

The following information is part of **Addendum #1** to the RFP to Support Engineering – Scale ROTA-CAP™ System for CO₂ Capture. This RFP was issued on 8/15/25.

During the pre-Bid meeting on **8/25/25** several questions and clarifications were noted and are captured below to further clarify the RFP previously issued.

Questions are listed followed by GTI's reply.

Q1: The evaluation of the existing blower will require coordination with the blower manufacturer. Rather than having all bidders contact them can GTI Energy (GTI) be the point of contact.

A1: GTI can be the central contact for this option. GTI requests any questions related to this blower be sent to GTI.

Q2: What subsystem will the used/existing blower be used in? What is the temperature of the flue gas coming into this used blower, if used?

A2: The existing blower that GTI has is a liquid ring blower that would potentially be utilized to replace blower K-0102 detailed in the technical documents (Part 2 of the RFP). This blower would be located downstream of the indirect flue gas cooling and flue gas scrubber system, at which point the flue gas would already be partially conditioned and would no longer be at an elevated temperature. The flue gas entering this blower is estimated to be at approximately 120-125°F (stream 112 in the H&MBs), but this is also partially dependent on the design/operation of the scrubber system. Please submit any other questions relating to this blower.

Q3: Is heat tracing required in any section of the system?

A3: This is dependent on whether the selected bidder has the equipment in an environmental enclosure or if the lines are located outside and if the insulation would be sufficient. In general, if liquid lines would be located outside, then appropriate insulation and/or heat tracing would need to be considered to ensure that the liquid in these lines does not freeze. Per the Basis of Design included in Appendix 1 (RFP Part 2 of 3), the winterization design temperature for the site is -19°F. This criterion, as well as the other site conditions listed in the Basis of Design, should be considered in conjunction with the enclosure strategy to determine whether heat tracing is recommended.

In most of the system, temperature control consists of utilizing cooling water to cool process streams and maintain a process temperature. However, the primary process unit areas in which heat loss management is critical are listed below, based on the definition of process unit areas in Appendix 1.

- Process Unit 0300 - Rich Solvent Conditioning & Regeneration
- Process Unit 0400 - Reboiler System & Hot Solvent Handling
- Process Unit 0500 - CO₂ Product Handling (from the regenerator outlet through heat recovery)

These systems are shown to utilize heat conservation insulation on the P&IDs, and bidders may evaluate whether that is sufficient or whether heat tracing is also recommended for heat management during winter.

Q4: Will the installation of interconnecting equipment between modular skids be the Bidders responsibility or for a site Contractor?

A4: The installation of interconnecting piping between equipment skids would be installed by a site Contractor but would be supplied by the selected Bidder, with specific instructions on how it should be installed.

Q5: On the package units for the RPBs (Absorber & Regenerator), do they come with a VFD?

A5: For bidding purposes, consider that the RPBs shall be supplied with the following by the RPB Vendor:

- VFD
- Bearing temperature measurement and vibration sensors (as shown on the P&IDs)
 - Absorber (D-0102A/B): TE-0119 & VS-0119
 - Regenerator (D-0301): TE-0311 & VS-0311
- Motors for each RPB

The VFDs and instruments shall be supplied such that feedback signals will be available to be tied into the control system of the overall Skid, so that the RPBs can be controlled and monitored via the HMI of the skid. The control system development and tie-in of signals from the RPBs is expected to be in the scope of the Bidder.

Q6: Have the rotated packed beds (RPB) been ordered by GTI? What is the lead time for the RPB? Also, what is the approximate motor size and RPM rating?

A6: The RPB's have not been ordered yet. GTI has been coordinating with a supplier of the RPBs, but an order will not be able to be placed until GTI receives approval from DOE-NETL to proceed with the issuance of purchase orders for equipment. This also applies to issuance of a PO with the Selected Bidder for the overall Skid fabrication.

The projected lead time of the RPBs is 50 weeks, which the supplier is confident that they can meet as of now.

GTI does not yet know the size of the RPB motors, but a preliminary estimate by GTI indicates that the motors required may be approximately 15-20 HP motors. This is just an estimate at this time, and GTI shall work with the RPB supplier to try to better define estimates of motor size and estimated equipment weights. This information shall be shared with bidders when possible.

The typical operating speed of the RPBs is expected to be within the range of 600-700 RPM.

Q7: Any areas of datasheets that need to be changed?

