
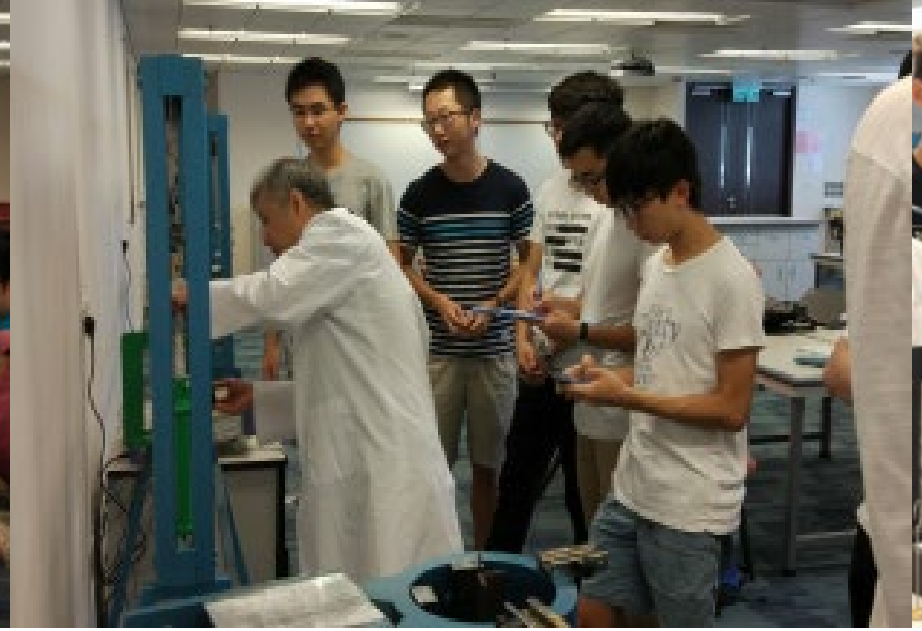


Light Structures Laboratory

Room ZS1107, Block Z,

Department of Civil and Environmental Engineering,

The Hong Kong Polytechnic University

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
土木及環境工程學系

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Introduction

The Light Structures Laboratory has an area of 80 m^2. It provides facilities for teaching and research.

A series of experiments related to structural mechanics, mechanics of materials, construction materials and structural analysis are carried out here.

We have the following teaching equipment:

- Unsymmetrical bending apparatus
- Three span beam Apparatus
- Torsion test on circular section
- Strut buckling apparatus
- Simple bending of beams
- Tensile test machine
- Influence line apparatus
- Shear center apparatus

Main Equipment

Unsymmetrical bending apparatus

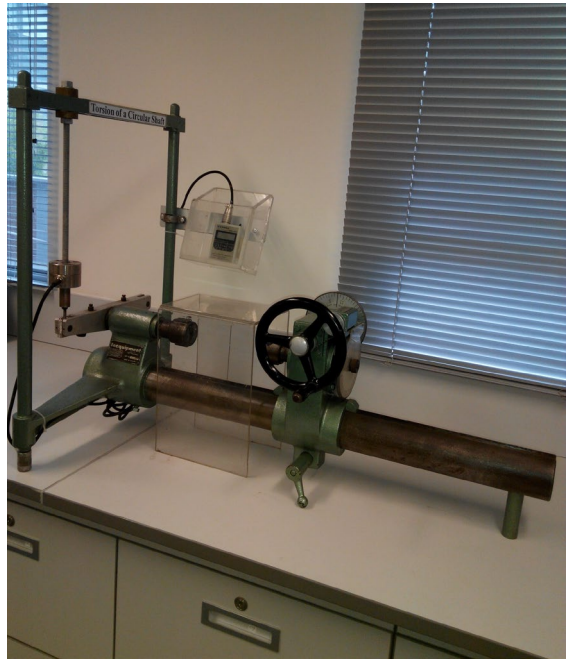
A vertical cantilever system, with dial gauges, standard weights, hanger, cantilever beams of L and Z section for unsymmetrical bending examination.

The machine is used to make comparison between the theoretical and the observed behavior of the cantilever beams.

Three Span Beam Apparatus

A three-span continuous beam with strain gauges attached on the specimen connected to a data-logger for strain measurements, and a dial gauge for deflection measurements.

The machine is used to master the basic techniques of strain and displacement measurement using a strain measurement system and dial gauges respectively. It helps user to understand the analytical method through the experimental approach.

