



GAIL (India) Limited
CENTRAL INTEGRITY MANAGEMENT GROUP, NOIDA

NOIDA
12th November, 2018

Expression of Interest (EOI) – EOI for providing technological solution for useful utilisation of flare & vent gases.

The instant EOI is being floated to seek interest in providing technological solution/ to explore the available technology(s) for useful utilisation of vent gas.

PART-I: Flare gas of GPU-Gandhar

GAIL is operating Gas Processing Unit at Gandhar (State: Gujarat). Hot flare system is installed and there is continuous (technical) flaring of gas. GAIL would like to seek technical know-how/solution for storage of the gas and make use for gainful utilisation/ re-usage for other applications.

PART-II: Vent gas of GTC Units

GAIL (India) Limited is operating a large network of Natural Gas Pipelines across India. There are intermediate Compressor Stations along trunk pipeline network. All compressor stations are equipped with numbers of Gas Turbine driven Compressor Units for boosting natural gas pressure for onward transportation through pipeline network. At the time of un-scheduled tripping & scheduled shutdown of GTC Unit(s), gas entrapped in the piping and compressor gets vented in open atmosphere. GAIL would like explore the possibility of technological solution for storage of the gas and make use for gainful utilisation. Approximately, cumulative 0.15 MMSCM gas is vented each month.

PART-III: Vent gas during ILI activities

As a part of the integrity assessment of natural gas pipelines; ILI (in-line inspection/pigging) is being carried out at prescribed interval. As a general practice, during retrieval of pigging tool; the gas entrapped in the pig receiver barrel is required to be vented for safe operation. Further, during ILI activities, due to exigency (retrieval of stuck-up tool or maintaining prescribed tool velocity); sometimes gas is required to be vented. GAIL would like explore the possibility of technological solution for storage of the gas and make use for gainful utilisation. Gas vent quantity varies which primarily depends on the line pressure, pipeline diameter and size.

PART-IV: Quick evacuation of LPG product

In addition to the natural gas pipeline network, GAIL is operating a network of approximately 2100 kilometers of LPG product pipeline. These pipelines have got intermittent Sectionalizing Valve Stations for isolation of affected section during emergency. Even though, there is a provision of hot flare; GAIL would like to seek technical know-how for quick evacuation of LPG from the affected section and injection of the LPG product in next pipeline section.

This EOI is being published to seek interest from prospective Vendors having requisite works experience to offer technological solution for addressal of issues.

The completed Application Form along with attachments, if any, to be mailed to cmggroup@gail.co.in latest by **31.12.2018**.

If further technical inputs/details/information are required; may please communicate to the given mail address.

ADDRESS FOR APPLICATION FORM & DOCUMENTS SUBMISSION

**Chief General Manager (O&M)-CO
GAIL (India) Ltd
20th Floor, Jubilee Tower, B-35, 36, Sector-1,
Noida-201301, Uttar Pradesh, India
Email: cmggroup@gail.co.in
Contact no: +91-(120) 2446400/4862400**

APPLICATION FORM

1	Name of the Company	
2	Address of the Company	
3	Nature of Business of the Company	
4	Application submitted for:	PART-I <input type="checkbox"/> PART-II <input type="checkbox"/> PART-III <input type="checkbox"/> PART-IV <input type="checkbox"/>
5	Submission of Technological Solution and brief write-up	PART-I <input type="checkbox"/> PART-II <input type="checkbox"/> PART-III <input type="checkbox"/> PART-IV <input type="checkbox"/>
6	Work Experience along with brief details of the Client(S)/Operator(s) where the offered solution has been successfully implemented (Self-attested documentary evidence in support of above is required to be attached along with Application Form)	PART-I <input type="checkbox"/> PART-II <input type="checkbox"/> PART-III <input type="checkbox"/> PART-IV <input type="checkbox"/>

Place:

Date:

(Signature of Interested Vendor)

NOTES:

1. Documents in other than English Language have to be attached along with self-certified English translated copies.

SECTION - 7

FLARE SYSTEM

7.1 Introduction

A flare system has been provided for safe disposal of flammable, toxic or corrosive vapours discharged by pressure relief systems. The flare system consists of a flare header, a knock out drum, a blowdown pump, a water seal drum, flame front generator and a flare stack.

7.2 Flare Loads

The flare system is designed to cater for both process and offsite flaring loads.

For design purposes, the system shall be capable of flaring 5 MMSCMD of hydrocarbons having an molecular weight range of 19.15 - 44.3 and temperature range of 20 to 85°C.

