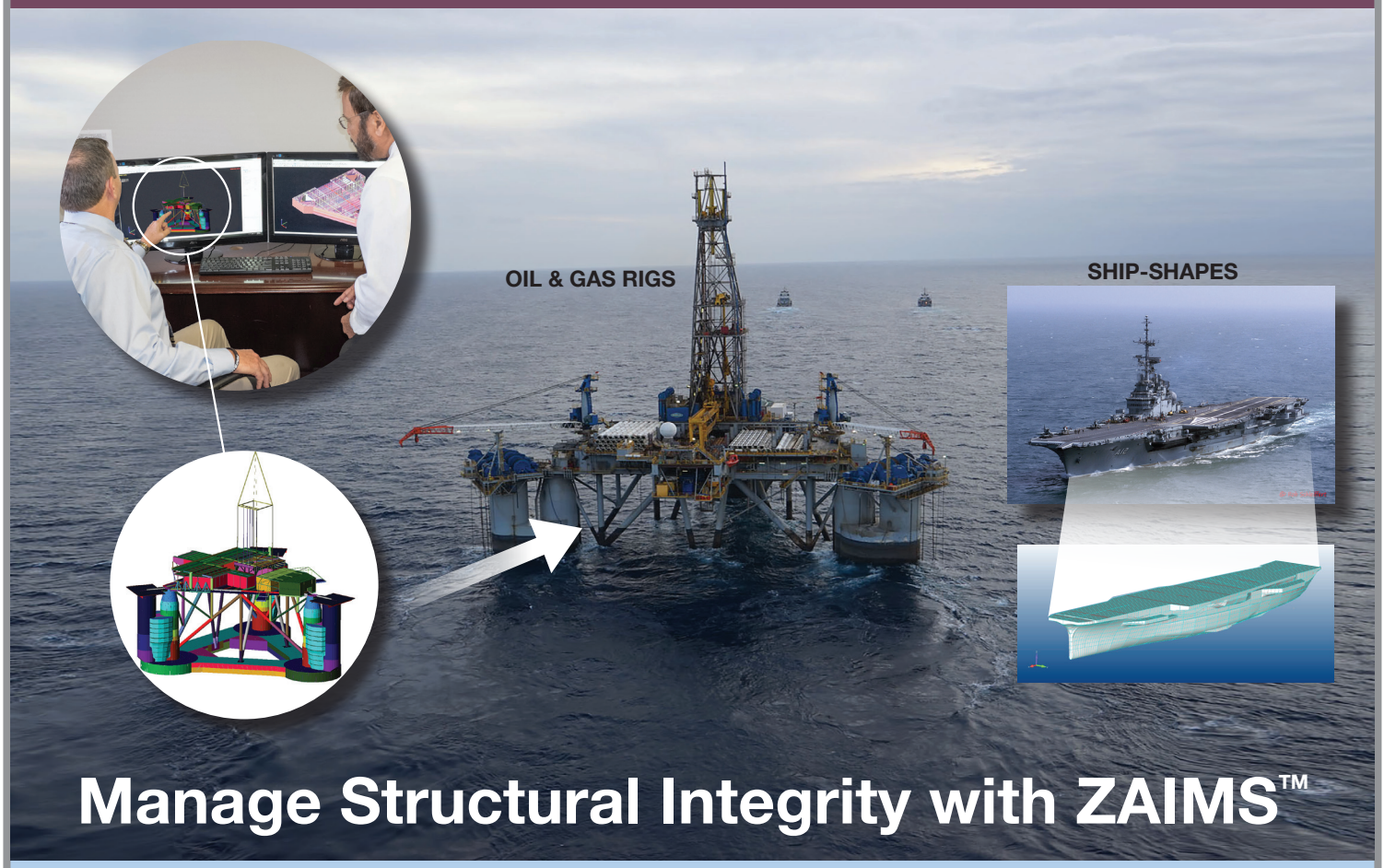
ZAIMS™ Zentech's Asset Integrity Management Solution



