



Measuring Crack the Right Way

- Measuring Crack propagation
- Crack Gauge Installation.
- Data Acquisition for crack measurement

Fracture Mechanics

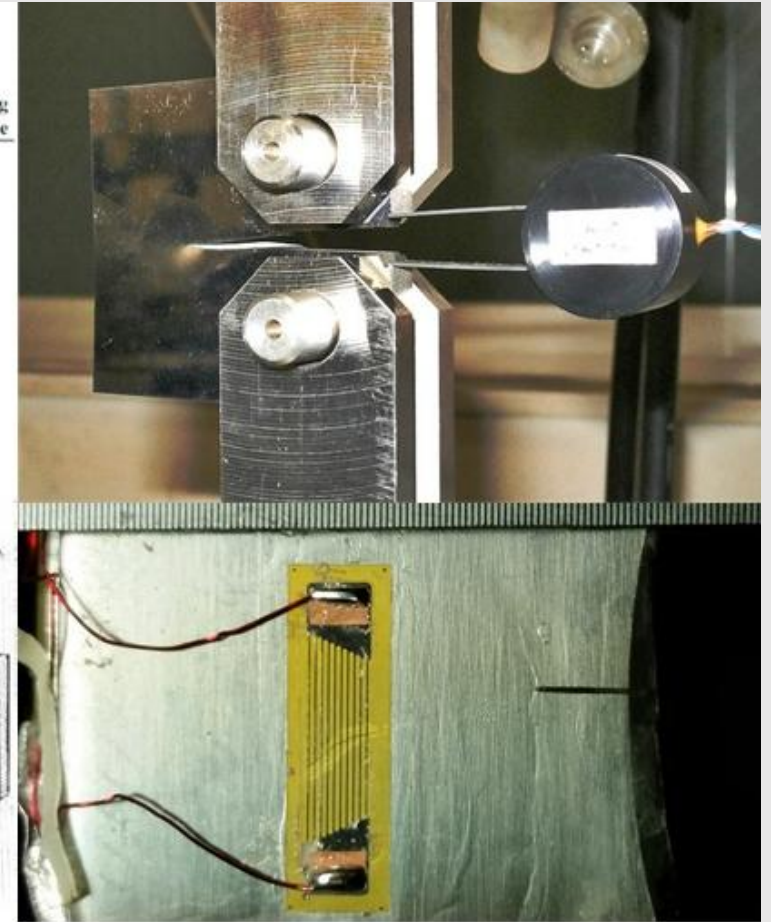
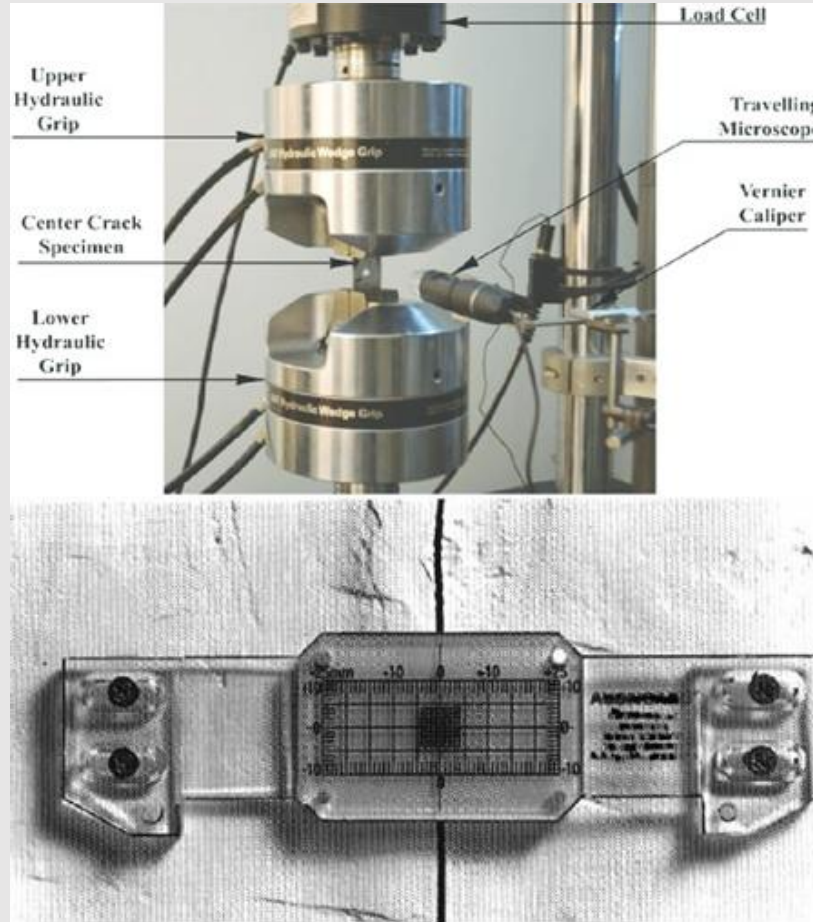
- The field of fracture mechanics deals with presence of crack in material.
- It attempts to find out the relation with crack length, material property and the stress at which the crack propagation would cause structure failure.
- Structure failure due to fracture is ¹estimated to be \$119 billion per year in 1982 dollars.



