



SDC Verifier for Offshore Crane

Structural verification software for vessel-mounted and offshore platform cranes — using your existing FEA results or models built in SDC Verifier.

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BUILT FOR TEAMS THAT DESIGN, MANUFACTURE, VERIFY, OR OPERATE OFFSHORE CRANES

● Offshore crane OEMs

● Marine equipment designers

● Vessel and platform engineering teams

● Crane owners & operators

Where it helps in offshore crane verification



Main boom / jib sections

Strength, stability, deformation, and governing load cases across different outreach positions.



Knuckle, hinge & pin zones

Local stress concentrations, load introduction areas, surrounding plates, and welded details.



Pedestal & foundation

Global load transfer, local strength, welded and bolted connections, and supporting steel.



Cylinder supports & ear brackets

High-force brackets, local reinforcement, weld strength, and fatigue-sensitive details.



Telescopic sections & guide rails

Local strength, deformation, guide-rail regions, and local detail assessment where used.



Welded details & internal reinforcements

Weld utilization, fatigue life, critical locations, and design modifications.



Operating Conditions & Load Scenarios

Define crane positions, operating modes, vessel conditions, load combinations, and fatigue inputs in one verification workflow.



Crane positions

- Parked
- Short-radius operation
- Maximum height
- Maximum outreach
- Multiple boom configurations



Operating modes

- Harbor lifting
- Offshore lifting
- Heave-compensated lifting, where applicable
- Project-defined operating modes



Vessel & environmental conditions

- Heel and trim
- Accelerations due to vessel motions
- Wind loads where included in the FEA model
- Project-specific offshore conditions



Offshore operating factors

- Fatigue & operational loads
- Operating cycles
- Load spectrum
- Dynamic factors
- Required fatigue life



Define positions



Build combinations



Create envelopes



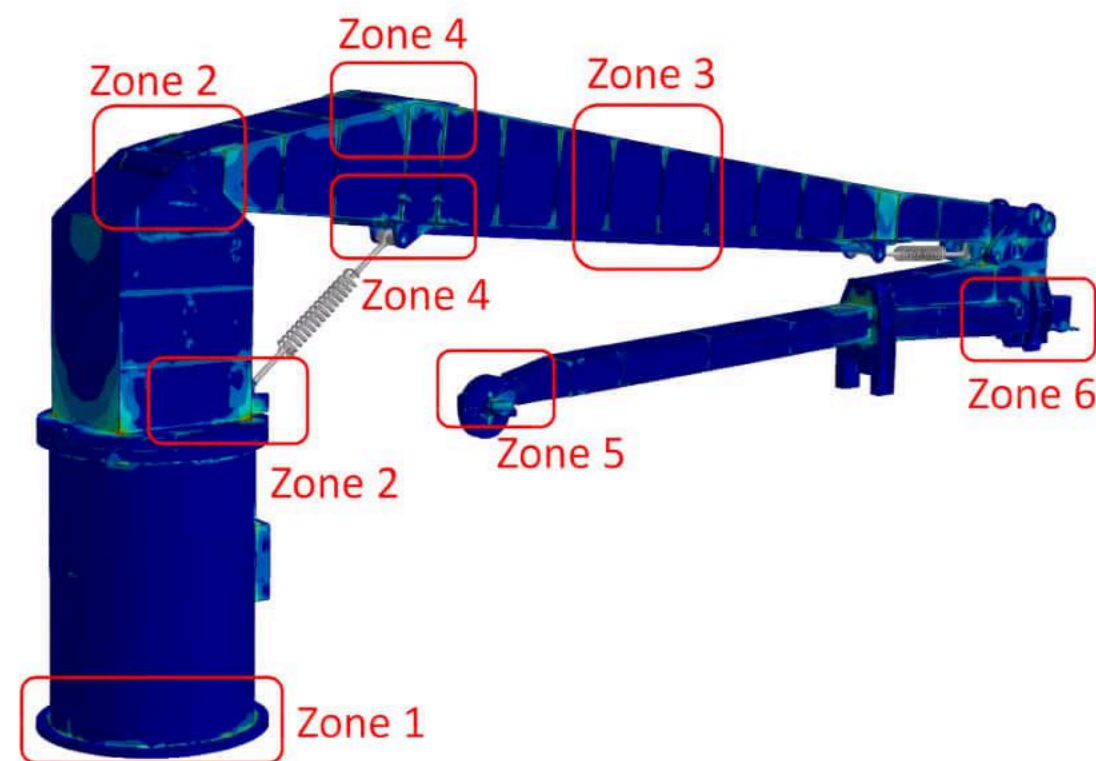
Identify governing cases

Exact positions, loads, factors, and acceptance criteria are defined by the project requirements.

