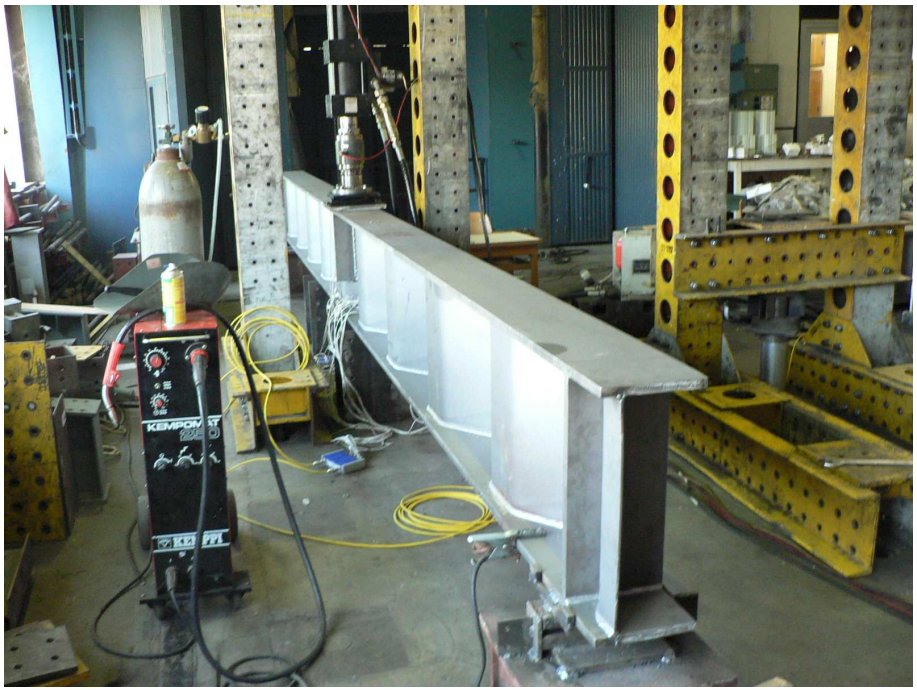
Budapest University of Technology and Economics
Department of Structural Engineering

# Experimental fatigue analysis of girders with corrugated web



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# Aim of the research

Corrugated steel plate is a widely used structural element.

Limited number of fatigue tests on girders with corrugated web.

All the previous tests by four point bending (normal stress only)


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**Scope:**

1, Fatigue analysis under normal stresses.

2, Fatigue analysis under interaction of normal and shear stresses.

3, Effect of the weld size on the fatigue behaviour.

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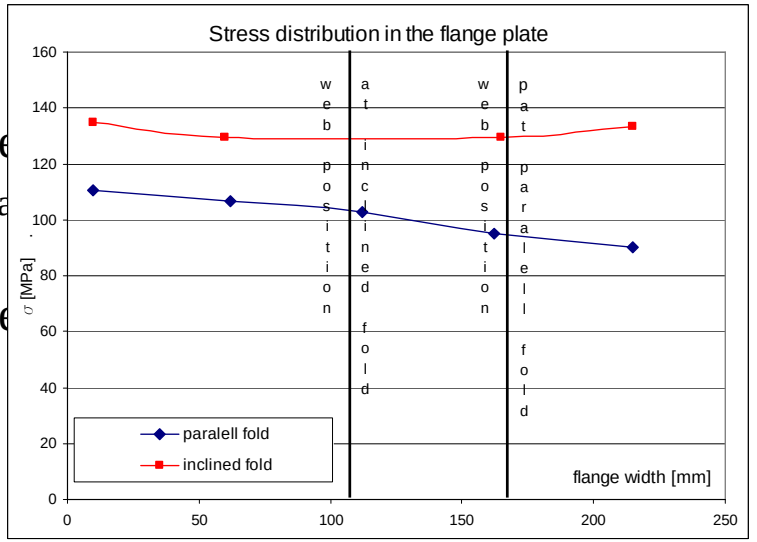
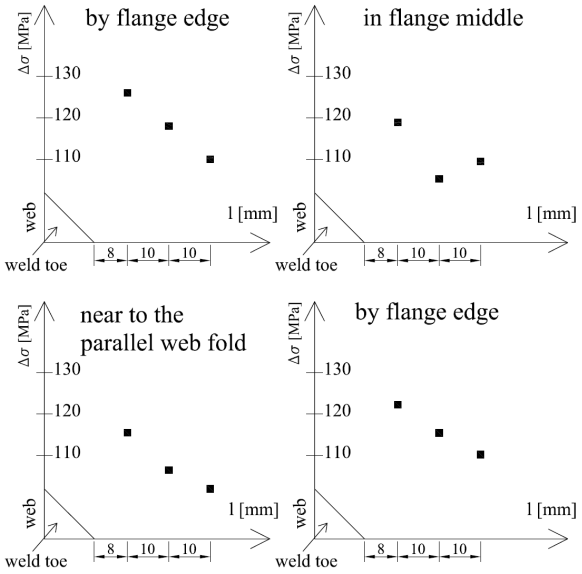
6 girders with corrugated web were tested under cyclic load.

