



LUDRE TEST MEASUREMENT AND QUALITY CONTROL SOFTWARE

LUDRE YAZILIM

<https://www.ludre.com.tr/>

UPDATE: AUGUST 2022

Ludre IEPE Shockwave Blast Sensor

1.FEATURES

- Sensitivity: 0.3 mV/Pa (Nominal)
- Frequency ranges: 6 kHz
- Maximum Sound Pressure Level: 200 dB
- Dimensions: 12 cm x 1.6 cm

2.DESCRPTIONS

- It is used for shock wave measurements created by explosive products such as grenades (or flash bangs) in indoor and outdoor areas.

3.APPLICATIONS

- Peak and Total Impulse
- Explosive Research - R&D
- Structural Loading
- Shock Tube
- Closed Bomb Test
- Wave Velocity Determination
- Explosive Component (eg Squib) Lot Acceptance
- Ammunition and Weapons Testing
- Explosive Tests
- Sound RPM Measurement

Device Name	Dimensions
Ludre IEPE Shockwave Blast Sensor	cm
	Length: 12 cm
	Diameter: 1.6 cm



Figure 1. IEPE Shockwave Blast Sensor



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4.PRESSURE MEASUREMENT with DIFFERENT TECHNOLOGY SENSORS

4.1.Static Pressure Sensor Technology

Static pressure sensors have strain gage based technology. It creates a value depending on the elongation or shortening created by the pressure on the metal or membrane surface.

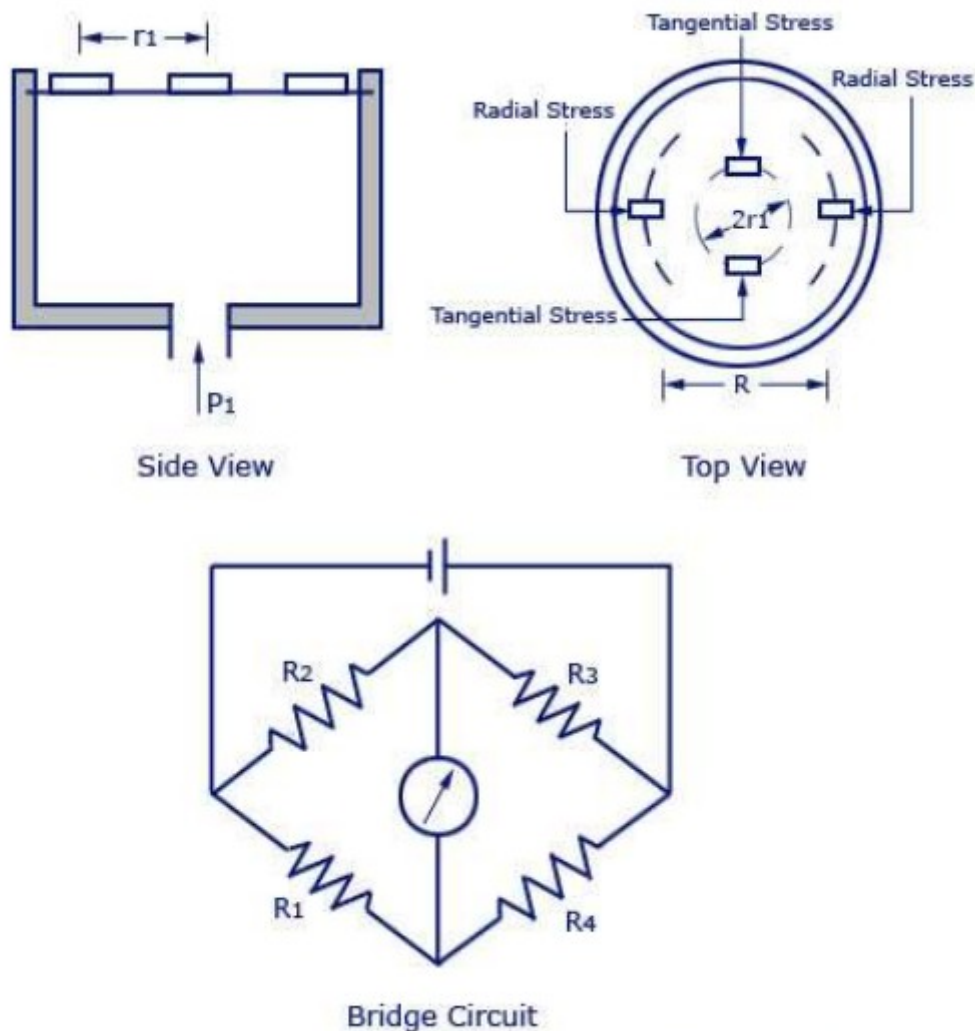


Figure 4.1. Pressure Measurement With Strain Gauges on Diaphragm



4.2. Dynamic Pressure Sensor Technology

Dynamic pressure sensors; It creates a shape change on the piezo or quartz crystals against the pressure change. The voltage formed against the deformation on the crystal is measured.

