ASME Standards Technology, LLC
REQUEST FOR PROPOSALS
RFP No. 17-01

Project Number:	**STEX-0147**
Project Title:	**Testing for Development of Joint Efficiency Factors for Glass-Fiber Reinforced Thermosetting Resin Piping (FRP)**
Solicitation Date:	**1 September 2016**
Proposal Due Date:	**15 October 2016 (Extended to October 28, 2016)**

1 Summary

ASME Standards Technology, LLC (ASME ST-LLC) is soliciting proposals for the referenced project. The project results from a request made by the ASME Nonmetallic Pressure Piping Systems Subcommittee on Glass-fiber Reinforced Thermosetting Resin Piping (NPPS SC-FRP) to investigate the effect of pressure stiffening and to determine Joint Efficiency Factors for Glass-fiber Reinforced Thermosetting Resin Piping (FRP).

This Request-for-Proposal ("RFP") and all open RFPs are posted on the ASME ST-LLC webpage: (http://stllc.asme.org/ST-LLC_RequestsProposals.html)

2 Background

The principle work currently in the ASME code books was conducted by Markl in the 1940's on carbon steel piping. Due to FRP being a heterogeneous and orthotropic material with properties derived from fiber direction and glass content within a thermoset matrix, it behaves differently than other piping materials and therefore the rules developed based on testing of small diameter steel piping, as developed by Markl, are not reliable for engineering FRP systems.

Due to the composite nature of FRP, with strength dominance in the fiber direction, significant axial and hoop stiffening can be observed in a piping system as operating temperatures increase.

FRP is used extensively in pressure piping and chemical process systems throughout the world. Therefore, there is a substantial need for testing in this area to develop a reliable means of determining Joint Efficiency Factors for FRP in order to yield more safe and reliable piping systems.

3 Scope of Work

3.1 Summary

The Independent Consultant shall conduct strain based testing on NPS 4 and NPS 12 FRP piping to evaluate the influence of pressure on the stiffness of FRP piping (the Bourdon effect) and the effect of pressure stiffening on strain and how it may effect functional pipe spans between supports. Additionally, the independent consultant will investigate the performance of several FRP joint systems by testing the pipe spools with joints in bending and compare the strain and load to

failure results and to a similar straight pipe specimen without a joint present. The joint types to be tested are:

1. Butt wrap joints
2. Socket Adhesive Joints
   a. Tapered Bell x Tapered Pipe End
   b. Tapered Bell x Straight Pipe End

Due to the variation in material properties from adhesive to adhesive and manufacturer to manufacturer, a variety of joint specimens are to be tested from at least three (3) different manufacturers in order to qualify the performance of joint systems by type of joint.

All material will be fabricated from common brands of vinyl ester and epoxy resin and glass reinforcements to minimize the possible variability of test results due to the raw materials. All piping sections to be tested are to be filament wound to a 55° wind angle filament wound pipe.

Strain test result data shall be compared to a Finite Element Analysis (FEA) and conclusions shall be drawn and presented regarding how closely the results of the test can be duplicated by FEA and how well strain in composites is being predicted at present. Using the data on the joint failures, a correlation between the strength of the pipe and the joint itself in bending shall be determined and an approach or adjustment factor shall be formulated based on the type of joint implemented in the system. The FEA results shall be used to correlate the test findings across a greater range of piping sizes typical of industry applications.

The Independent Consultant shall be responsible for acquiring all piping specimens to complete the entire testing, as defined in this scope of work. The Independent Consultant shall identify all supplier/manufacturer's of the FRP piping samples to be used in the testing in their testing proposal. The piping manufacturers shall be industry leaders in FRP piping and will be considered for approval by the ASME ST-LLC project team.

Required Test Specimens shall be:

Straight Piping Spool: (without joint)

4" NPS:	6 spools	(2 x 3 manufacturers)
12" NPS:	6 spools	(2 x 3 manufacturers)

12 Total Spools

Pipe Spool with Butt Wrap Joint:

4" NPS:	4 spools	(2 x 2 manufacturers)
12" NPS:	4 spools	(2 x 2 manufacturers)

8 Total Spools

Pipe Spool with Socket Adhesive Joint (Taper x Taper):

4" NPS:	4 spools	(2 x 2 manufacturers)
12" NPS:	4 spools	(2 x 2 manufacturers)

8 Total Spools

Pipe Spool with Socket Adhesive Joint (Taper x Straight):

4" NPS:	6 spools	(2 x 3 manufacturers)
12" NPS:	6 spools	(2 x 3 manufacturers)
12 Total Spools		

Total Spools Required for Testing: 40 Spools

3.2 Deliverables

The project deliverables shall be a report providing a summary of the test procedure used, the test results, resultant Joint Efficiency Factors for the 3 joint types listed, and conclusions and recommendations to the NPPS SC-FRP for incorporation into their code (ASME NM-2). The raw data from all testing shall be included with the final report for project reference.