Manage Structural Integrity with ZAIMS™

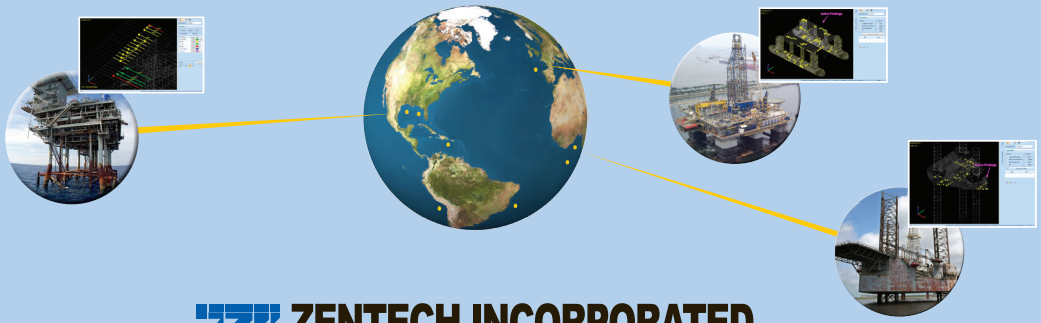
...identify steel replacement areas based on engineering calculations

Zentech's Asset Integrity Management Solution (ZAIMS™) is a cost- and time-effective way to manage the structural integrity of offshore structures. It combines multiple components into a seamless package for both individual assets and global fleet management.

With ZAIMS™, steel replacement areas are identified using engineering results (minimum scantling, buckling and global stress calculations) rather than the current industry practice based on percentage of loss.

ZAIMS organizes and maintains reports and results of a single, as well as multiple, inspections to record corrosion gauging, bends, dents and cracks for each asset of the company in a single and securely accessible data repository.

Multiple recordings of gauging reports may further be used to predict the remaining useful life left, before steel replacement is required.



ZENTECH INCORPORATED
INNOVATIVE ENGINEERING SOLUTIONS

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Traditional Asset Management Method…the Problem at Hand:

In the traditional vessel inspection/repair procedure, manual inspections are performed with corrosion data recorded in 2D sketches and spreadsheets.

Those sketches are then converted into various analysis models and summarized, and the results are brought into voluminous reports.

Field engineers, operations personnel and shipyard management are then confronted with all the information needed, but in a difficult-to-use format.

This "start-stop-start-stop" approach is not only laborious but also prone to human error and possible compromises to quality.

ZAIMS™ Methodology Streamlines the Procedure with Better Quality Control...

1. Zentech prepares AutoCAD template drawings / sketches.

2. Inspection company provides gauged information.

3. Gauged information is brought into AutoCAD drawings.

4. Gauged data is brought into the ZAIMS™ database from AutoCAD drawings.

5. Local minimum scantling and Global Von Mises are calculated, and the results are displayed in a 3D model, and also exported to the template drawings.

6. The field engineer and Class surveyor review the drawings and make final replacement decisions.

7. The fabricator can use the template drawings and continue the development of cut-sheets or fabrication drawings.

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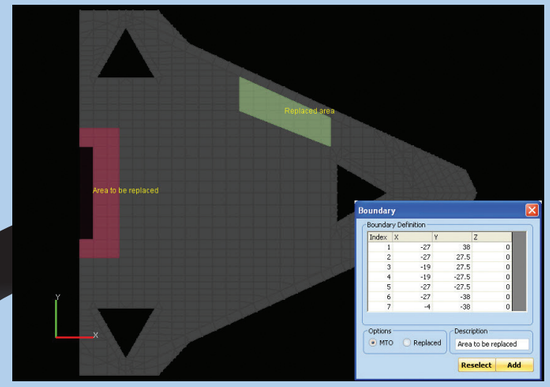
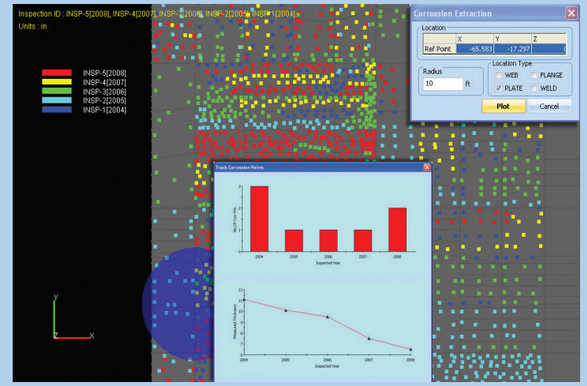
MTO (Material Take-Off)