A7: GTI recommends that Bidders review/evaluate the following items pertaining to datasheets:

- As specified on the datasheets, in some cases GTI has recommended potential materials to be used, but Bidders should review and verify material selection to confirm that quotes received are accurate and are based on materials suitable for the application.
- The datasheets for the columns within the system (Caustic Scrubber D-0101 and Water Wash Column D-0801) are relatively preliminary as GTI is not a specialist in column/packing design. GTI requests that the Bidder or the Vendor quoting the columns/associated subsystems define the details of the packing configuration/geometry that can achieve the specified performance requirements.
- Filter datasheets are not included in the preliminary datasheets developed by GTI, but filters are included in the Equipment List and scope of supply. Bidders should consider supply of filters in their proposals.

Q8: Is a fouling factor built into the heat exchanger datasheets?

A8: No, fouling factors for river water have not been explicitly applied. Heat duties listed in the datasheets and other technical documents are based on heat exchanger performance estimates in commercial process simulators which utilize generic fouling factors. Bidders to apply specific fouling factors as deemed appropriate based on the water source and quality.

A water quality analysis is included in the RPB under Appendix 3 (RFP Part 3 of 3). Within the report provided, the relevant water stream is the “#3 Once Through” stream”. The data for this stream has been boxed in red as an indication of the relevant data. The Host Site also periodically treats the process water supply with biocide (typically sodium hypochlorite) to prevent microbial growth.

Please request any additional information required that is not included in the water analysis.

Q9: The preliminary pipe specifications list many of the lines as Class 150 RF for end connections. Please confirm if SW end connections up to 2" are acceptable, in accordance with the valve specifications defined in PIP PN01SA0S01.

A9: Yes, the use of SW end connections in accordance with PIP PN01SA0S01 is acceptable. Bidders are encouraged to submit similar clarifications if other aspects GTI's preliminary pipe specifications are inconsistent with, or deviate from, typical industry standards or guidelines.

Q10: In regards to the alternative solvents evaluation, can it be assumed that the flow rates for either the MEA based solvent and CESAR-1 based solvent would be as shown in the HMB? Is a fair scope of this evaluation to include:

1. Hydraulic analysis - pump sizing, pipe pressure drop analysis, etc.
2. Thermal sizing for heat exchanger performance.

A10: Yes, the data presented in the H&MBs is based on MEA (the baseline solvent for the system), and for bidding purposes it is fair to assume that the flow rates for CESAR-1 would fall into the same range as the MEA flow rates shown in the two H&MB cases. The scope defined is also accurate. GTI expects that CESAR-1 solvent will perform similarly to MEA, but differences in viscosity and thermal properties such as heat capacity are likely to impact pump and heat exchanger requirements.

GTI expects that the reboiler operating temperature could potentially be reduced if utilizing CESAR-1 solvent, but this is to be explored further. For bidding purposes, Bidders shall consider the operating temperatures for the CESAR-1 solvent to be in line with the H&MBs provided for MEA-based operation.

Q11: Can GTI supply the bid form excel sheet and other technical documents in excel format?

A11: Yes, documents can be supplied in their native excel formats. The bid form excel sheet has been included with this addendum. For other technical documents, please reach out to GTI directly and native files will be distributed as requested.

Q12: Can GTI confirm the sequencing requirements for the controls system?

A12: The sequencing capabilities desired for the control system consist of the following:

1. Start-up sequencing, allowing for the system to be started up through the HMI via an automated sequence.
 - a. This could potentially be an operator guided sequence that includes approval checkpoints within the start-up sequence, at which point an operator would acknowledge that system is ready to proceed to the next phase of start-up.
2. Shutdown sequencing, such that in the event of an Emergency Shutdown or operator-initiated shutdown, the system can proceed through a defined, automated shutdown sequence to bring the system to a safe state.
3. Fill sequences for make-up streams within the system, defined below. These sequences are intended to allow an operator to define an intended volume of make-up to be added to a given vessel, initiate the fill via an input on the system HMI, and then have the system start the appropriate pumps and/or open the appropriate valve to begin filling the specified vessel. Once the appropriate volume has been added, as measured by the level transmitter on the vessel in question, the fill shall be stopped by shutting off the associated pump or closing the appropriate On/Off valve.
 - a. Make-up caustic to Caustic Scrubber (D-0101), via Caustic Make-up Pump P-0601.
 - b. Make-up water to Liquid Ring Blower(K-0102)/Flue Gas Knockout Tank (V-0102).
 - c. Make-up water to V-0201.

