E1. Starting with a new software

We propose below some simple advice to deploy a quality approach in finite element calculations. The main issues are:

- The correct use of the software
- Appropriate modeling of the structures' behavior
- Traceability of modeling assumptions and results.

The advice below deals with the good handling of a software by an engineer or a team, the self-checking tests that each engineer must imperatively carry out at the end of his or her modeling, and finally the minimal elements to be traced to allow the work of several engineers or the later resumption of a model.

E1. Starting with a new software

When a new software is acquired in a design office, or when new engineers arrive, there is a very important, and unfortunately often overlooked step: the appropriation of the software and **the validation of the user-software couple**.

This validation, under the responsibility of the management, is at the heart of the quality approach of the studies that will be produced. We have seen, in the previous paragraphs, all the possible errors linked to a lack of knowledge of the software's operation, during the modeling process and when the results are used.

Tools exist to help during this validation phase. In particular, we can quote the "Validation guide for structural calculation software" published by AFNOR (French Standardization Association) 1990 (ISBN 2-12-486611-7). This guide, initially established for software validation for developers, provides a database of test data and simple modeling examples, accompanied by the correct results.

It is advisable to choose a few tests from this database, distribute them as an exercise to the team and share the results, right or wrong, of these tests so that everyone understands how the software works, the options taken by default and the mistakes to avoid.

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