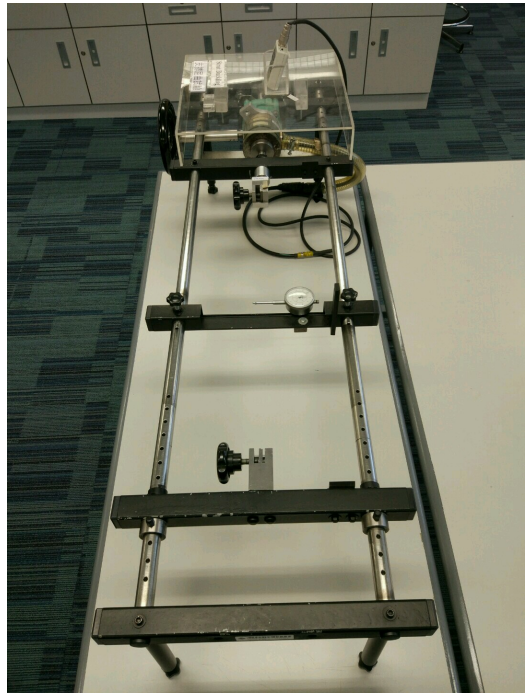


Torsion test on circular section

Torsion test machine for bars made of different materials connected to a Torque meter for torque measurements.

The machine is used to determine the behavior of different materials under torsion applied.

Main Equipment



Strut Buckling Apparatus

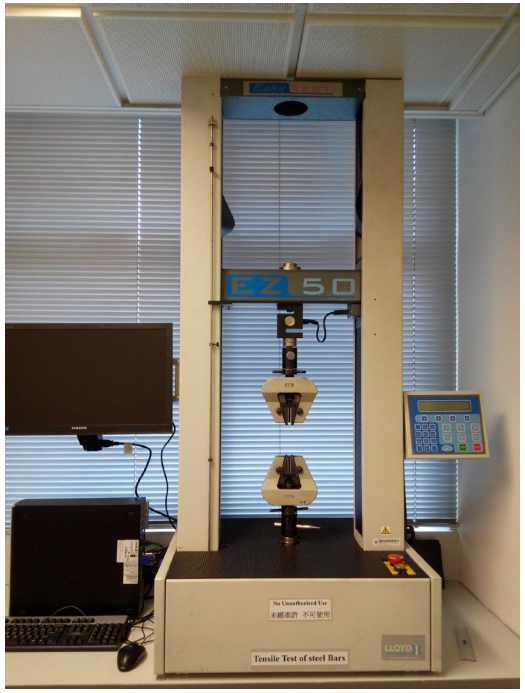
The SM105 Struct apparatus, connected with a data-logger for force measurements and a dial gauge for deflection measurements.

The machine is used to determine the load vs defection curves and buckling load for a struct with various end conditions, and to study the variation of buckling load with slenderness ratio.

Simple bending of beams

A loading frame with different beam specimens, dial gauges, hangers, standard weights, electrical strain gauges that connected to a data logger for strain measurements.

The machine is used to study the bending stress distribution of beams, and to understand the effect of I and E in simple bending problems.