The report shall be provided initially as a draft report and subsequently as a final report that incorporates the comments of ASME ST-LLC or applicable ASME review committees, such as an ASME Peer Review Group ("PRG").

All written deliverables shall be provided as an MS Word file that is formatted in accordance with the ASME Style Guide. One peer review cycle is anticipated and modifications required to the draft, as a result of the review cycle, are the responsibility of the respondent awarded the contract.

3.3 Schedule

The respondent shall submit a schedule with its proposal that provides major milestones for draft and final deliverables and a reporting schedule. The final deliverable shall be completed no later than 15 January 2018.

3.4 Reporting

The respondent shall provide a brief status report on a monthly basis, via email, to the ASME ST-LLC project manager identified herein. Progress reports shall be presented at ASME Nonmetallic Pressure Piping Systems Subcommittee on Glass-fiber Reinforced Thermosetting Resin Piping (NM-1) meetings, as requested by ASME ST-LLC.

4 Respondent Eligibility Requirements

ASME ST-LLC is seeking proposals from all qualified organizations including, but not limited to, engineering firms, independent consultants, academic institutions, and federally funded research and development centers. In addition to relevant technical qualifications and experience, respondents must possess an understanding of relevant ASME codes and standards.

5 Basis for Selection and Award

ASME ST-LLC will select the winning proposal by evaluating and comparing the merits of each respondent's complete proposal. This process reflects ASME ST-LLC's desire to select application proposal based on its potential to achieve program objectives, rather than solely on evaluated technical merit or cost. Evaluation criteria include, but are not limited to, the following:

- Respondent's technical capabilities
- Respondent's applicable experience
- Proposal price
- Project schedule
- Any exceptions to ASME ST-LLC's standard agreement

ASME ST-LLC reserves the right to award, in whole or in part, any, all, or none of the proposals/respondents answering this solicitation.

6 Contract Terms and Conditions

The contract to perform the Scope of Work shall be fixed price. A form of ASME ST-LLC's standard agreement applicable to this Scope of Work is attached as Attachment 1 to this RFP.

ASME ST-LLC will provide access to applicable codes, standards, and other technical references as needed to perform the Scope of Work.

7 Submission Requirements

7.1 Proposal Due Date

Proposal must be submitted by 15 October 2016 **(Extended to October 28, 2016)**. Respondents are encouraged to transmit its proposal well before this deadline. Requests for extra time must be sent by 1 October 2016 to the contact listed in Section 8 of this RFP.

ASME ST-LLC intends to select the winning proposal within three weeks of the proposal deadline.

7.2 Proposal Preparation Costs

Proposal costs shall be borne by the respondent. This solicitation does not obligate ASME ST-LLC to pay any costs incurred in the preparation and submission of the proposal, in making necessary studies or designs for the preparation thereof, or to acquire, or contract for any services.

7.3 Proposal Clarification

ASME ST-LLC reserves the right to request clarification of the proposal and/or supplemental information. The award may be made after few or no exchanges, discussions, or negotiations. Therefore, all respondents are advised to submit its most favorable application to ASME ST-LLC. ASME ST-LLC reserves the right, without qualification, to reject any or all proposals received in response to this solicitation and to select any proposal, in whole or in part, as a basis for negotiation and/or award. ASME ST-LLC reserves the right to modify or cancel this solicitation. All questions relating to the solicitation must be submitted to the contact listed in Section 8 herein. Any amendments to the solicitation will be posted on the ASME ST-LLC website previously referenced.

7.4 Treatment of Proprietary Information

A proposal may include technical and/or other data, including trade secrets and/or privileged, confidential commercial or financial information, which the respondent does not want disclosed to the public or used by ASME ST-LLC for any purpose other than proposal evaluation. To protect such data, the respondent should specifically identify the data or information to be protected.

7.5 Proposal Preparation and Submittal Instructions

ASME ST-LLC may form a committee of subject matter experts to evaluate the technical qualifications of applicants. To help facilitate this evaluation, proposals should be separated into two separate documents: (1) a Technical Proposal; and (2) a Financial Proposal.