¹R.P. Reed et al., NBS Special Publication 647-1, Washington, 1983

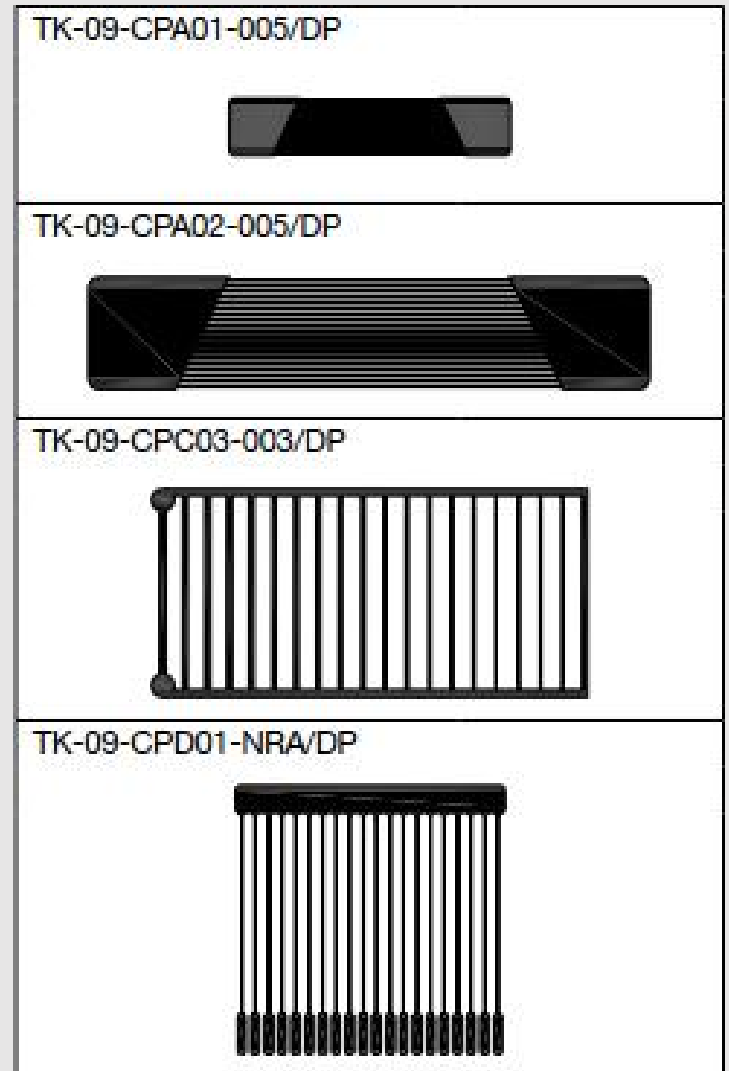
Crack Measurement Techniques

- There are several methods to measure crack and crack propagation rate.
- visual inspection, microscope, eddy current and crack propagation gauges among most popular methods.
- Using crack propagation and indication gauges is one the most reliable and economical methods.



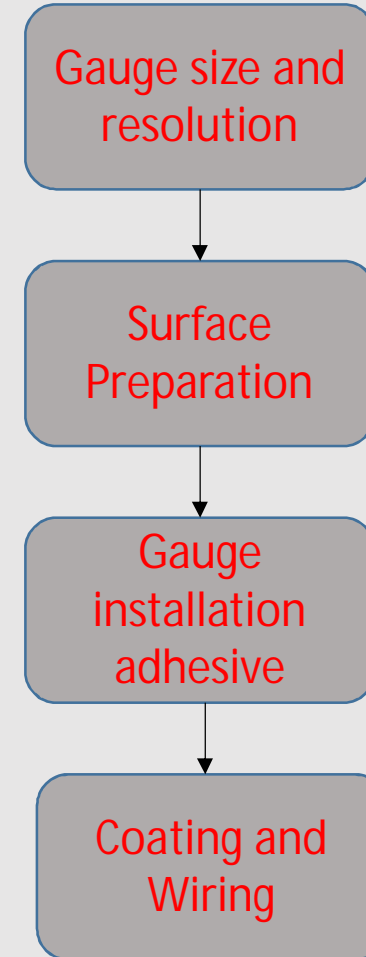
Crack Propagation Gauges

- Crack propagation gauges are provided in different sizes and configuration by [©Micro Measurement Group](#).
- The crack propagation gauges can be installed in same method as strain gauges.
- Crack propagation data can be captured and recorded automatically using any strain measurement and data acquisition system.
- Ease of installation, availability of automated recording devices and reliability of data makes crack gauges one the best options to measure and record crack propagation.



