

**Technical Consultation on Development of PIPSYS-to-
PIPESTRESS Converter Program and Review of
Appropriateness of PIPESTRESS User's Manual**



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[Appendix A - SCOPE OF SERVICES AND METHOD OF PERFORMANCE]

1.0 PURPOSE

A converter program, which can convert PIPSYS input files of SKN Units 5&6 into PIPESTRESS input files of SHW Units 3&4 to which the PIPESTRESS program will be applied for the first time in KEPCO E&C, shall be developed by the Contractor and provided to KEPCO E&C.

And appropriateness of the PIPESTRESS User's Manual, which will be developed as a kind of guidance for the PIPESTRESS-based piping stress analysis by KEPCO E&C for the employees of both KEPCO E&C and its subcontracted companies, shall be reviewed by the Contractor and submit their review results to KEPCO E&C so that design outputs with high quality enough to satisfy the subject projects can be produced according to the project schedules.

2.0 TECHNICAL SCOPE OF WORK

Contractor shall provide the following engineering services to KEPCO E&C as described in the following tasks:

Task 1: Development of PIPSYS-to-PIPESTRESS Converter Program

- Contractor shall develop a beta version of PIPSYS-to-PIPESTRESS Converter Program, temporarily called as PIPtoPS, which can convert the following items in the PIPSYS input data of Piping Subsystem RC101, one of the most complicated piping systems in a NPP, into a PIPESTRESS input data:
 - Piping Configuration Modeling
 - Weight Analysis
 - Hydrostatic Test Analysis
 - Thermal Expansion Analysis
 - Pressure Analysis
 - Seismic Anchor Motion Analysis
 - Seismic Analysis
- Contractor shall also review a technical review report, which will be prepared by KEPCO E&C based on the testing results on whether the beta version of PIPtoPS program can convert the PIPSYS input data of about 20 representative piping subsystems in each of the Reactor/Compound/Auxiliary/ Turbine/Yard Buildings into the PIPESTRESS input data.
- As a result of reviewing KEPCO E&C-prepared technical review report, Contractor shall incorporate the KEPCO E&C requested items into the beta version of PIPtoPS after technical discussion between Joseph Catalano and a KEPCO E&C engineer during the 3-day face-to-face meeting at a CWANTIC office and complete the development of the PIPtoPS program.

Task 2: Review of Appropriateness of PIPESTRESS User's Manual

- Contractor shall review the appropriateness of PIPESTRESS User's Manual, which will be developed by KEPCO E&C with the various relevant sample problems as a kind of guidance for the PIPESTRESS-based piping stress analysis for the employees of both KEPCO E&C and its subcontracted companies who have never used the PIPESTRESS program.
- As a result of reviewing the KEPCO E&C-developed PIPESTRESS User's Manual, Contractor shall provide their review comments to KEPCO E&C in advance so that all of the contents in the PIPESTRESS User's Manual can be confirmed through technical discussion during the 3-day face-to-face meeting at a CWANTIC office between Joseph Catalano and a KEPCO E&C engineer.

Task 3: Face-to-Face Technical Discussion at CWANTIC for Three Days

- Contractor shall have a face-to-face technical discussion at a CWANTIC office for three days between Joseph Catalano and a KEPCO E&C engineer to deal with the following items:
 - To discuss the proper way of incorporating the KEPCO E&C requested items into the PIPtoPS program (output of Task 1), which will be developed by CWANTIC as a converter program.
 - To discuss the review comments (output of Task 2) on appropriateness of the KEPCO E&C-developed PIPESTRESS User's Manual.

Consulting Schedule

Tasks	Schedule											
	2023.09					2023.10					2023.11	
	1	2	3	4	5	1	2	3	4	5	1	2
Task 1 – Development of PIPSYS-to-PIPESTRESS Converter Program	<hr style="border-top: 2px solid red;"/>											
1) Transmittal of PIPSYS input file of RC101 to CWANTIC for developing the Beta version of PIPToPS	←	Execution Date										
2) Transmittal of Beta version of PIPToPS to KEPSCO E&C for review					←	2023.09.25						
3) Transmittal of technical review report prepared by KEPSCO E&C to CWANTIC						←	2023.10.02					
4) Transmittal of review comments for technical review report to KEPSCO E&C							←	2023.10.10				
Task 2 – Review of Appropriateness of PIPESTRESS User’s Manual	<hr style="border-top: 2px solid red;"/>											
1) Transmittal of PIPESTRESS user’s manual prepared by KEPSCO E&C to CWANTIC					←	2023.09.25						
2) Transmittal of review comments for PIPESTRESS user’s manual to KEPSCO E&C							←	2023.10.10				
Task 3 – Face-to-Face Technical Discussion at CWANTIC for Three Days								<hr style="border-top: 2px solid red;"/>				
1) Preliminary report and Draft PIPToPS program								2023.10.31 →				
2) Final report and completely developed PIPToPS program										2023.11.07 →		

- Contractor shall start the consulting service in accordance with the schedule shown as the above schedule, immediately after signing of the Contract, and KEPCO E&C will provide the technical review report and PIPESTRESS user's manual to the Contractor to perform Tasks 1 and 2.
- As a result of reviewing the technical review report and PIPESTRESS user's manual provided by KEPCO E&C, Contractor shall provide their review comments in advance so that all of the technical issues in the technical review report and PIPESTRESS User's Manual can be confirmed through technical discussion during the 3-day face-to-face meeting at a CWANTIC office between Joseph Catalano and a KEPCO E&C engineer.

- Technical issues shall be resolved by the 3-day face-to-face technical discussion and the Contractor shall provide the preliminary report and draft PIPtoPS program by Oct. 31, 2023 for the review of KEPCO E&C.
- Contractor shall provide the final report and completely developed PIPtoPS program by Nov. 07, 2023 to KEPCO E&C by incorporating the review comments for the preliminary report and draft PIPtoPS program.
- Contractor shall keep confidential all the data and information from this Contract, and shall not divulge them to any third parties.

Deliverables

- Transmittal of Beta version of PIPtoPS program developed by CWANTIC for Task 1 by Sep. 25, 2023.
- Review comments on the KEPCO E&C-prepared technical review report for Task 1 shall be provided by Oct. 10, 2023.
- Review comments on the KEPCO E&C-prepared PIPESTRESS User's Manual for Task 2 shall be provided by Oct. 10, 2023.
- The Preliminary Report and Draft PIPtoPS program, into which the discussed items during the face-to-face meeting have been incorporated, shall be provided by Oct. 31, 2023.
- The Final Report and completely developed PIPtoPS program shall be provided by Nov. 07, 2023.