- d. Make-up solvent to Lean Solvent Storage Tank (V-0201), via Solvent Make-up Pump P-0602.
4. A purge sequence allowing an operator to purge a specified amount of condensed water collected in the Product Knockout Vessel (V-0501), using XV-0506 (P&ID 23654-0200-PID-0001).

Please let GTI know if further definition or clarification is required on this topic.

Q13: Can galvanized pipe be used instead of copper for cooling water and cooling water blowdown (waste water) lines?

A13: Yes, Bidders may propose the use of galvanized pipe in the place of copper for cooling water applications.

Q14: Clarification on Section 9.1 of the Basis of Design (Appendix 1, RFP Part 2 of 3) – Is aluminum permitted in non-process contact equipment and instruments (i.e. air regulators, basket tray, brackets)

A14: Yes, the use of aluminum is acceptable for applications in which the material will not be in contact with amine solvent. The restriction on the use of aluminum (as well as the other materials listed in Section 9.1 of the Basis of Design) is intended to be applicable specifically to materials in contact with the amine solvent utilized in the system.

Q15: Can GTI provide an explanation how the neutralizing step for the wastewater works?

A15: Non-amine wastewater generated in the system, consisting of the purge stream from the caustic scrubber system and acidic water purged from the seal water recirculation loop of the liquid ring blower (K-0102/V-0102), are collected in the Wastewater Buffer Drum V-1001 (see P&ID 23654-1000-PID-0001).

The Host Site has specified that the non-amine wastewater collected in this vessel shall be neutralized (adjusted to a pH of ~7) before the water can be collected and disposed of by Host Site personnel in an appropriate wastewater collection system. Therefore, the pH of the water in V-1001 is monitored and utilized to control a feed of neutralizing agent, which is added to adjust the pH of the water in V-1001 to a neutral pH (~7). Once the wastewater has been appropriately neutralized, Host Site personnel shall be notified, and the neutralized waste shall be drained out of V-1001 and sent to the Host Site battery limit at tie-point T-1005.

The type and quantity of neutralizing agent required is dependent on the amount of caustic to be purged from the Caustic Scrubber system, which will need to be defined by the supplier of the Scrubber and Caustic Recirculation subsystem. GTI's H&MBs provide preliminary estimates of the non-amine waste stream quantities, but these are subject to change based on the final design of the scrubber system.

The control methodology for this subsystem is described in further detail within the Control Philosophy and Control Narrative documents (Appendix 1), but if needed GTI can provide further clarification on the intended operation.

Q16: Can GTI provide an approved vessel fabricators list?

A16: GTI does not have a list of pre-approved vessel fabricators available.

Q17: Is any secondary containment of amines required on the host site?

A17: Yes, secondary containment of chemicals used within the system (amine, caustic, etc.) is required. Chemical totes shall be equipped with secondary containment during transport and in final placement. Furthermore, in the design of the foundation/concrete pad for the system, Bidders shall account for the containment of spills and/or runoff to prevent environmental releases.

Q18: Are calibration certificates required for instruments or will instruments be recalibrated once the plant reaches the host site?

A18: Yes, calibration certification/records are needed as part of GTI's QA/QC requirements. The QA/QC requirements are further detailed in RFP Part 1, section 5.5.

Q19: What is the target water quality output for the DI water system X-0601?

A19: For bidding purposes, the target water quality shall be Type II DI water as defined by ASTM D1193.

Q20: Can GTI confirm the filter micron size requirements (F-0101A/B, F-0201, F-0401)?

A20: Filter details are as follows:

- F-0101A/B – Coalescing type filter, 5 micron
- F-0201 – Lean solvent particulate filter, 5 micron
- F-0401 – Carbon filter, 5-10 micron

Any questions or clarifications on this Addendum should be directed to Mark Stevens (mstevens@gti.energy) and GTI will reply and document future clarifications in subsequent addendums, as needed.

NOTE:

Note 1:

GTI requests that Bidders clarify the period of validity when submitting proposals. Also, in order to address potential uncertainty in approval schedules with DOE-NETL, GTI requests that Bidders detail the impact that a 90-day and 180-day validity would have on the quoted costs and lead times as part of their proposals.

Note 2:

The prebid meeting slides reviewed are attached for reference. As noted during the pre-bid meeting, the content of the RFP and subsequent addendums supersedes the content of the presentation should any discrepancies occur. Also, please treat this presentation as confidential and do not share outside of your organization.

END OF ADDENDUM #1