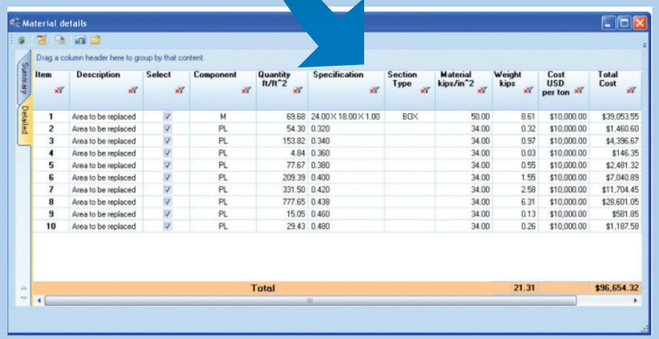
Summary and detailed list of the quantity and cost for the selected material replacement areas are shown.

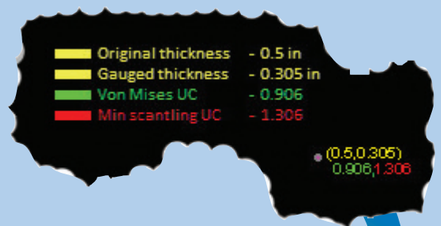


Recommended replacement and actual replaced areas can be defined directly in the 3D model. An MTO can be generated for these areas.

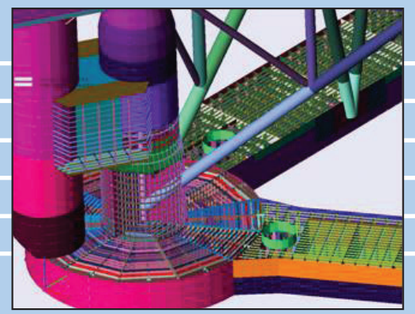


Variations in minimum measured thickness and the number of corrosion readings recorded in various inspections on a particular area can be plotted.

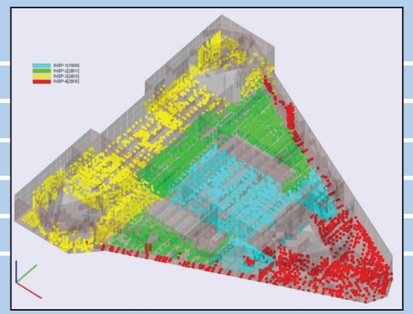




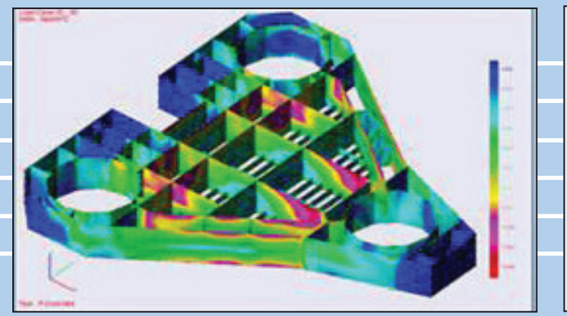
Examples of ZAIMS™ 3D Model Output...