What you can verify

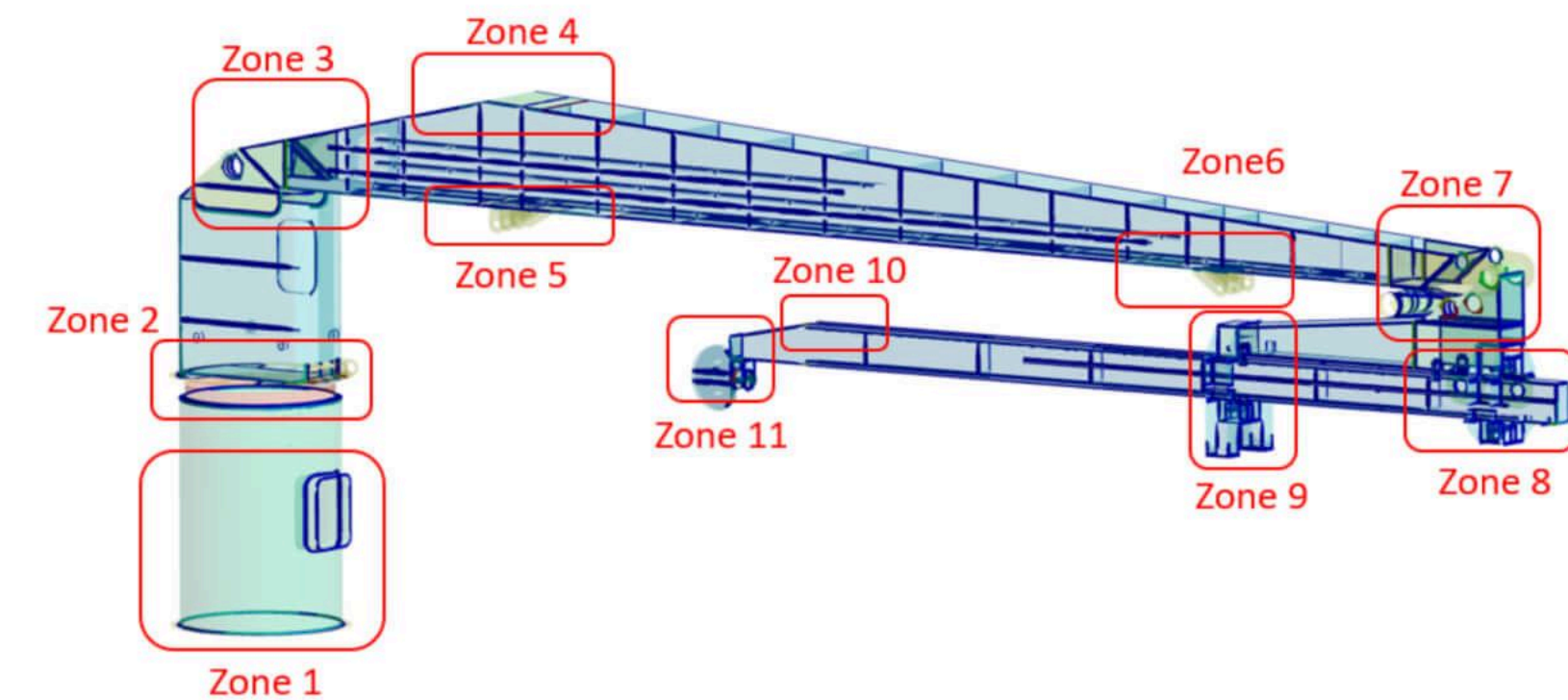
Fatigue assessment

Review calculated fatigue damage across the crane structure and identify zones requiring closer examination.



Weld strength verification

Review calculated weld utilization across the crane and identify welded details that govern the assessment.



✓ Weld strength

Weld stress, utilization, and critical connections.

✓ Fatigue assessment

Fatigue damage across operating cycles and detail classes.

✓ Structural strength

Strength and utilization across positions and load cases.

✓ Deliverable

Governing cases, verification results, plots, tables, and a structured PDF report.

✓ Bolted joints

Bolt-group verification, including preloaded joints.

✓ Stability & buckling

Member, plate, and stiffener stability.

✓ Serviceability / deformation

Boom deflection and project-specific limits.

How it works — 5 steps

1



Import or build the model

Use existing FEA results from Ansys Mechanical, Simcenter 3D, or Femap, or build and prepare the model in SDC Verifier.

2



Define positions, loads & constraints

Set crane positions, lifting loads, vessel inclination, operating cycles, boundary conditions, and project assumptions.

3



Recognize welds & organize details

Use recognition tools to identify welds and organize plates, stiffeners, members, bolts, and connections into verification sets.

