JADE
Joint Analysis, Design & Engineering

IES JADE – Joint Assembly, Design and Engineering

What JADE is:

JADE is the foremost software package available for the assembly, design and engineering assessment of Pressure Boundary Bolted Joints. The core of the software is a world-leading, advanced engineering analysis module that allows an assessment of joint integrity that exceeds industry best-practice.

Jade includes:

- Joint Component Strength Calculations (exceeds WRC Bulletin 538)*
- Flange Design Calculations (ASME VIII, Division 1, Appendix 2)
- Assessment of the effects of transient thermal loading (exceeds WRC Bulletin 510)*
- Determination of the optimal joint assembly bolt load (exceeds ASME PCC-1 Appendix O)*
- Joint Assembly Procedure (ASME PCC-1 Appendix F)*
- Joint Inspection Procedure (ASME PCC-1 Appendix D)*

- Identification of the Joint Risk Ranking based on a fully quantitative approach*
- Assessment of all joint loads (including external loads & creep/relaxation)*
- Built-in standard flange and materials database
- Assess any custom flange or standard flange for the actual service conditions.

* All of these industry leading procedures and calculation methods were developed by Dr. Warren Brown, Principal Engineer at IES.

What JADE does:

Assembly
- Determines optimal bolt load
- Creates a custom joint assembly sheet
- Identifies the joint assembly technique required based on risk of leakage
- Stores assembly variables used

Design
- Eliminates leakage of new equipment
- Performs flange design code calculations
- Identifies the component strengths

- Enables design optimization, including gasket selection
- Enables simplification of site practices (uniformity of assembly techniques and bolt load levels) on new equipment
- Latest techniques for assessing external loads and component creep/relaxation incorporated

Engineering
- Identification of Root Cause of Leakage via joint integrity calculations
- Essential for continuous improvement of any Joint Integrity Program
- Facilitates standardization of approach for addressing existing equipment leakage
- Proactive identification of risk for all joints, enabling resources to be assigned where they are needed


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Why choose JADE:

- Exceeds industry standards
- The only software backed by industry leading knowledge and experience
- Gasket limits determined by both in-house testing & field experience
- Calculates the actual joint conditions, rather than relying on pre-calculated standard flange tables or simplified gasket stress limits

- Integrates with existing maintenance practices or as part of the IES Joint Integrity Program

IES guarantees that JADE represents the best available technology and knowledge in the industry. JADE contains unparalleled knowledge and the techniques employed are backed up with over 20 years of field experience and a solid engineering foundation.
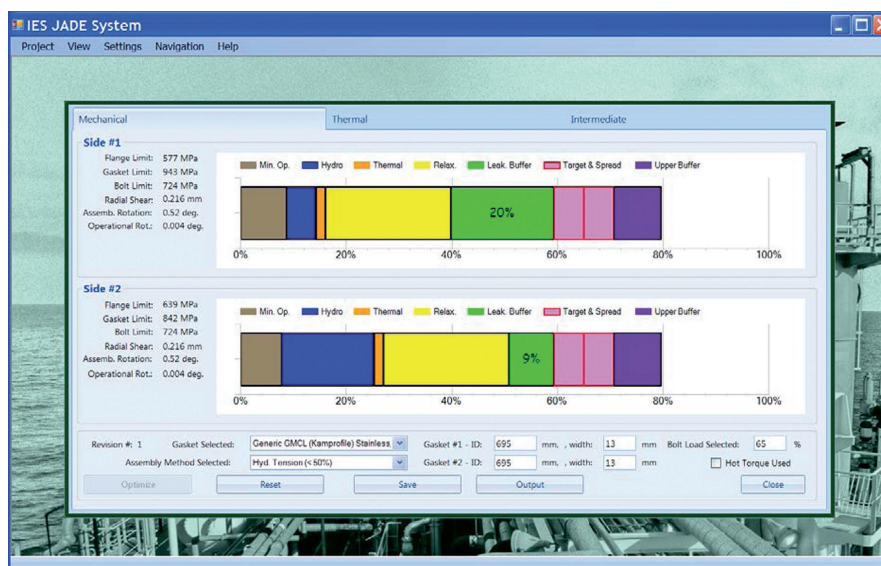
Assembly Bolt Load Selection Graph: these graphs allow visualization of the joint component strengths, operating loads and assembly bolt load selection. They also allow comparison of different gasket styles and dimensions. Real-time assessment means that it is possible to determine the optimal joint configuration or the reason for existing joint leakage in only a few clicks.
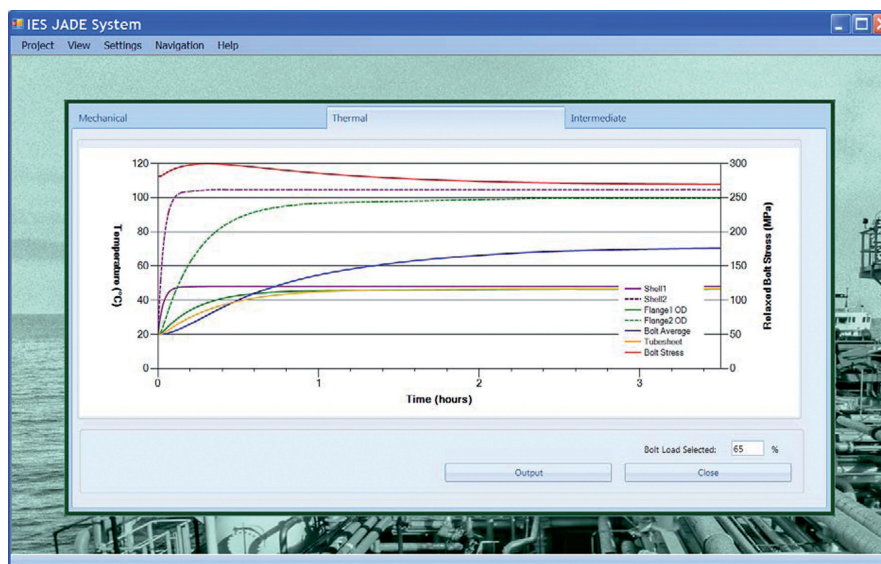
Thermal Load Assessment Graph: allows visualization of the joint component temperatures during a thermal transient (heating or cooling) and the resulting effect on bolt load. This enables the determination of whether the bolt load reduces below the required operational gasket stress limit during operation or increases beyond the acceptable joint component limits during start-up or once the joint is in operation. Leakage due to thermal transients is one of the leading causes of joint leakage. Visualization of this cause and determination of the most appropriate solution is made easy by JADE.

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