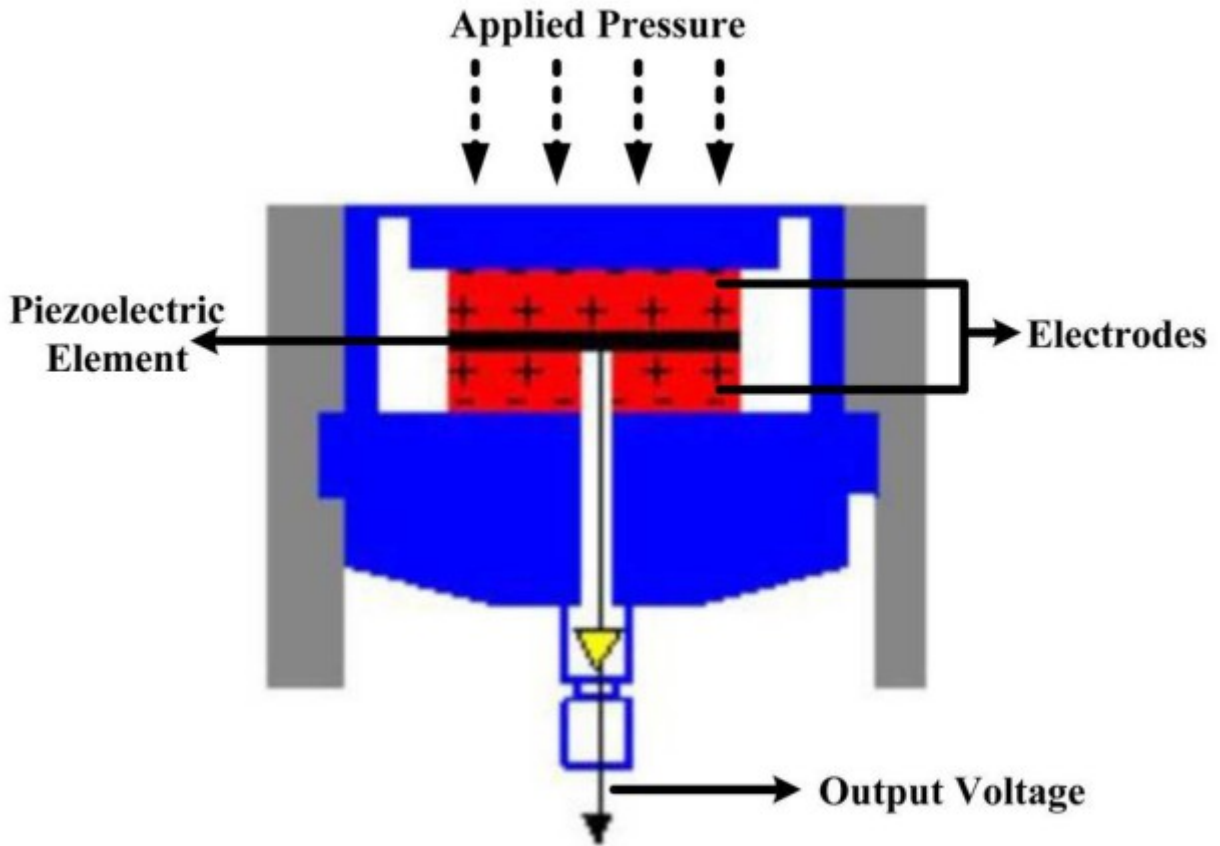


Figure 4.2. Structure



4.3.Static & Dynamic Pressure Sensor Measurement Differences

Static sensors read the resulting static value. Dynamic sensors read the pressure change.

