What's new in CAEPIPE 3D+ V13.10?

(Release date: January 1, 2025)

We are excited to release CAEPIPE 3D+ Version 13.10, featuring key advancements to elevate your piping system analysis. The **detailed fatigue evaluation** process has been enhanced to a node-by-node approach, offering greater precision in assessing fatigue and enabling a more accurate understanding of localized fatigue behavior. This refinement allows engineers to identify critical areas with confidence, ensuring more effective design and maintenance decisions.

This release also includes updates to keep your analyses aligned with the latest industry standards. The new version incorporates piping code updates for **ASME B31.1 (2024)** and **ASME B31.12 (2023)**. Additionally, the computation of Stress Intensification Factors (i-Factors) and Flexibility Factors (k-Factors) has been updated to reflect the **2023 revisions in ASME B31J** for relevant ASME B31.x codes. With these enhancements, SST Systems Inc. continues to deliver robust, reliable tools for precise and compliant piping system analysis.
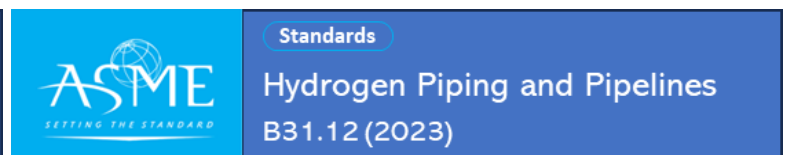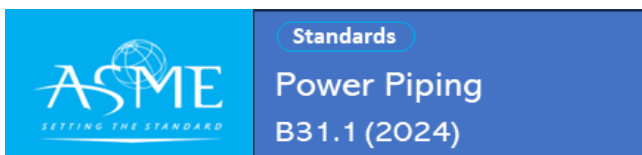
Power Piping | **Hydrogen Piping** | **Detailed Fatigue Evaluation**
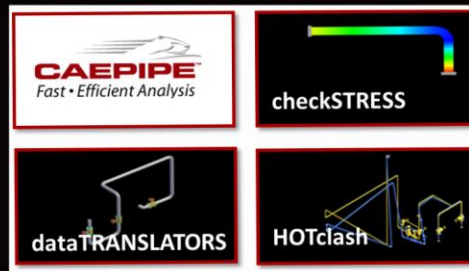

Fatigue Crack
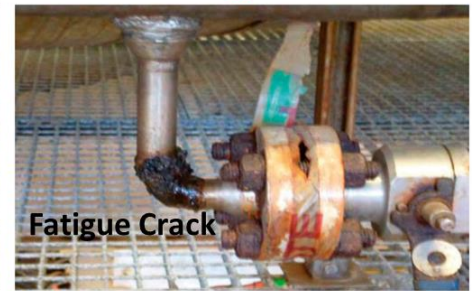
Updated Piping Codes

- ASME B31.1 (2024)
- ASME B31.12 IP (2023)
- ASME B31.12 PL (2023)

Refer to Piping Code Compliance section of CAEPIPE Code Compliance Manual for details on their implementations.

New Material Libraries

Material libraries for the following codes are added. Refer to Piping Code Compliance section of CAEPIPE Code Compliance Manual for details.

- ASME B31.1 (2024)
- ASME B31.1 (2024) Non-Metallic Piping
- ASME B31.12 (2023)

Enhancements

- The computation of Stress Intensification Factors (i-Factors) and Flexibility Factors (k-Factors) has been updated in line with the ASME B31J (2023) revisions for the relevant ASME B31.x piping codes.
- New feature is added to perform node-by-node Detailed Fatigue Evaluation. Fatigue Evaluation output can be reviewed through Sorted Stresses, Code Compliance, Element forces and Fatigue Summary options under CAEPIPE 3D+ Results.
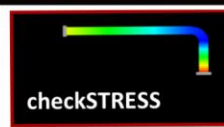
Bug Fixes

- Bug Correction: Inserting a Limit Stop with a Location card was issuing "Access Violation" when the direction of Limit Stop is NOT parallel to the Global Vertical Axis.

CAEPIPE Code Compliance Checks

Table given below lists the Piping Codes that are built into CAEPIPE 3D+ Version 13.10 for Code Compliance checks with their piping type and analysis type covered.