7.5.1 Technical Proposal contents must include:

- Provide organization name and contact information.
- Provide evidence of technical capabilities: credentials, qualifications, capabilities, and experience of individuals and the organization.
- Describe approach to accomplish the Scope of Work (refer to Section 3).
- Demonstrate agreement with the Scope of Work (refer to Section 3).

7.5.2 Financial Proposal contents must include:

- Provide a fixed price quotation, which shall remain firm for one hundred eighty (180) days.
- Confirm agreement with the form of agreement attached herein, or state any requested exceptions to same.

7.5.3 The respondent shall submit the Technical and Financial Proposals files via e-mail to the ASME ST-LLC contact identified in Section 8 of this RFP. Responses must be received on or before the proposal due date identified in Section 7.1 of this RFP.

8 ASME Standards Technology, LLC Contact Information

All correspondence regarding this RFP is to be directed to the following person:

Ms. Colleen O'Brien
Project Manager
ASME Standards Technology, LLC
Two Park Avenue
New York, NY 10016
Telephone: 212-591-7881
E-mail: obrienc@asme.org

ASME Standards Technology, LLC

Nonexclusive Independent Consultant Agreement

Standard Terms and Conditions

[Title]

This Agreement, dated as of [_____], is made between ASME Standards Technology, LLC ("ASME ST-LLC"), a New York not-for-profit corporation with its principal office at Two Park Avenue, New York, New York 10016 and [Insert Consultant Name and Address, spelled out completely without zip code] (the "Independent Consultant").

W I T N E S S E T H:

WHEREAS ASME ST-LLC desires to engage the Independent Consultant to perform [insert scope description] for [Project name]; and

WHEREAS the Independent Consultant agrees to accept such engagement and to perform the services hereinafter specified;

NOW, THEREFORE, in consideration of the foregoing and the mutual agreements of the parties contained in this Agreement, it is agreed as follows:

1. Engagement. ASME ST-LLC hereby engages the Independent Consultant, on an as needed and nonexclusive basis, to perform the services defined in Annex 1 to this Agreement (the "Work").

2. Performance. The Independent Consultant agrees to perform the services set forth above. The Independent Consultant agrees to perform such services professionally and to the best of its ability, to provide the services in an ethical manner, and to avoid conflicts of interest and any appearance thereof. It is understood that the Independent Consultant may obtain other consulting work and, as a result, may be unavailable, from time to time, to perform consulting services for ASME ST-LLC, but the Independent Consultant agrees to adhere to the ASME Policies on Conflicts of Interest and Ethics (http://stllc.asme.org/Policies.cfm). ASME ST-LLC will not set specific daily schedules. ASME ST-LLC will not provide tools,

materials, supplies or equipment necessary for the Independent Consultant to perform the Work except for the necessary codes, standards, and procedures. Neither will ASME ST-LLC reimburse the Independent Consultant for the use of its tools, materials, supplies or equipment. The Independent Consultant shall not engage subcontractors to perform any portion of the Work without the written approval of ASME ST-LLC.

3. Fees. For all services to be rendered by the Independent Consultant to ASME ST-LLC, as required by ASME ST-LLC, the Independent Consultant will receive fees as specified in Annex 2 to this Agreement. It is understood and agreed that the Independent Consultant is performing services as an independent contractor. As a result, ASME ST-LLC will not withhold any tax, of whatever nature, from payments made by ASME ST-LLC to the Independent Consultant. The Independent Consultant is solely responsible for meeting federal, state, or local income tax liabilities. The total charges for all fees and expenses shall not exceed the contract value specified in Annex 2 to this Agreement.

4. Expenses. Expenses incurred by the Independent Consultant in connection with the Work shall be borne by the Independent Consultant as part of the total compensation for the Work.

5. Terms of Payment. The Independent Consultant shall submit associated invoices for acceptance by ASME ST-LLC prior to payment. Invoices shall be submitted following achievement of milestones specified in Annex 2 to this Agreement. Payment shall be 100 percent net due 30 days after receipt of an acceptable invoice from the Independent Consultant.

6. Benefits. The Independent Consultant is not eligible for, and will not receive, any benefits from ASME ST-LLC based on services performed under this Agreement.