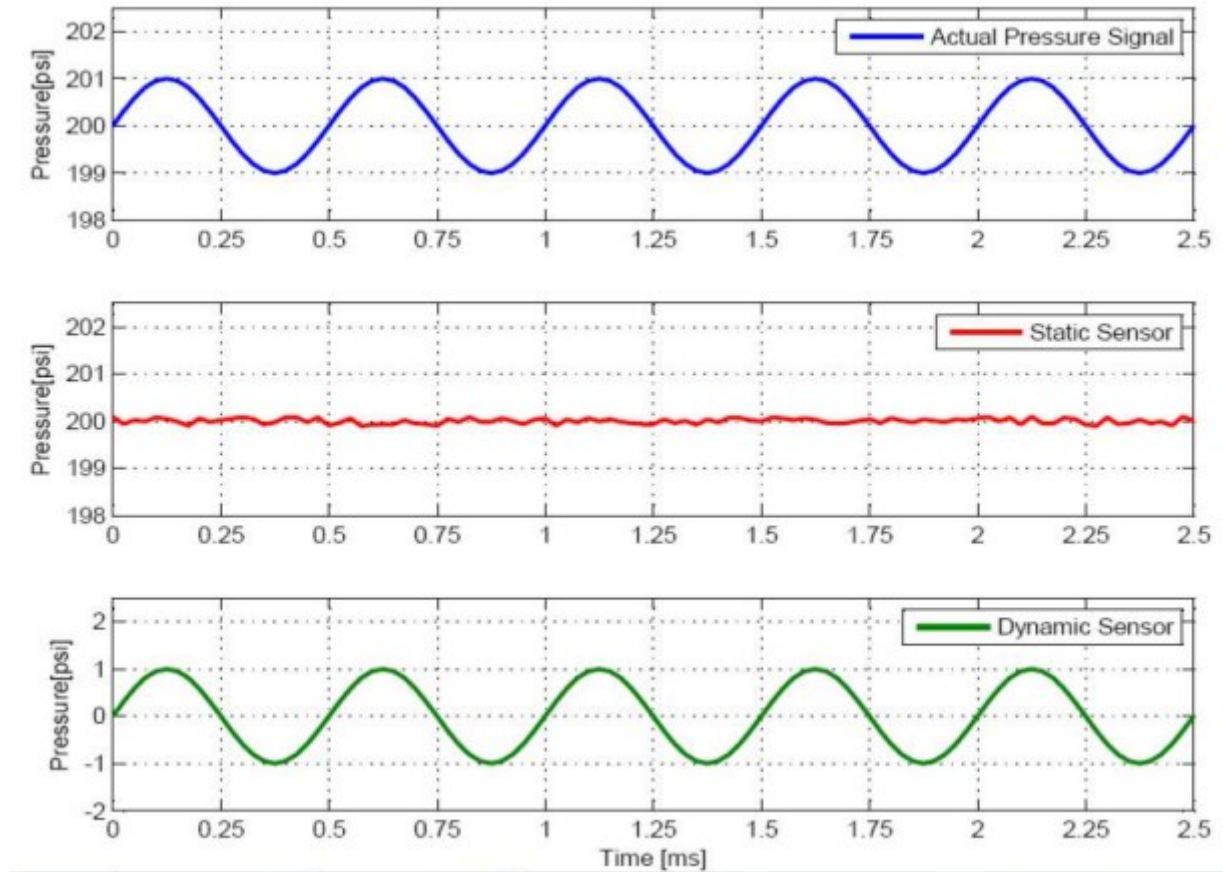


Figure 4.3. Different Signals



4.4. Open Burst Test Dynamic Pressure and Blast Measurement

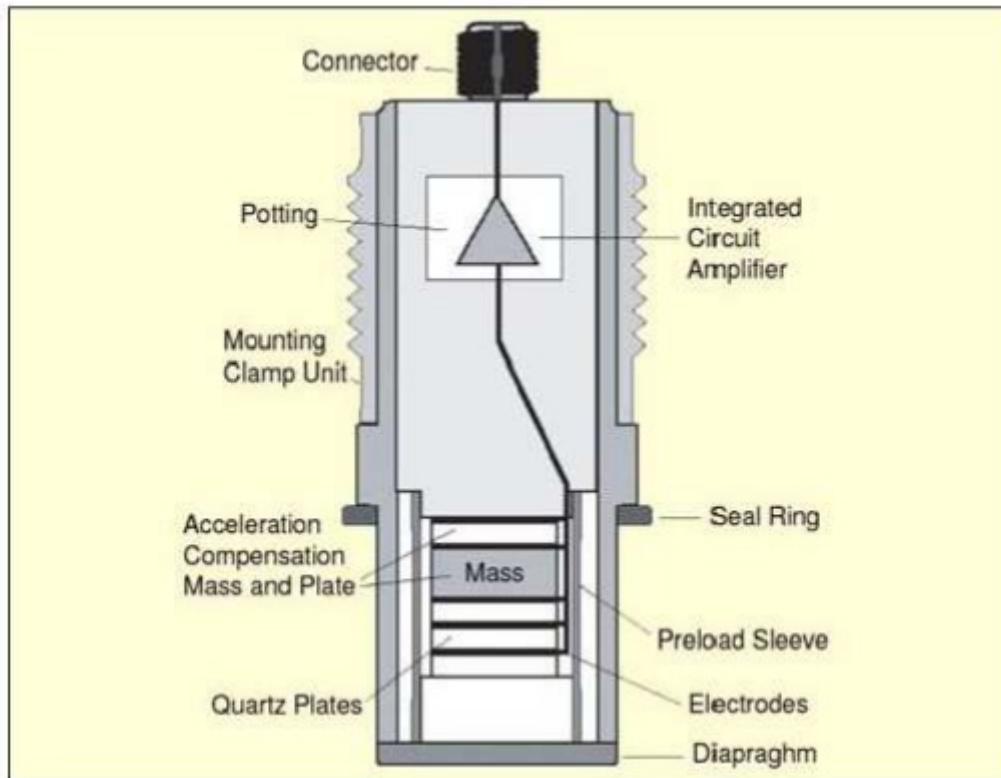


Figure 4.4. PCB Blast Pressure Transducers

