one on the back side, which absorbs axial and radial forces, and the other on the front side, which absorbs only radial forces. Both are circular in form and thus realise equal stresses in all directions. During heating, the front suspension will deform and create a small angle towards vertical. When the tank, due to the cold liquid and firming on the back side, reaches the heat balancing, radial and axial compression is restrained, thus the membrane retains the position across the vertical because it is freed from horizontal stress, and only stress caused by the leaning of radial force remains.

- **Description of insulation**

Annular space is insulated by filling with special insulation material. The basic intention of this insulation is to block the entrance of heat to the internal vessel. In addition to the above, for the exaggeration of insulation capability annular space is subjected to high vacuum.

- **Holding time**

Holding time has been calculated with the described construction and insulation material, and results shown tremendous holding time of 55 days, which means that the LNG Criogenic Container will hold liquified gas without opening of the safety valve at a constant temperature of 50 ℃, for the whole period of 55 days. Today, no LNG Container exhibits such results, but there is still space for improvement.

3. Construction process

- **Control**

Control is divided into several stages:

(a) Establishing all procedures to be able to achieve top quality product as PQRs, WPS's, NDT, procedures for recording of all results on each production phase, such as cutting, bending, marking, welding, sandblasting, painting, insulating, and vacuuming.
(b) Before material entrance to production halls, checking of material certificates, checking of material appearance, dimensions, etc.
(c) During production in all stages of production, recording of all results on each production phase, such as cutting, bending, marking, welding (current, voltage, speed), sandblasting, painting, achievening of proper vacuum.
(d) Final control of completed units (US, RTG, pressure testing). It is necessary to emphasise that NDT will be carried out in different production phases, separately for the inner and outer vessel.
(e) Marking of completed units with the supply of delivery documents.

- **Production process**

The production process is basically divided into six phases:

1) Production line for stainless steel material. It is emphasised that the stainless steel production line must be strictly separated from the steel production line, even from the warehouse, for the reason to avoid any contamination of stainless steel by particles of steel to prevent any accelerated corrosion. This is extremely important for all production stages. The only stage of construction where stainless steel comes into contact with steel material is the stage where the inner vessel is to be inserted into the outer vessel.
   The stainless steel production line will be equipped with its own machinery, commencing from the warehouse, including cranes, handling, cutting, bending, and welding machinery. To speed up production, cut material for standard elements of vessels will be ordered, with tightly specified and controlled dimensions, and only special elements will be cut at the site.

2) Production line for steel. The steel production line will be equipped with its own machinery, commencing from the warehouse, including cranes, handling, cutting, bending, and welding machinery.

3) Assembling the inner to the outer vessel. Assembling of the inner vessel into the outer vessel will be performed in separated hall by special automated machinery with high capacity, enabling tack welding and full welding of assembled units. The hall will be assigned only for assembling, and no cutting or grinding will be allowed.

4) Sandblasting and painting will be performed in a separate hall fully equipped with automated processes, to be able to achieve the designed production capacity.

5) Filling of insulation material will be done in separated well ventilated hall.

6) Vacuuming will be performed in separated air-conditioned hall, for the reason to achieve the requested vacuum in shorted time. Humidity from the air affect time of vacuuming, so the atmosphere in this hall is to be conditioned with as small a relative humidity as possible.

- **Handling machines and cranes**

Handling machinery and cranes are to be separated for the stainless steel production line and the steel production line. These consist of bridge cranes which will cover complete halls, cantilever cranes for specific working area and forklifts for quickly transport idividual elements, as found necessary. All cranes will be equipped with remote control and local control in an emergency.

- **Automation and Robotisation**

To be able to satisfy the designed production capacity of 1000, 2000 or even more units per year, a comprehensive volume of automation and robotisation is to be applied in all stages of production, especially in cutting, bending and welding. Depending on available space and designed capacity, the volume of automation and robotisation will be established. It is to be emphasised that all automated and robotised machinery requires a very skilled labour force, so it is a prerequisite to employ employees with experience, but also to train them for specific machinery at an early stage.

4. Feasibility Study

A feasibility study has been developed for the Croatian location of the factory. The study could be applied to facilities in Iran, with data applicable to the relevant items mentioned above.

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