The summary of flare loads from LPG Unit and offsites area under various emergency conditions are given below in table 7.2. Block discharge/operational error is the controlling case for which flare system has been designed.

Table - 7.2

Basis of operations	PROCESS UNIT		OFFSITES	
	Block Discharge/Operational Error	Power/Cooling Water Failure	Fire	Fire
Capacity, T/ Hr	208	130.9	157	71.5
Molecular Wt. (Average)	18.9			
Temp. EC (Avg.)	50			

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**ENGINEERS INDIA
LIMITED
NEW DELHI**

GPC, GANDHAR UTILITIES AND
OFFSITES OPERATING MANUAL

DOCUMENT NO.

REV

1939

0

7.3 System Description

Refer P&ID No. 4516-02-41-63-1111 Rev.0

7.3.1 Flare Stack (63-LS-00-001)

The flare stack diameter has been fixed based on limiting the velocity of flare gases to about 0.4 mach for a peak flaring rate of 5 MMSCMD. The stack diameter is 32". The height of the flare stack is fixed, based on the need to keep the radiation intensity at grade within a safe limit of 2000 BTU/Hr, including solar radiation during peak flaring of 208 tons/hr of hydrocarbons. The height of the flare stack is 60 M including water seal drum, flare seal and tip. The flare header is 26" dia. and finally leads to a knock out drum located near the flare stack.

7.3.2 Knock-Out Drum (63-VV-00-001)

A knock-out drum is provided to trap any liquid particles in the flare gas which have condensed as a result of cooling of gas. This avoids the danger of burning droplets falling from the top of the stack. Two blowdown pump 63-PA-CF-001 A/B having a capacity of 5.0 M³/Hr and discharge pressure of 7.4 Kg/cm².a are provided near the knock out drum to transfer any liquid accumulation in the drum to the unit flare knock out drum from where it is pumped to the LPG column.

7.3.3 Water Seal Drum (63-VV-002)

A vertical water seal drum, integrated with flare stack is provided at the base of the flare stack to prevent flash back of hydrocarbons. The water seal prevents damage to the system upstream of the seal. Service water is continuously supplied to this drum and a pipe seal maintains the level of water. Water seal of 300 mm is provided. The MOC of water seal drum is carbon steel with a liner of washed silica sand mixed with high alumina in a ratio of 3.5:1.


7.3.4 Molecular Seal (63-LS-00-002)

A molecular seal is installed near the top of the flare stack to prevent ingress of air and to effect economy in purge gas requirements. Fuel gas will be used as purge for the molecular seal. For this, fuel gas is injected into flare stack.

7.3.5 Flare Tip (63-LS-00-003)

A low emissivity flare tip with pilot burners is installed at the top of the stack to burn the flare gases. The burner shall be so designed to ensure a smokeless flame for a normal load of 2 TPH.

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			1939	0

7.3.6 Flame Front Generator (63-LS-00-004)

A flame front generator is provided so that a source of ignition of the pilots is available during start-up and in cases of flame failure.

For more details of items under subsection 7.3.1 to 7.3.6, refer vendor's operating and maintenance manual.

7.3.7 Flare Header

Individual flare headers collect hydrocarbon vapours relieved by safety valves for safe discharge to the flare. Main header originates from the LPG Unit and header from offsites joins the main header. The main header is of 26" dia.

A mass flow meter FI-1104 indicates the amount of gas flared.

7.4 Utilities

Instrument Air

A 2" instrument air line leading to flame front generator with a gate valve & spectacle blind supplies air to form combustible mixture with the fuel gas. Instrument air header is provided with pressure gauge PG-1104.

Fuel Gas

A 2" fuel gas line leading to flame front generator supplies fuel gas to flame front generator when the pilots are to be ignited. A 2" branch connection is taken to supply fuel gas to the pilot burner. PG-1103 downstream of the isolation valve indicates the fuel gas supply pressure. Self actuating control valve regulates the supply fuel gas pressure to pilot burners. A Low point drain is provided downstream of PCV-1101. PAL-1101 is provide downstream of PCV to indicate low fuel gas pressure to pilot burners. A 1.5" branch connection is taken upstream of FI-1103 for providing purge gas to flare stack. RO-1101 & globe valve downstream of RO is provided for giving regulated fuel gas to flare stack which can be observed through FI-1101. FG purge is provided to prevent flash back in flare stack by maintaining a positive pressure.

Utility Water

A 2" utility water line supplies water to the flare seal drum for maintaining constant level