4



Combine & envelope cases

Create EN 13001 load combinations, apply project factors, and build envelopes to identify governing operating, lifting, serviceability, and fatigue cases.

5



Verify to selected standards & report

Perform structural, weld, and fatigue verification to selected standards, identify governing results, and generate calculation reports to support crane certification.

FEA Integrations



Ansys Mechanical



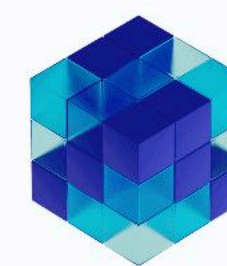
Simcenter 3D



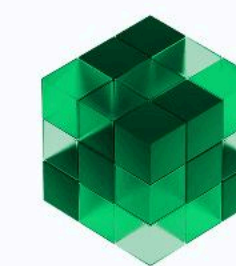
Femap (NX Nastran)

LS-DYNA result reading in Ansys supported

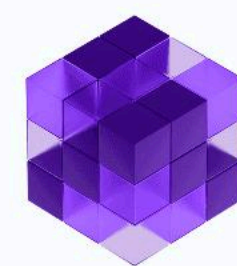
Supported Geometry



STEP



IGES



Parasolid
(.x_t / .x_b)

Standards & Project Criteria

Crane static strength

- ✓ EN 13001 Static Strength
- ✓ F.E.M. 1.001 (3rd edition)
- ✓ DIN 15018 (where required)

Weld strength

- ✓ EN 13001 Weld Strength
- ✓ DNV OS-C201-WSD Weld Strength
- ✓ DNV OS-C101 Weld Strength (where applicable)

Fatigue

- ✓ EN 13001 Fatigue
- ✓ DNV RP-C203
- ✓ Eurocode 3 EN 1993-1-9

Beam members & connections

- ✓ Eurocode 3 EN 1993-1-1
- ✓ Eurocode 3 EN 1993-1-8
- ✓ AISC 360 or AS 4100 (where applicable)
- ✓ VDI 2230 (where applicable)
- ✓ ASME BTH-1 Members

Plate & stiffener stability

- ✓ Eurocode 3 EN 1993-1-5
- ✓ DNV RP-C201 (where applicable)

