

KC ID# 341 Questions

Q1: According to Ch.7 Sec.3 [2.1.1] “(..)the areas listed in Tab 1 are to be refined at the locations whose calculated stresses exceed 95%(..)“What is the correct interpretation of this item?

- a. We assume that only areas covered by Table 1 need to be refined if the utilization according to section 2 (coarse mesh model) is above 95%. Areas not given in table 1 are not subject to refined mesh analysis according to section 3 even if the stress level is above 95%. Please advice.
- b. If all areas mentioned in Table 1 have utilization below 95% according to the analysis in section 2 (coarse mesh model), no refined mesh is required. Please advice.

Q2: Example:

A refined mesh analysis is made for one location in table 1 where peak stresses in the global analysis (coarse mesh model) according to section 2 is above 95% of allowable limit.

The refined model will cover an area of the (coarse mesh model) model where stress level according to section 2 (coarse mesh model) range from 80-99% of allowable limits.

In the refined mesh analysis according to chapter 3 the allowable stress levels are above 280/k in a large area. That is, high stressed elements are identified at locations where the global analysis according to section 2 show stresses below 95%. What is the correct application of the CS Rules?

- a. Where the stress level according to section 2 (coarse mesh model) is below 95% of acceptable limit no reinforcement will be required by the analysis of section 3.
or
- b. Where stress level according to section 3 is above the acceptable limit of section 3, reinforcements are required. This is regardless of result in coarse mesh analysis in section 2.

Q3: Example: The uppermost element in the web of a double bottom girder at the connection to hopper tank or stool plating has a utilization of 1.1 against yield according to the coarse mesh model of section 2. Ref. situation in Q3 above. The fine mesh model according to section 3 is made of the area and stress levels are found to be within the limits of section 3.

What is the correct application of the CS Rules?

- a. Coarse mesh analysis according to section 2 has to be satisfied before doing fine mesh analysis according to section 3. Both requirements shall be fulfilled.
or
- b. If the results of the fine mesh analysis of section 3 are within rule limits of section 3, it is acceptable that the coarse mesh analysis according to section 2 is above the limits of section 2.
or
- c. The results may be accepted based on fine mesh analysis if:
I: The criteria of section 2 [3.2.3] is satisfied for the fine mesh analysis when stresses are averaged over an area, $S \times S$, equal to the representative stiffener spacing.
and
II: The criteria of section 3 [3.1.1] is satisfied for the fine mesh analysis.

Please note that alternative c. is in line with the procedure in the CSR for Tankers.