7. Copyright and Ownership. The Independent Consultant agrees that ASME ST-LLC specially ordered and commissioned the Work as "work made for hire" as that term is defined in the United States Copyright Act (17 U.S.C. §101), and that for purposes of the copyright laws, ASME ST-LLC shall be deemed the "author" of the Work. If it is determined that the Work is not a work made for hire under the U.S. Copyright laws, then, as of the creation

of the Work, the Independent Consultant hereby assigns exclusively and irrevocably to ASME ST-LLC all worldwide, present and future right, title and interest in the Work, including the copyrights and other proprietary rights existing in the Work (including all United States and foreign copyrights, all copyrights under any treaties, conventions, proclamations, or the like, and all extensions of such copyrights; all artistic and literary property rights; all moral rights; all rights to apply for or obtain any registrations for copyright in the Independent Consultant's name; and the right to sue and recover for any infringement of the Work). The Independent Consultant may not reproduce the Work in any form without ASME ST-LLC's prior written permission.

8. Indemnification and Hold Harmless.

a. Obligation of the Independent Consultant – The Independent Consultant shall indemnify, defend and hold harmless ASME ST-LLC and its officers, directors, employees and agents and each of them from any and all claims, actions, causes of action, demands, liabilities of whatsoever kind and nature including judgments, interest, attorney's fees, and all other costs, fees, expenses and charges which ASME ST-LLC, its officers, directors, employees, agents and each of them, may incur arising out of the negligence, gross negligence or willful or wanton misconduct of the Independent Consultant, its officers, directors, employees or agents.

b. Obligation of ASME ST-LLC – ASME ST-LLC shall indemnify, defend and hold harmless the Independent Consultant and its officers, directors, employees and agents and each of them from any and all claims, actions, causes of action, demands, liabilities of whatsoever kind and nature including judgments, interest, attorney's fees, and all other costs, fees, expenses and charges which the Independent Consultant, its officers, directors, employees, agents and each of them, may incur arising out of the negligence, gross negligence or willful or wanton misconduct of ASME ST-LLC, its officers, directors, employees or agents.

9. Term. It is mutually agreed that the Independent Consultant will commence work on this project immediately upon execution of this Agreement, and continue until completion, estimated as on or about [Contract End Date]. This termination date may be extended by mutual agreement, which must be confirmed in writing.

10. Termination. ASME ST-LLC shall have the right to terminate this agreement upon 14 days notice in writing to the Independent Consultant at any time that ASME ST-LLC shall in its judgment decide that such termination is in the best interests of ASME ST-LLC. Conversely, the Independent Consultant shall have the right to terminate this agreement upon 14 days' notice in writing to ASME ST-LLC at any time that the Independent Consultant shall in its judgment decide that such termination is in the best interests of the engineering profession. In the event of such termination, ASME ST-LLC shall pay the Independent Consultant on a pro rata basis for percent of work completed as determined by mutual agreement subject to the provisions of Sections 3 and 4 of this Agreement.

11. Force Majeure. The parties' performance under this contract is subject to acts of God, war, government regulation, terrorism, disaster, strikes, civil disorder, curtailment of transportation facilities, or any other emergency beyond the parties' control, making it inadvisable, illegal or which materially affects a party's ability to perform its obligations under this contract. Either party may terminate this contract for any one or more of such reasons upon written notice to the other party.

12. Trademark Usage. Independent Consultant may not use any of ASME ST-LLC's trademarks or other identifiers (including the ASME ST-LLC logo) in any manner without ASME ST-LLC's prior written approval or consent. ASME ST-LLC reserves the right to review any approved use of its trademarks and to require changes in any further use, and Independent Consultant agrees to comply with those requirements.

13. Publicity Release and Public Affairs. The Independent Consultant shall not make without prior review and approval of ASME ST-LLC, any publicity release of any nature of general, non-technical information in connection with this Agreement. For purposes of this Agreement, general, non-technical information means any information concerning the existence of the Agreement, the identity of the parties, and the scope and general character of the research or technical activity**.**

14. Entire Agreement. This Agreement entirely supersedes, terminates, and replaces any and all prior agreements between the parties relating to the subject matter hereof

and may not be amended except by an instrument in writing signed by both parties to this Agreement.

15. Notices. Any notices hereunder shall be given to the parties at their respective addresses set forth above by registered mail until a new and different address shall be established for either party on the basis of notice given to the other party.

16. Governing Law. This Agreement shall be subject to and governed by the substantive laws of the State of New York (without regard to its conflict of laws rules).

IN WITNESS WHEREOF, ASME ST-LLC has caused this Agreement to be executed on its behalf by its officer thereunto duly authorized and the Independent Consultant has executed this Agreement as of the day and year first above written.

ASME STANDARDS TECHNOLOGY, LLC

By: _____
Name: John J. Koehr
Title: President

INDEPENDENT CONSULTANT

By: _____

Name:
Title:
Social Security or Federal Tax ID number: [_____]