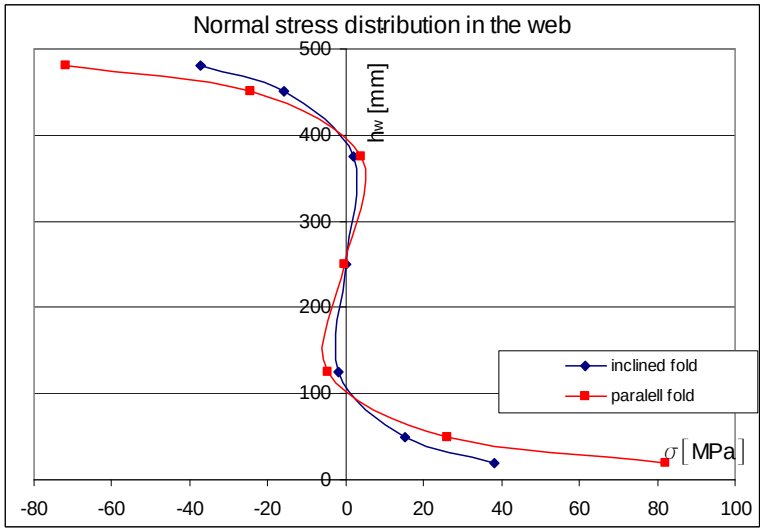
# Results of the static tests

Measurement: 1. normal stresses in the flange
2. normal stresses in the we
3. hot spot stresses (stress concentra
4. shear stresses in the web
5. stress state in the flange




Hot spot stresses in the flange

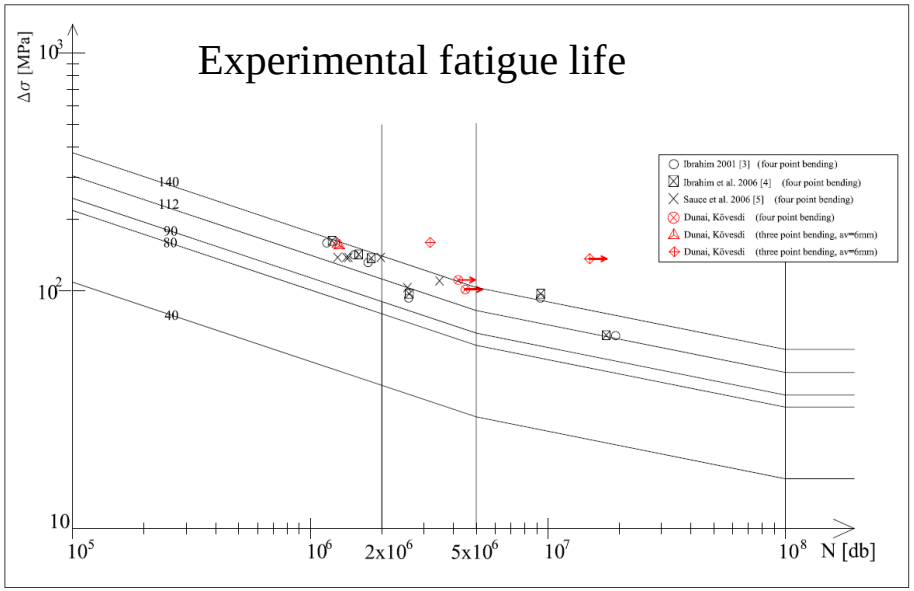


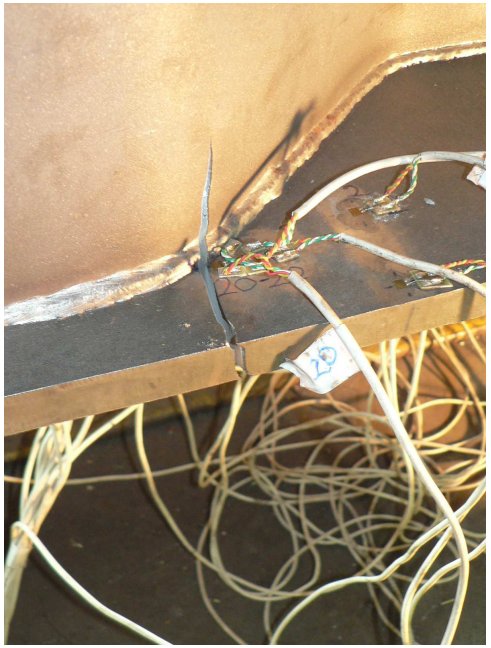



# Results of the fatigue tests

1, Crack initiation point:
From weld toe at the meeting point of the inclined and a paralell fold.

2, Crack propagation:
In the flange and after reaching the plate surface it propagated very rapidly



Crack surface