# Analysis of Frame Constructions of Morefloors Buildings with the Aspect on Distribution of Internal Forces

**Authors:** Predrag SAVIC;

1 EPS DISTRIBUTION ltd., predrag.savic@epsdistribucija.rs;

---

## Abstract:

Simple calculation of the frame constructions, due to the effect of horizontal seismic forces, which is possible by using approximate methods and procedures, respecting analogy and similarity of the console and multi-floors buildings. The accuracy of the procedures depends on the starting assumptions and the input parameters. Control of the balance state of the frame constructions of the whole building or individual floors is also important, as a security in accuracy of the results.

## Solutions - Methods / Results - Findings

Starting basics for calculation and analysis of calculation models:
- Using computers and appropriate software packages,
- The symmetrical framework structures of multi-faceted buildings on the effect of horizontal seismic forces were analysed,
- Using an analogy with the equivalent static load method,
- Modelling ranges for beams or gaps in pillars,
- Modelling floor level,
- Modelling stiffness of columns and beams,
- Modelling structural assemblies of frame structures,

Analysis of the results of the diagram of the moment bending of frame structures of multi-storey or multi-floor buildings it showed that:

There is a complete analogy of frame structures with a console carrier in the redistribution of the bending moment.

The sum of the bending moment in the vertical columns or the nodal connections of the frame structure with a direction opposite to the effect of the horizontal seismic force is equal to the value of the clamping moment in the replacement console carrier.

## Novelties - Value / Relevance to …

The value of the bending moment in the pillars of the ground floor is equal to the value of the product of the total seismic force applied at the level of the first ceiling and the height of the first floor it is possible to quickly and easily control the balance situation at any stage or the whole construction. This analysis method indicates the existence of legality regarding the redistribution of the bending moment in the frame construction due to the effect of horizontal seismic forces, which results in the value of the clamping moment at an equivalent console carrier with a precise value without any deviation.

---

**Forum statement** ...

---

**Keywords:**

frame constructions; console; seismic forces; system balance; bending moment