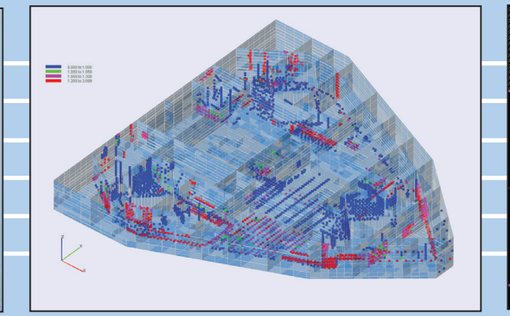
The 3D analysis model which is generated contains exact geometric and material perspectives.



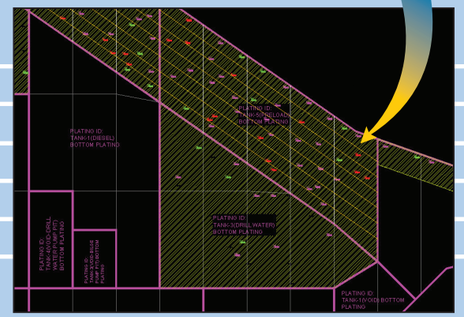
Corrosion points are plotted and segregated according to the inspected years and represented with various colors.



Stress analysis is performed for storm and drillng cases using approved MOM criteria. Von Mises stress contour plots are plotted on the 3D model.



Class rules are used to determine the minimum scantling requirement for plates and stiffeners/girders for tanks and other compartments.



The recommended areas to be replaced are identified by the minimum scantling values and Von Mises stress rather than "15 percent loss" rules of thumb.

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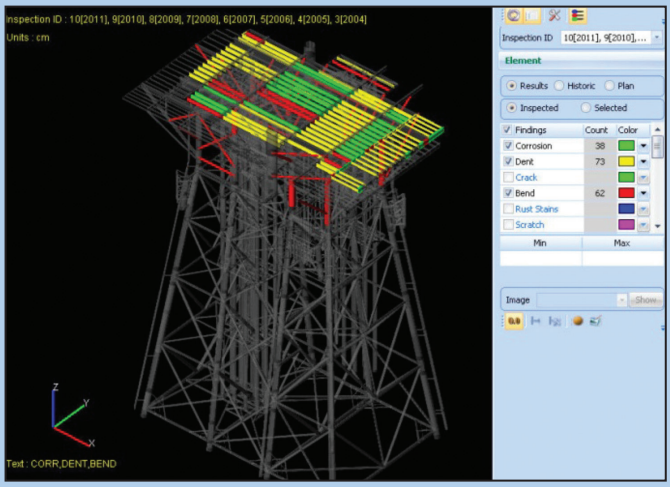
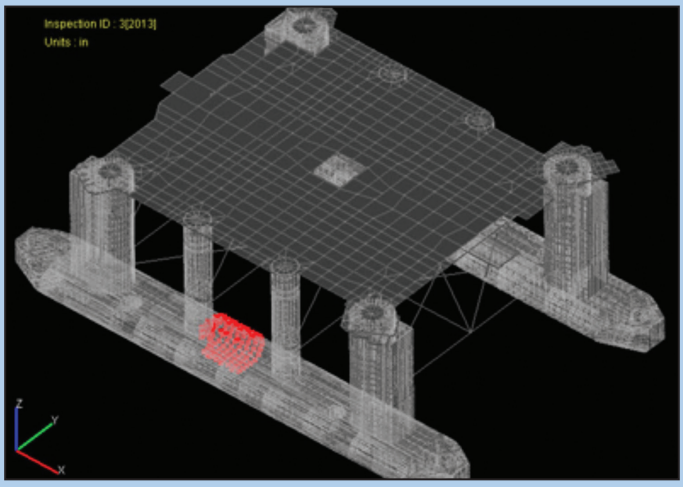
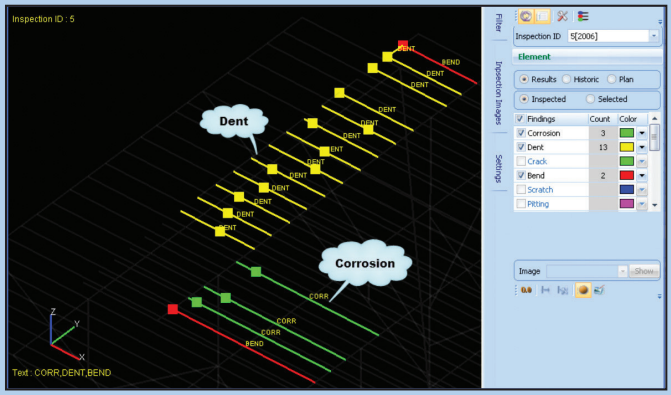


