



IB-TEC

EQ-FAST

EQ-Fast Expert System is a program which has been developed for **the objective, fast and reliable assessment of seismic vulnerability and safety of existing reinforced concrete buildings** in collaboration with the Gerling Consulting Group, RWTH Aachen University of Technology and Cologne Earthquake Center, and also certified by Civil Engineering Faculty of Istanbul Technical University.

Our country is located on one of the most active fault zones of the world and **%98 of its area is under seismic risk**, therefore it is obvious that destructive earthquakes may occur in the future as in the past and cause loss of lives and properties. For the purpose of mitigating probable losses to minimum, **a seismic code was prepared in 1975 and most of the cities in Turkey had been built according to this code**. But at the present, it was taken into account that the buildings built according to this code have insufficient seismic forces and are lack of technology, so it was revised in 1997 and then regulated again in 2007. Therefore, **existing buildings which had been built according to the codes 1975 and 1997 should be investigated according to the code 2007** for objective evaluation and determination of insufficient behaviors.

EQ-Fast Expert System, that has **European Patent Office and TUV Certificates** and applied by specialist engineers, evaluates the characteristic properties and fundamental natural frequencies of building and soil obtained from acceleration pickup measurements, then concludes all data as a report using the latest techniques and calculations with the **EQ-Fast** software.

For the existing buildings, the application methodology of **EQ-Fast Expert System** is as follows:

- If static plan is available, investigation of correctness; if the plan is not available, composing the building's measured drawings.

- Investigation of stirrups spaces and reinforcement bars on columns and beams with **Profometer**.
- Calculation of the concrete strength and the elasticity modules by **Schmidt Hammer** with non-destructive concrete test method.
- **Measurement of the fundamental natural frequencies of the building and subsoil** and evaluation of this measurement with the **EQ-Fast Expert System** in order to **find out if there is a resonance between the soil and the building**.
- Entering the data obtained from the building into the **EQ-Fast** Expert System and control of the building according to the **code 2007**.

The **EQ-Fast** program controls if the overturning, shearing stress and drift checks are in accordance with the **1975, 1997, 2007 codes and EuroCode8**. Taking into account these results and the other discrepancies which are entered into program interface, **EQ-Fast Expert System** gives information about the **mean damage ratio of buildings for different modified mercalli intensities** and **classifies buildings as A (low risk), B (acceptable risk), C (high risk), D (very high risk)**.

After these studies, there will be a report presented to you that contains the building's deficiencies and if there is any requirement about retrofitting of the building.

Besides the **EQ-Fast** report, **3 dimensional mathematical modeling** of the building is realized and a **static analysis report** is performed.

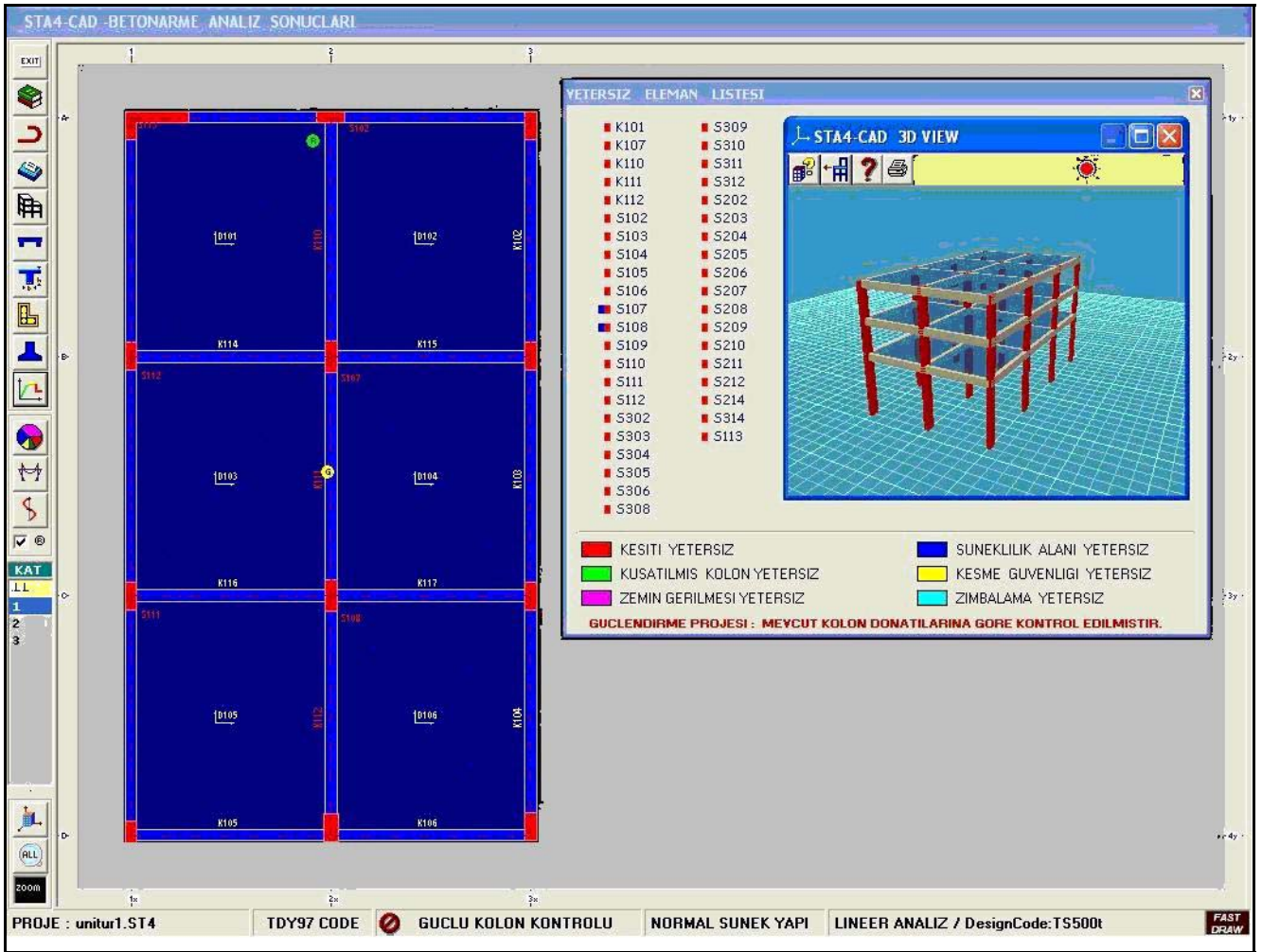
IB-TEC Ltd. Co. is the **sole authorized representative** of **EQ-FAST** Expert System in Turkey.



RWTH AACHEN
UNIVERSITY



STA4 – CAD Structural Analysis



Our company is a licensed user of **STA4-Cad (Structural Analysis For Computer Aided Design)** Software Program. **STA4-Cad** is special software that is improved to analyze the design and existing conditions of buildings. The data obtained from the investigations on the building is processed using STA4-CAD to make the **static controls** according to the seismic codes and realize detailed analyses. In this context;

- If the structural drawing of the building is available, there is an inspection if the building's built in accordance with the drawing. If the structural drawing is not available, the building's measured drawings are composed. The reinforcement bars on columns and beams are controlled and a number of concrete samples (cores) are taken **according to the current seismic code**. 3 Dimensional Mathematical Modeling of the building is realized depending on the results of these tests.
- Buildings are controlled according to the **TEC 2007 (Turkish Earthquake Code 2007) Part - 7** (Existing Buildings' Evaluation and Retrofitting.)
- The risk performance of the building is determined.
- A report including the capacities of load bearing elements is presented.