

TESLA MECHANICAL DESIGNS

ANALYSIS & SIMULATION

Finite element analysis

EIGHT STAGES · ONE LOOP

A proposed design becomes a predicted result, and the result feeds straight back into the design, until the acceptance criteria are met.

01 Modeling

A 3D model is created from the proposed design.

02 Operative functions

Selected from the operations the component performs and its application type.

03 Mesh generation

Full-sized components are broken into minuscule finite nodal elements.

04 Generation of equations

Generated from the model and the functions applied to it.

05 Simulation

The equations estimate the behaviour of each nodal element against the applied functions.

06 Calculations

Individual element results are summed into an overall result for the complete model.

07 Result

Analysed and displayed as deformations, graphs, and colour plots.

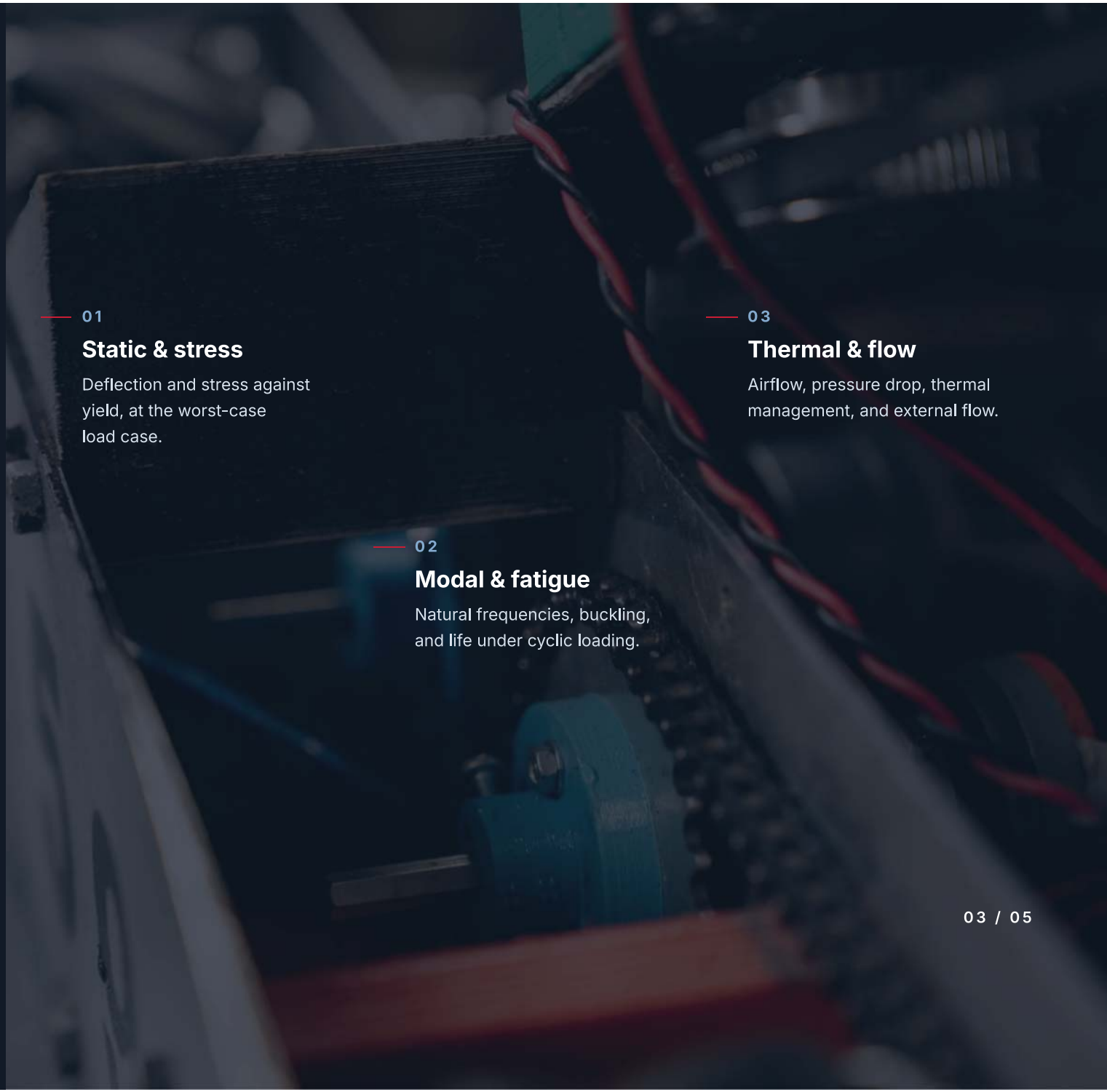
08 Design optimisation

Engineers revise the design; the loop repeats until the target is met.

