

THE SEISMIC CALCULUS FOR A COKING CHAMBER MODELLED AS A CANTILEVER BEAM WITH ELASTIC EMBEDDING AT THE REST PLACE

RIZEA Nicoleta, STANCIU Lavinia

Petroleum-Gas University of Ploiesti

nicoletarizea @yahoo.com, lavinia.stanciu@yahoo.com

Keywords: seismic calculus, coking chamber, cantilever beam

The evaluation of the seismic action that occurs in the calculus of the vertical metallic equipments with shells of revolution, used in the chemical and petrochemical industry, is made taking into account the specific standards recommendations STAS 9315/1-80 and the aseismic design specifications given by the new P100-2006 standard. The seismic calculus is realized for all the equipments for which the ratio between the height and the interior diameter is: $H / D_{min} > 5$, or the height is $H > 10$ m.

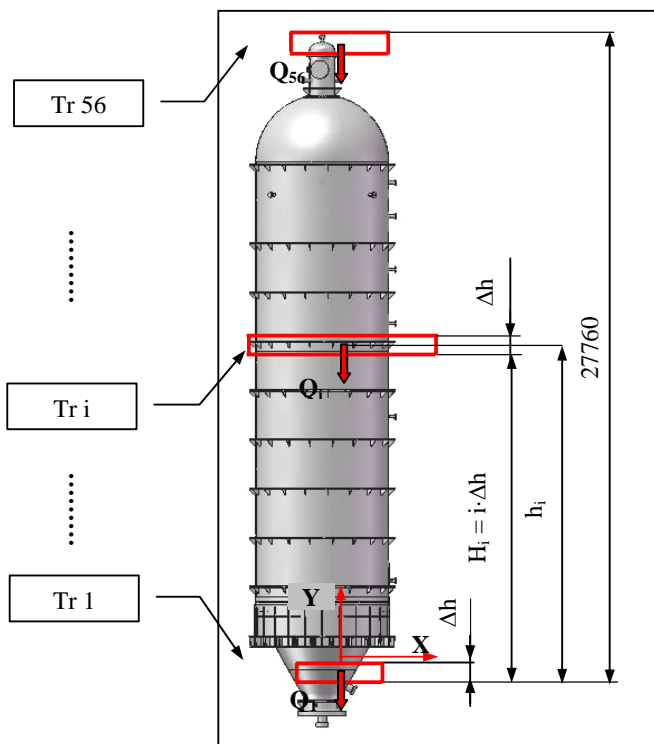


Figure 1

In the coking chamber's case, it was adopted an initial dividing of the total height $H_i = 27,760$ m in 56 sections having equal lengths, $\Delta h_i = 0,5$ m, $i = 1, \dots, 55$, with $\Delta h_{56} = 0,26$ m (as it is shown in figure 1).

The equipment was considered as a cantilever beam with elastic embedding at the rest place.

The authors used the methods offered by the elastic structures dynamics and an advanced calculus program, as COSMOS 2007.

This program was used in order to determine the dynamic behaviour during the seismic action.

All the obtained results have a novelty and oneness character; they can be considered as a solid, new, modern and actual base for design and we consider that they can be extended to all the petrochemical equipments.

REFERENCES

1. Rizea N., Ţalu M., Ţalu Ş., Bica M.- „Seismic analysis of a petrochemistry petroleum coke plant using the F.E.M.”, "International Journal of Mechanics", published by North Atlantic University Union Publishing House, Issue 3, Vol. 2, 2008, p. 96-109, ISSN: 1998-4448.
2. Rizea N.- „Contributii la calculul de fluaj si oboseala al invelisurilor subtiri cu aplicatie la aparatura petrochimica”, Teza de doctorat, Universitatea Petrol-Gaze din Ploiesti, 18 aprilie 2008.
3. ***- CosmosM 2007, Structural Research and Analysis Corporation 2007 (SRAC).
4. *** - P 100 /2006. Cod de proiectare seismica. Partea I- Prevederi de proiectare pentru cladiri.