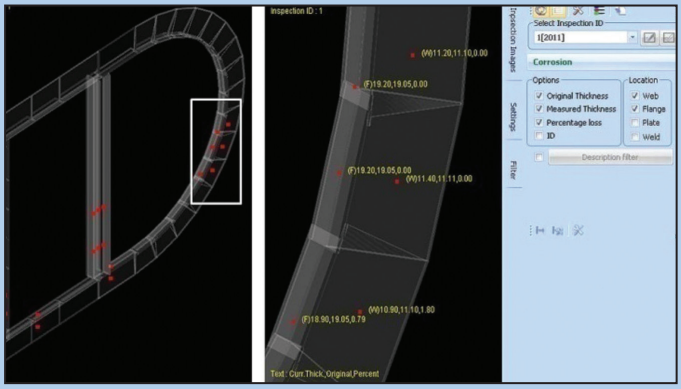
The information from Inspection Results is represented graphically in a 3D Model.



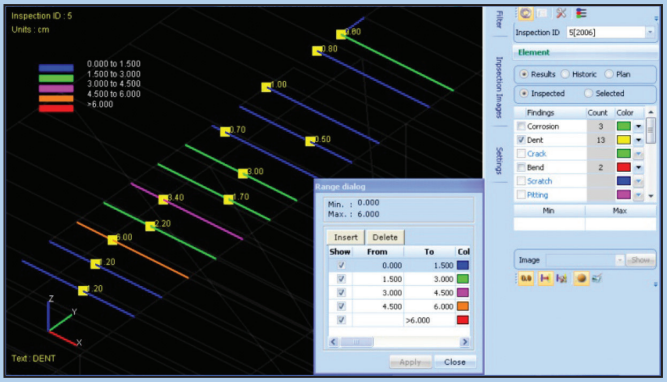
The Corrosion points can be filtered and viewed for an individual or multiple tanks of interests.



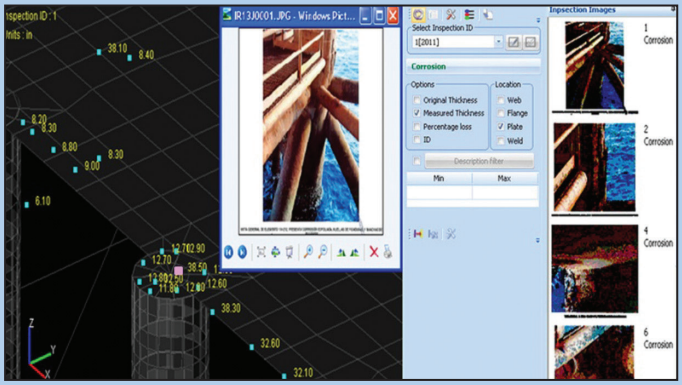
The elements with inspection data are highlighted in the model according to the findings.



Thickness values (Original, Measured and Percentage loss) are highlighted in the locations (Web, Flange, Plate) of the model for each selected inspection ID or multiple IDs.



The values of the selected findings can be color coded based on the extent of damage.



Photographs or video clips are posted for the selected inspection ID. The location is highlighted when an image is selected, and vice versa.

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