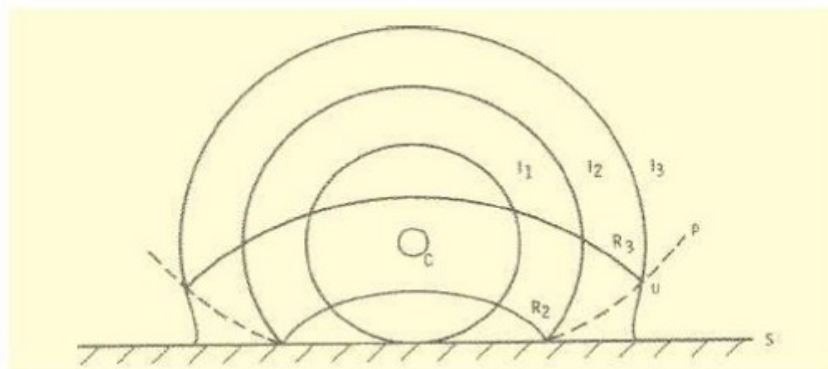


Figure 4.4.1. Strong Shockwave Interaction with a Reflective Surface



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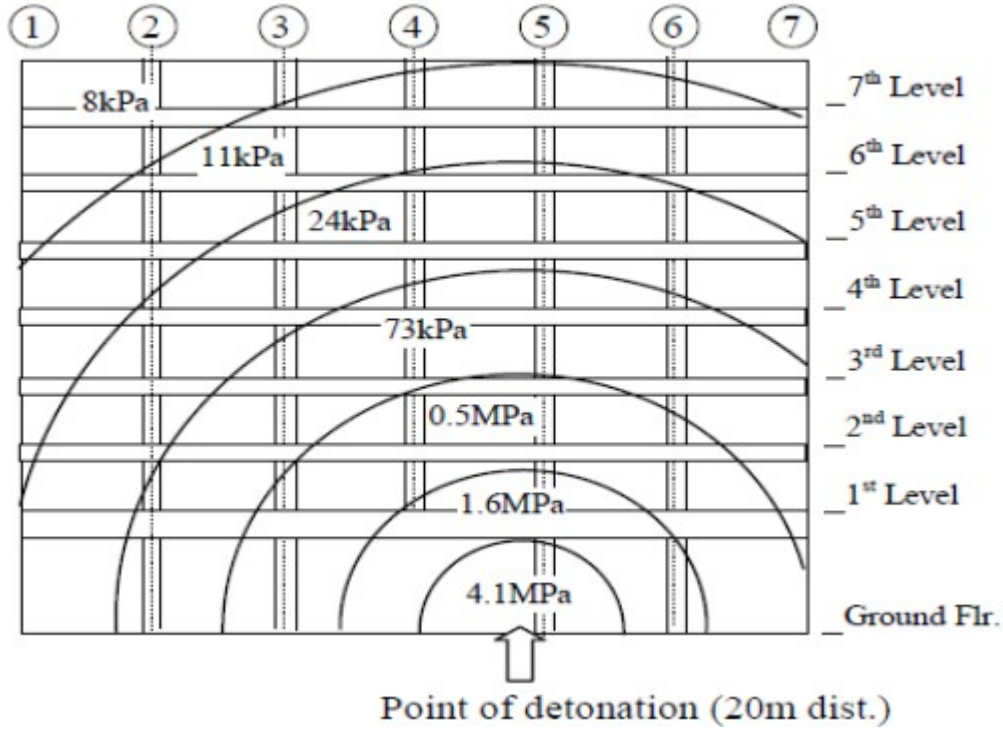