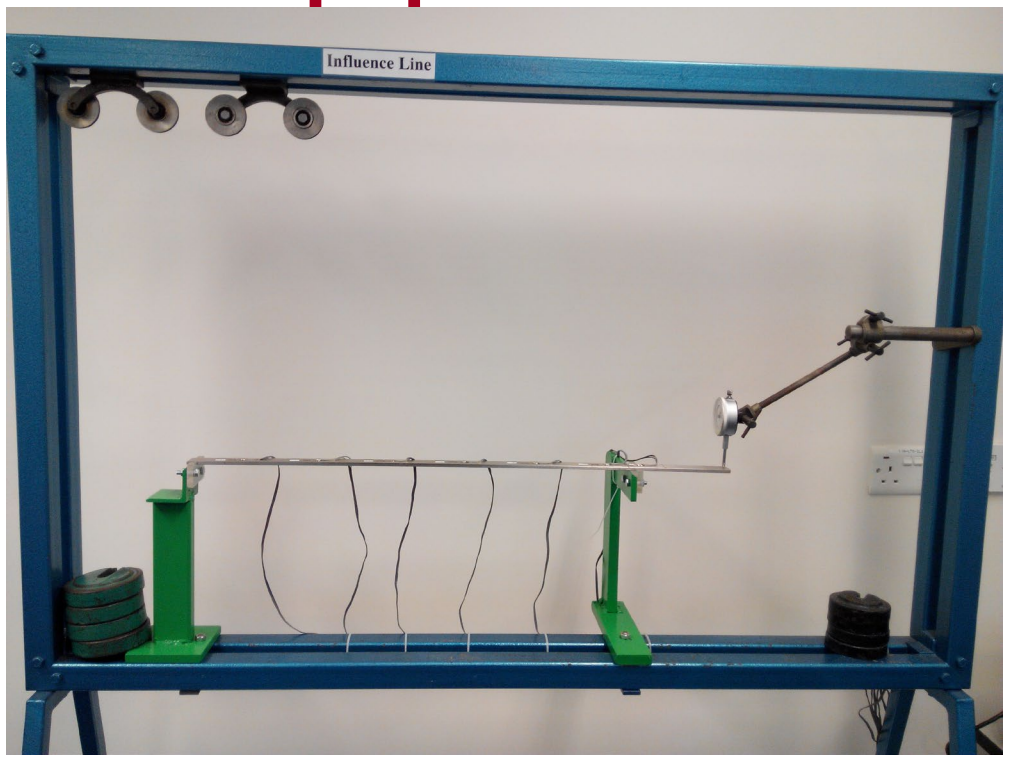


Tensile test machine

A tensile test machine for bars made of different materials with a load cell and real-time display system.

The machine is used to determine the stress-strain behavior for different materials under tension and to observe tensile failure.

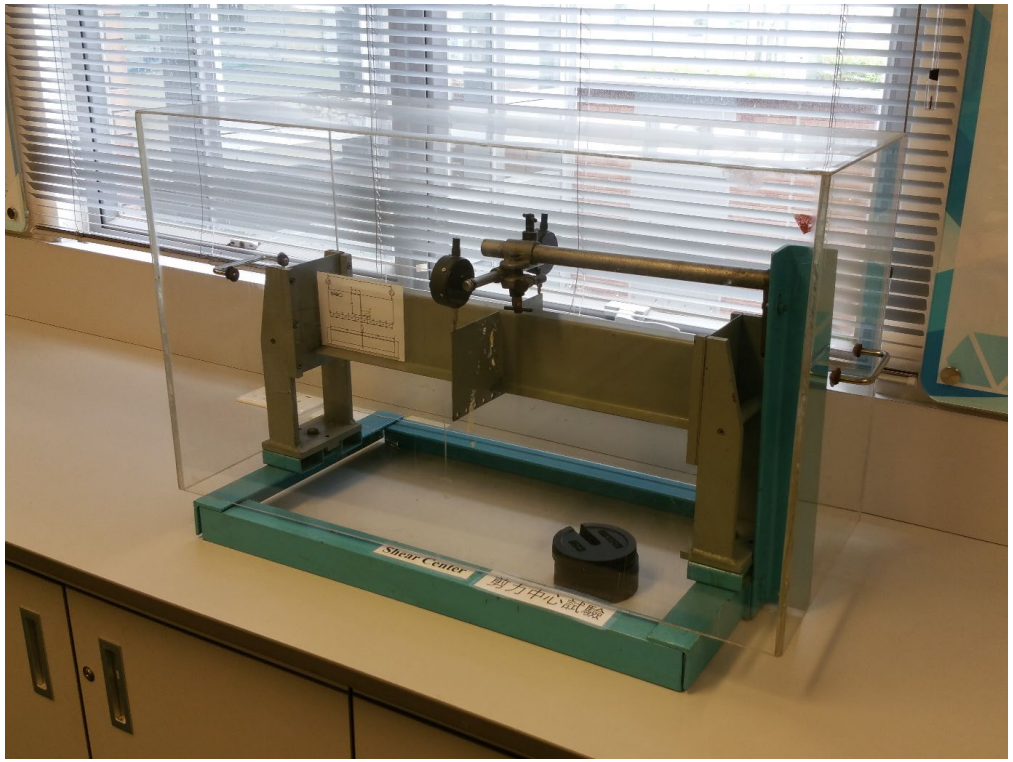
Main Equipment



Influence Line Apparatus

A Two-span continuous beam with strain gauges attached on the specimen connected to a data-logger for strain measurements and a dial gauge for deflection measurements.

The machines helps users to understand the concept of influence line, and to master the basic techniques for strain and displacement measurements using a strain indicator system and dial gauges respectively.



Shear Center apparatus

An apparatus made of three mild steel frames with different cross sections (Equal Angle section and “Z” section), two dial gauges with end support brackets, load hangers and weights.

The machine is used to find the shear center of various beam cross sections and to compare them with theoretical values.

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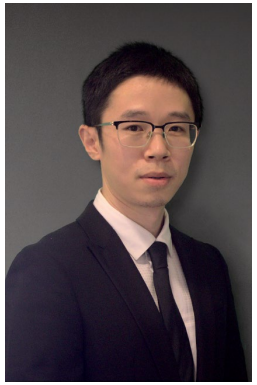

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(excluding Saturday, Sunday & public holidays)