Sl. No.	Piping Code and Description	Metallic / Nonmetallic Piping	Above Ground	Buried Piping
1	ASME B31.1 (2024) - Power Piping	Metallic	Yes	---
2	ASME B31.1 (1967) - Power Piping	Metallic	Yes	---
3	ASME B31.1 (1973) - Power Piping	Metallic	Yes	---
4	ASME B31.1 (1977) - Power Piping	Metallic	Yes	---
5	ASME B31.1 (1980) - Power Piping	Metallic	Yes	---

CAEPIPE 3D+

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V13.10

Sl. No.	Piping Code and Description	Metallic / Nonmetallic Piping	Above Ground	Buried Piping
6	ASME B31.3 (2022) - Process Piping	Metallic	Yes	---
7	ASME B31.4 (2022) - Pipeline Transportation Systems for Liquids and Slurries	Metallic	Yes	Yes
8	ASME B31.5 (2022) - Refrigeration Piping and Heat Transfer Components	Metallic	Yes	---
9	ASME B31.8 (2022) - Gas Transmission and Distribution Piping Systems	Metallic	Yes	Yes
10	ASME B31.9 (2020) - Building Services Piping	Metallic	Yes	---
11	ASME B31.12 IP (2023) - Hydrogen Piping	Metallic	Yes	---
12	ASME B31.12 PL (2023) - Hydrogen Pipelines	Metallic	Yes	Yes
13	ASME NM.1 (2022) - Thermoplastic Piping Systems	Nonmetallic	Yes	---
14	ASME NM.2 (2022) - Glass-Fiber-Reinforced Thermosetting-Resin Piping Systems (GRP/FRP)	Nonmetallic	Yes	---
15	ASME Class 2 (1980) - ASME Section III, Subsection NC - Class 2	Metallic	Yes	---
16	ASME Class 2 (1986) - ASME Section III, Subsection NC - Class 2	Metallic	Yes	---
17	ASME Class 2 (1992) - ASME Section III, Subsection NC - Class 2	Metallic	Yes	---
18	ASME Class 2 (2015) - ASME Section III, Subsection NC - Class 2	Metallic	Yes	---
19	ASME Class 2 (2017) ASME Section III, Subsection NC - Class 2	Metallic	Yes	---
20	ASME Class 2 (2021) - ASME Section III, Subsection NC - Class 2	Metallic	Yes	---
21	ASME Class 2 (2023) - ASME Section III, Subsection NC - Class 2	Metallic	Yes	---
22	ASME Class 3 (2017) - ASME Section III, Subsection ND - Class 3	Metallic	Yes	---
23	ASME Class 3 (2021) - ASME Section III, Subsection ND - Class 3	Metallic	Yes	---
24	ASME Class 3 (2023) - ASME Section III, Subsection ND - Class 3	Metallic	Yes	---
25	ISO 14692-3 (2017) - Petroleum and Natural Gas Industries - Glass Reinforced Plastics (GRP/FRP) Piping	Nonmetallic	Yes	Yes
26	EN 13480 (2020) - Metallic industrial piping	Metallic	Yes	Yes
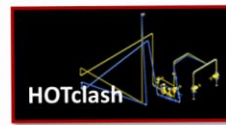
Sl. No.	Piping Code and Description	Metallic / Nonmetallic Piping	Above Ground	Buried Piping
27	EN 13941 (2019) - District heating pipes	Metallic	No	Yes
28	BS 806 (1986) - Construction of Ferrous Piping Installations for and in Connection with Land Boilers (British)	Metallic	Yes	---
29	DNV-ST-F101 – Submarine pipeline systems	Metallic	Yes	---
30	IGEM (2012) - Institution of Gas Engineers and Managers (IGEM) IGE/TD/12 Edition 2 (UK)	Metallic	Yes	---
31	Norwegian (1983) - Process design	Metallic	Yes	---
32	Norwegian (1990) - Process design	Metallic	Yes	---
33	RCC-M (1985) - Design and Construction Rules for Mechanical Components of PWR Nuclear Islands (French)	Metallic	Yes	---
34	RCC-M (2018) - Design and Construction Rules for Mechanical Components of PWR Nuclear Islands (French)	Metallic	Yes	---
35	RCC-M (2020) - Design and Construction Rules for Mechanical Components of PWR Nuclear Islands (French)	Metallic	Yes	---
36	RCC-M (2022) - Design and Construction Rules for Mechanical Components of PWR Nuclear Islands (French)	Metallic	Yes	---
37	CODETI (2013) - CODE DE CONSTRUCTION DES TUYAUTERIES INDUSTRIELLES (French)	Metallic	Yes	---
38	Stoomwezen (1989) - Dutch Power piping code	Metallic	Yes	---
39	Swedish (1978) – Swedish piping code	Metallic	Yes	---
40	Z183 (1990) - Oil Pipeline Systems (Canadian)	Metallic	Yes	---
41	Z184 (1992) - Gas Pipeline Systems (Canadian)	Metallic	Yes	---
42	Z662 (2019) - Oil & Gas Pipeline Systems (Canadian)	Metallic	Yes	Yes
43	NONE (for AWWA M11 applications, and for applications in aircraft, aerospace & defence industries)	Metallic	Yes	Yes

Download an evaluation version of CAEPIPE 3D+ from the link https://www.sstusa.com/caepipe3d-software-download.php.

Earlier versions' Release Notes are available at
http://www.sstusa.com/caepipe-enhancements.php