Figure 4.4.2. Distribution of Blast Pressure on Building Façade (Mendis&Ngo, 2002)

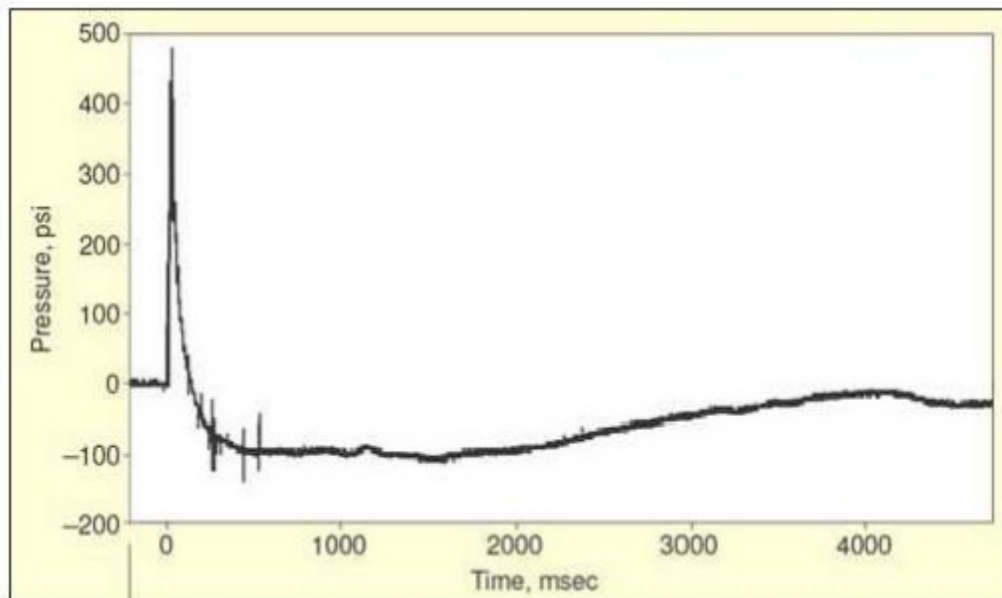


Figure 4.4.3. Erroneous Blast Pressure Data



4.5. Closed Burst Test Dynamic Pressure Measurement

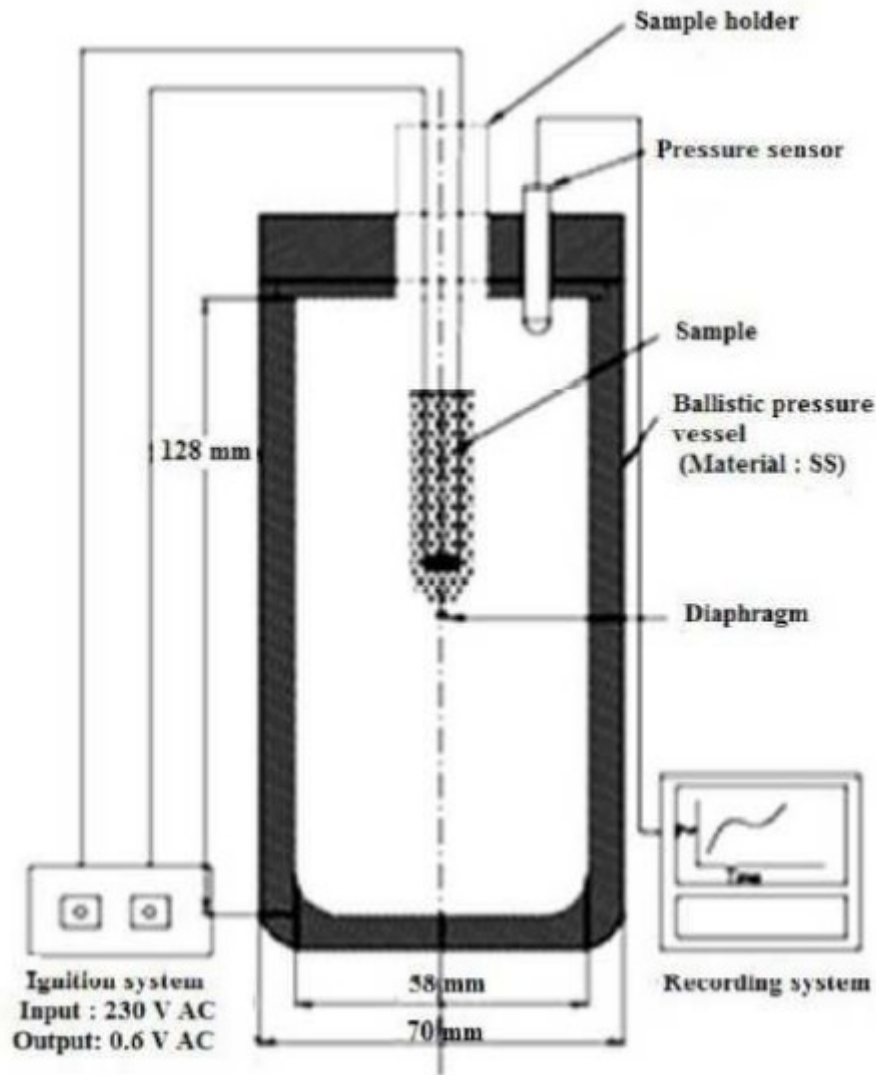


Figure 4.5. Line Diagram of the Experimental Setup of Ballistic Pressure Vessel



