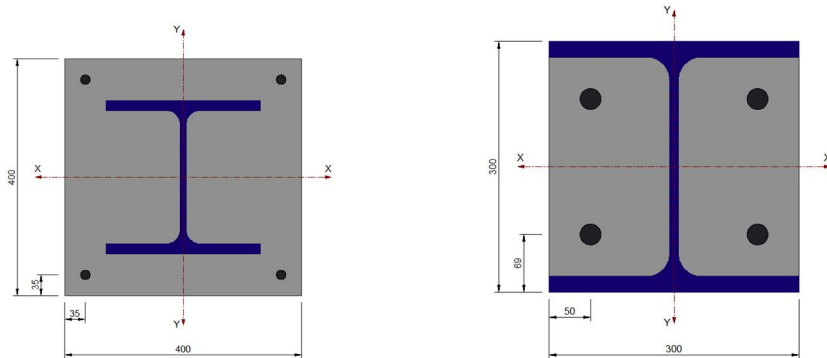


ENCASED COLUMN

DESIGN OF STEEL PROFILES ENCASED IN CONCRETE
WITH REINFORCING
DESIGN | X04

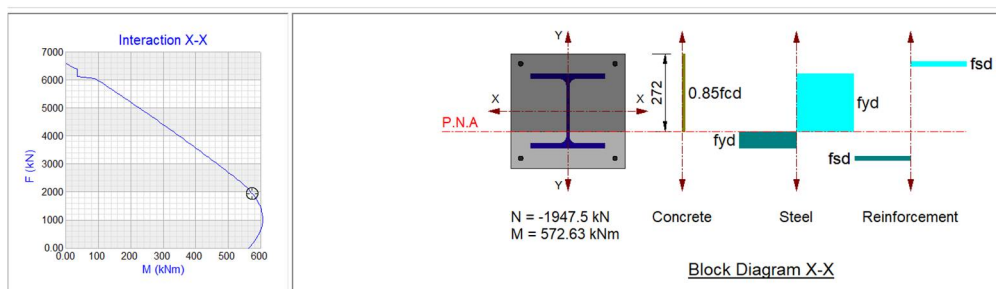
Summary

The encased column module designs compression members made up of steel and concrete materials. This module considers rolled steel profiles encased in reinforced concrete.



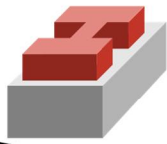
What makes this module special?

- Section resistance calculation, including second-order effects and material non-linearity
- Composite column design, including steel section, concrete, and rebar
- Interactive interaction charts for both design axes
- Detailed equations



Detailed Description

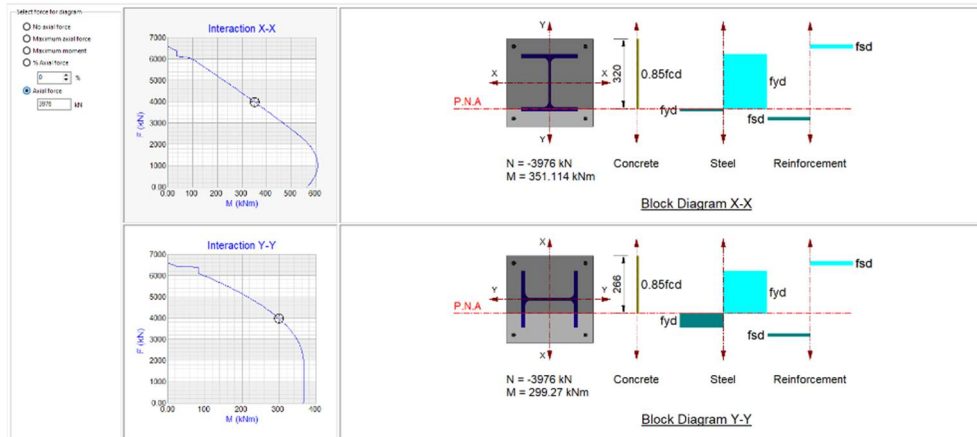
The composite encased column module designs compression members made up of either partially or fully encased I or H-sections and with reinforcement present. The module follows the rigid plastic theory set out in the Eurocode. Rather than using



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DESIGN OF STEEL PROFILES ENCASED IN CONCRETE WITH REINFORCING
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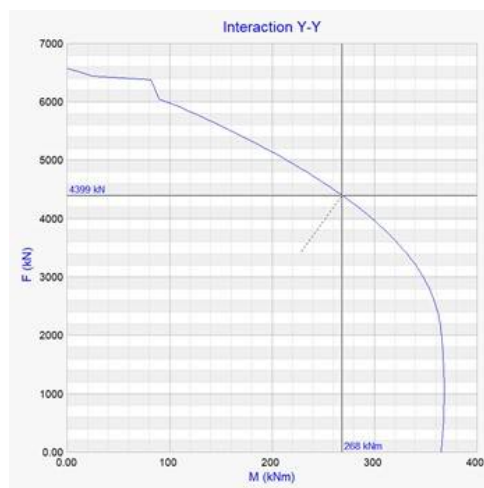
simplified interaction curves, the module generates full X-X and Y-Y interaction charts which can be viewed interactively to display the resistance at different points on the graphs.



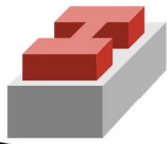
Theory used in this module

The module determines the plastic neutral axis location by balancing the contributing forces in the composite column cross-section based on the allowed plastic stresses.

Design results for individual materials are tabulated in detail, and a summary table is generated to show whether the design checks pass or fail. Multiple load cases can be entered to compare with the section capacity, and the comparisons are displayed in tabular form.



More importantly, a summary table for the critical load cases for each of the design checks (uniaxial and biaxial bending, axial force, shear forces) is given.



ENCASED COLUMN

DESIGN OF STEEL PROFILES ENCASED IN CONCRETE
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The module generates full X-X and Y-Y interaction charts which can be viewed interactively to display the section resistance for different combinations of axial forces and bending moments. Detailed equations are included with all assumptions stated, and relevant calculations are shown with the necessary references to the active design code.