WHAT GETS STUDIED

Where the model meets the load

Each study answers one question, against one acceptance criterion.



01

Static & stress

Deflection and stress against yield, at the worst-case load case.

02

Modal & fatigue

Natural frequencies, buckling, and life under cyclic loading.

03

Thermal & flow

Airflow, pressure drop, thermal management, and external flow.

WHAT YOU RECEIVE

A decision, not a folder of plots.

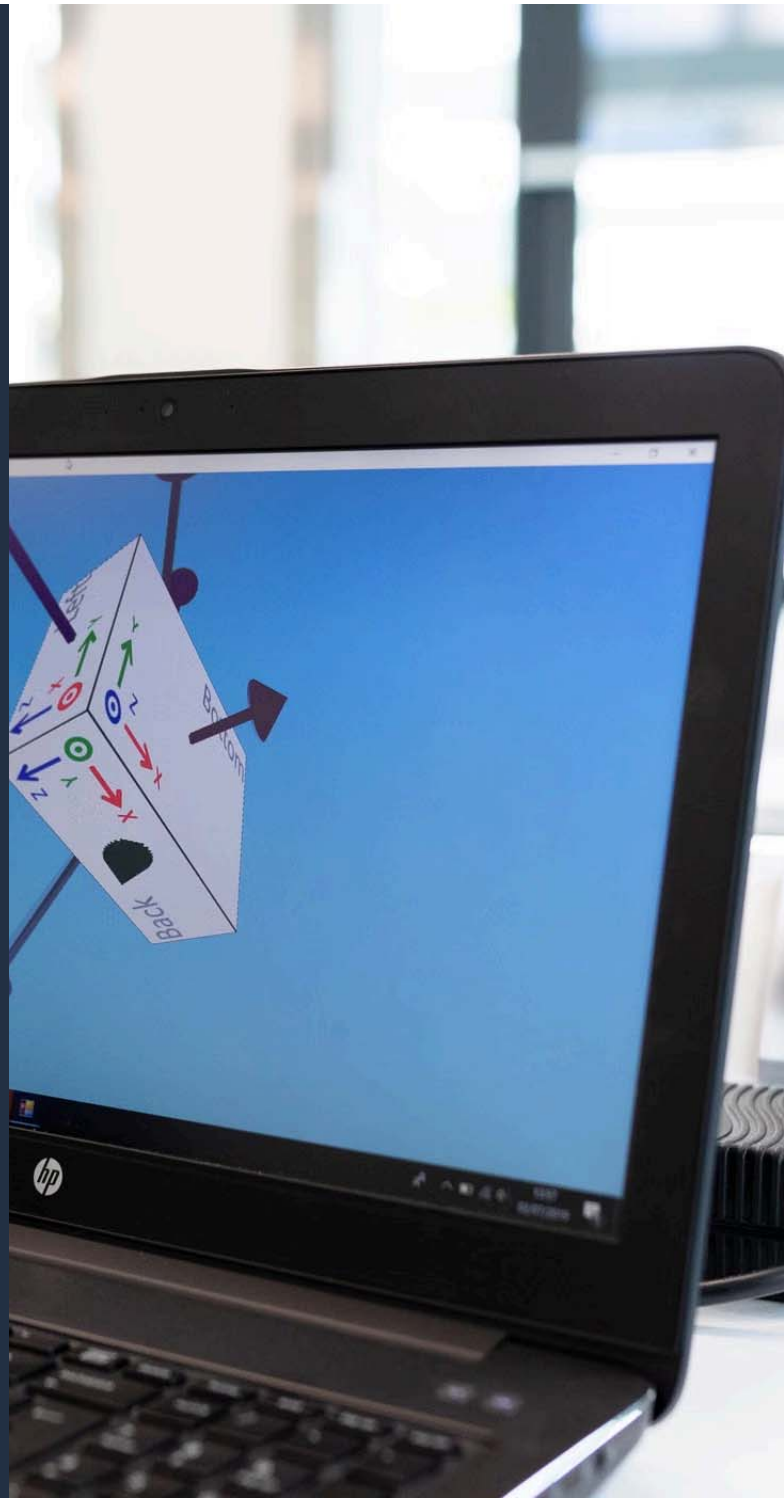
Every report carries a pass or fail against your acceptance criteria, the engineering interpretation behind it, and the design change that follows.

PLATFORM
ANSYS Workbench

ALSO
STAAD.Pro

INPUTS
Native CAD · STEP · IGES

OUTPUT
Report + revised model



VALIDATE BEFORE YOU MANUFACTURE

Answer it in the model, not in production.

Send the geometry and the load case. We will define the study, run it, and tell you what to change.

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