Project-defined criteria

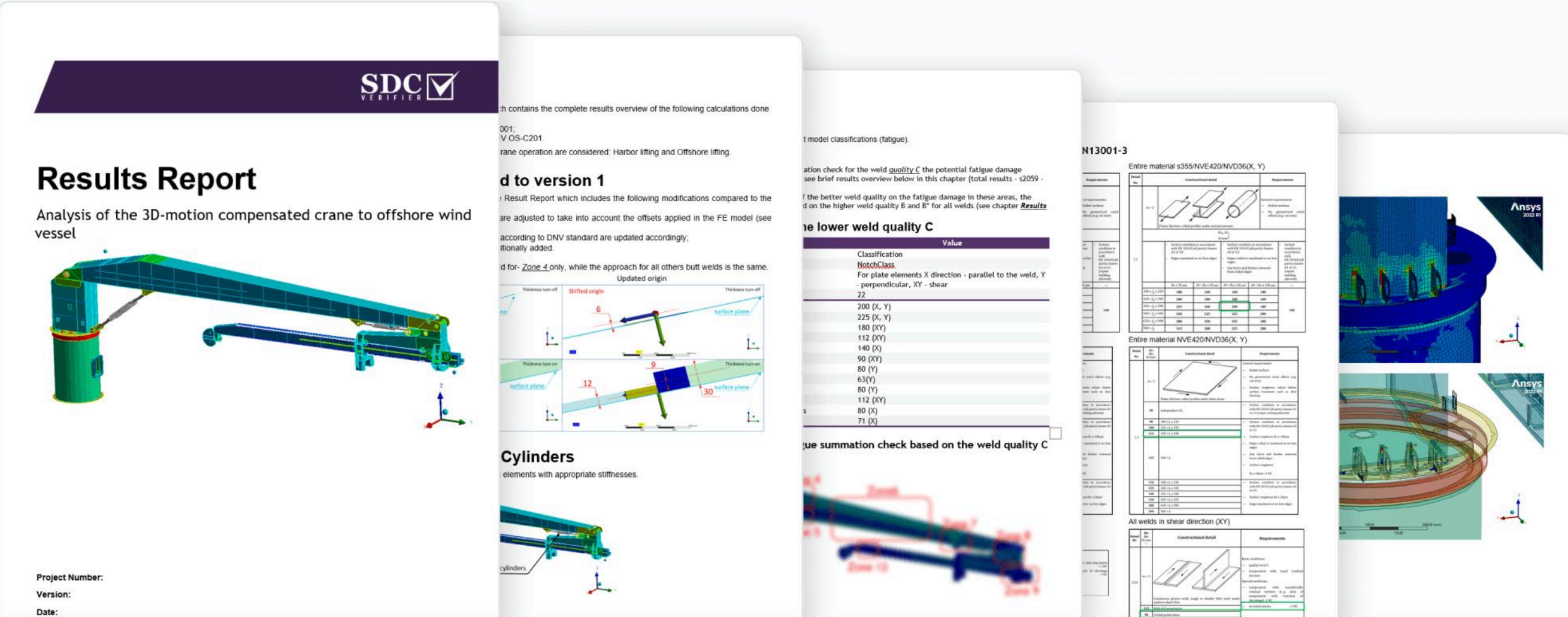
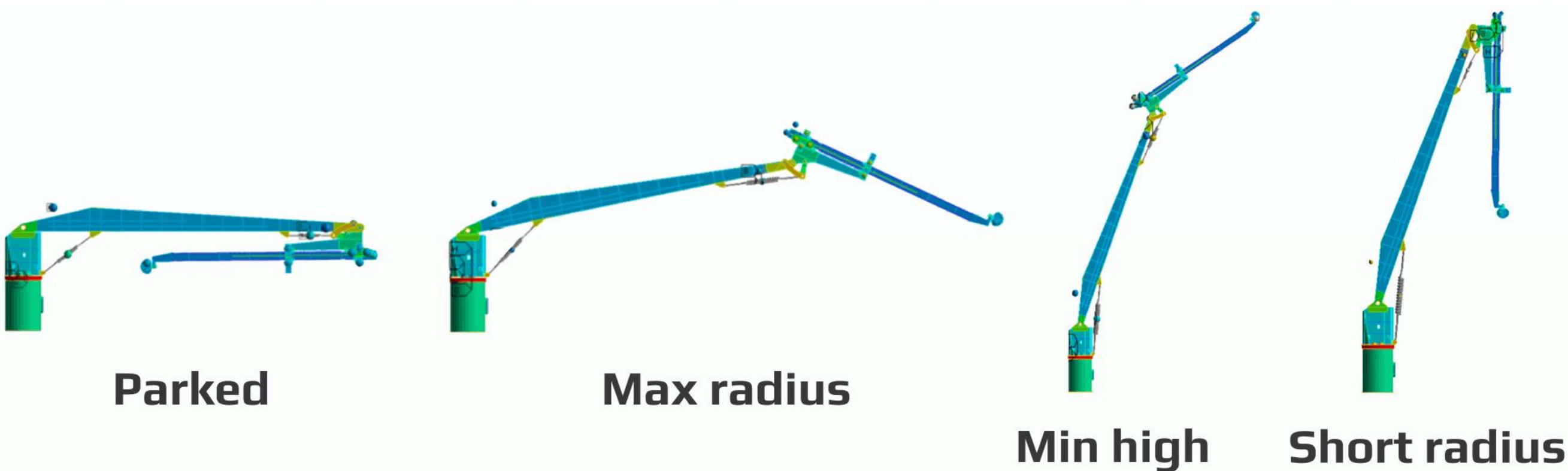
- Dynamic factors to standards
- Serviceability limit states
- Ultimate limit states
- Load factors & combinations

Structural verification is based on the selected standards, project load cases, and acceptance criteria defined for the project.

What the Verification Output Looks Like

Project example — fatigue and weld assessment across operating positions

3D-motion compensated crane for an offshore wind vessel



Aspect	Details
Scope	Support fatigue and weld assessment across representative harbor and offshore operating conditions.
Model setup	Existing Ansys FEM model with project-defined loads, factors, and operating positions.
Operating cases	Harbor and offshore lifting across representative boom positions and 3D-motion configurations, including vessel heel and trim conditions.
Verification	EN 13001 fatigue assessment DNV OS-C201 weld strength assessment
Load combinations & review	Project-defined load cases and combinations were organized to identify governing fatigue and weld results.
Selected weld configurations	Selected weld configurations were evaluated and optimized against the allowable utilization limit.
Deliverable	Governing fatigue and weld results, utilization summaries, and structured reports for engineering review.

Why engineering teams use SDC Verifier



Automatic weld recognition

Identify and organize welds and welded connections for verification with less manual selection.



Advanced crane fatigue workflows

Evaluate operating cycles, load spectra, detail classifications, and required fatigue life across crane positions.



Verify all relevant cases in one run

Run structural verification across selected load cases and identify the governing results.



Certification-focused reporting

Generate standards-based calculation results, plots, tables, and reports to support crane certification.

**SDC Verifier
saved up to**

80%

**of the time for modeling,
analysis and creating report.**

Verify your offshore crane model in SDC Verifier

Use your existing model or FEA results to evaluate structural strength, welded details, fatigue life, and governing operating cases.

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