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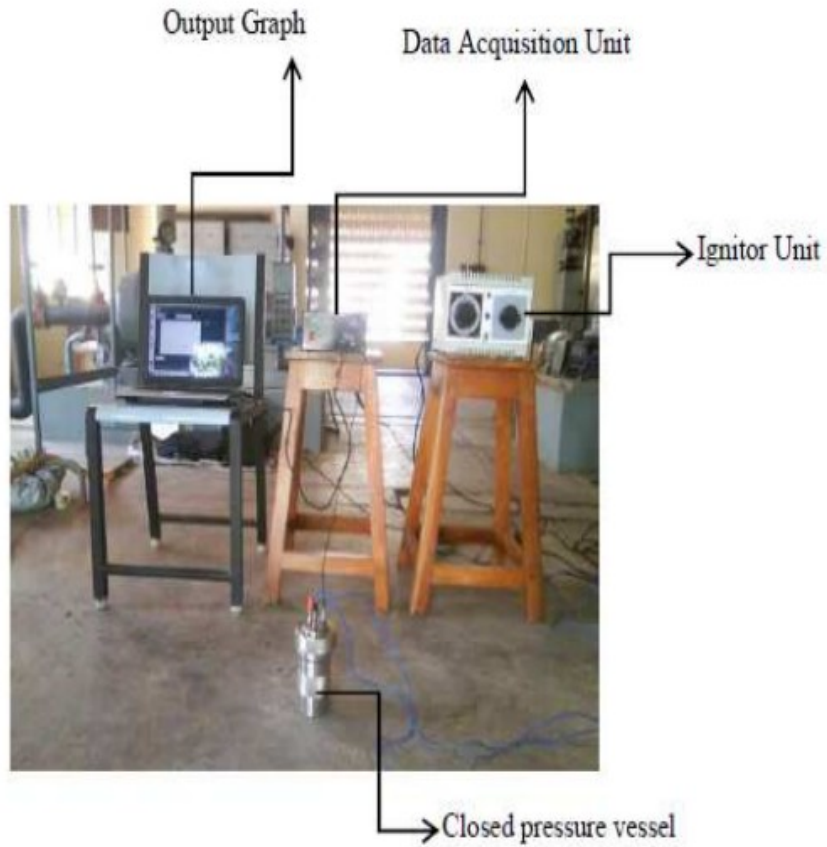


Figure 4.5.1. Photograph of the Experimental Setup to Measure the Explosion Pressure



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Figure 4.5.2. Pressure – Time Graph for the Sample