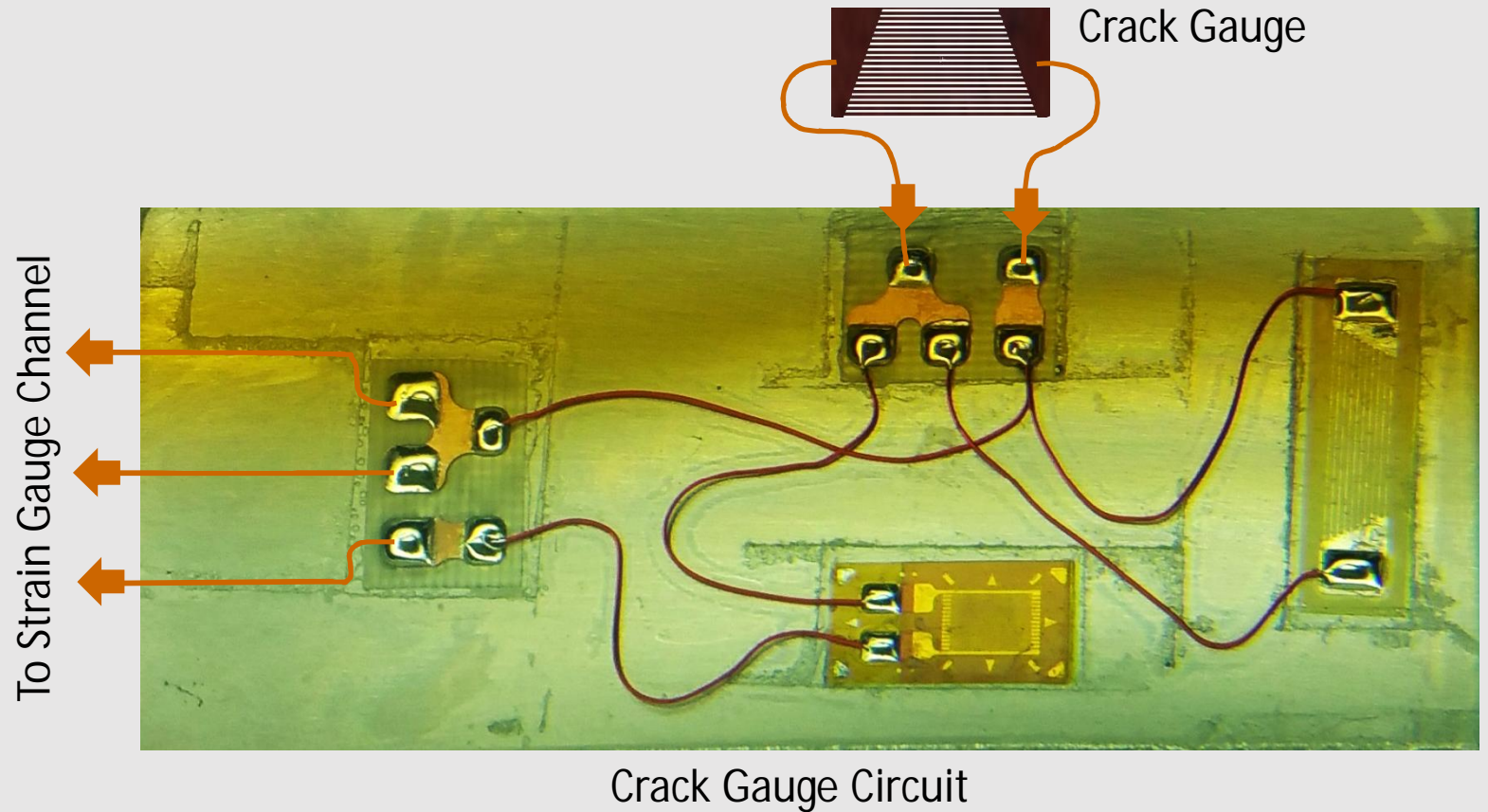
Crack Gauges Installation

- Crack gauge need to be carefully chosen based on its size and measurement resolution requirements.
- Material surface must be prepared same as strain gauge installation techniques.
- Strain gauge adhesives such as M-Bond 610, AE-15 and 43-B are excellent for wide temperature and high fatigue rates. M-Bond 200 could also be used for ambient temperature for short term testing.
- Crack gauges and wires should be protected from corrosion accelerated by high cyclic fatigue . M-Bond 43-B and M-Coat D are excellent coating options available from © [INTERTECHNOLOGY](http://www.intertechnology.com).



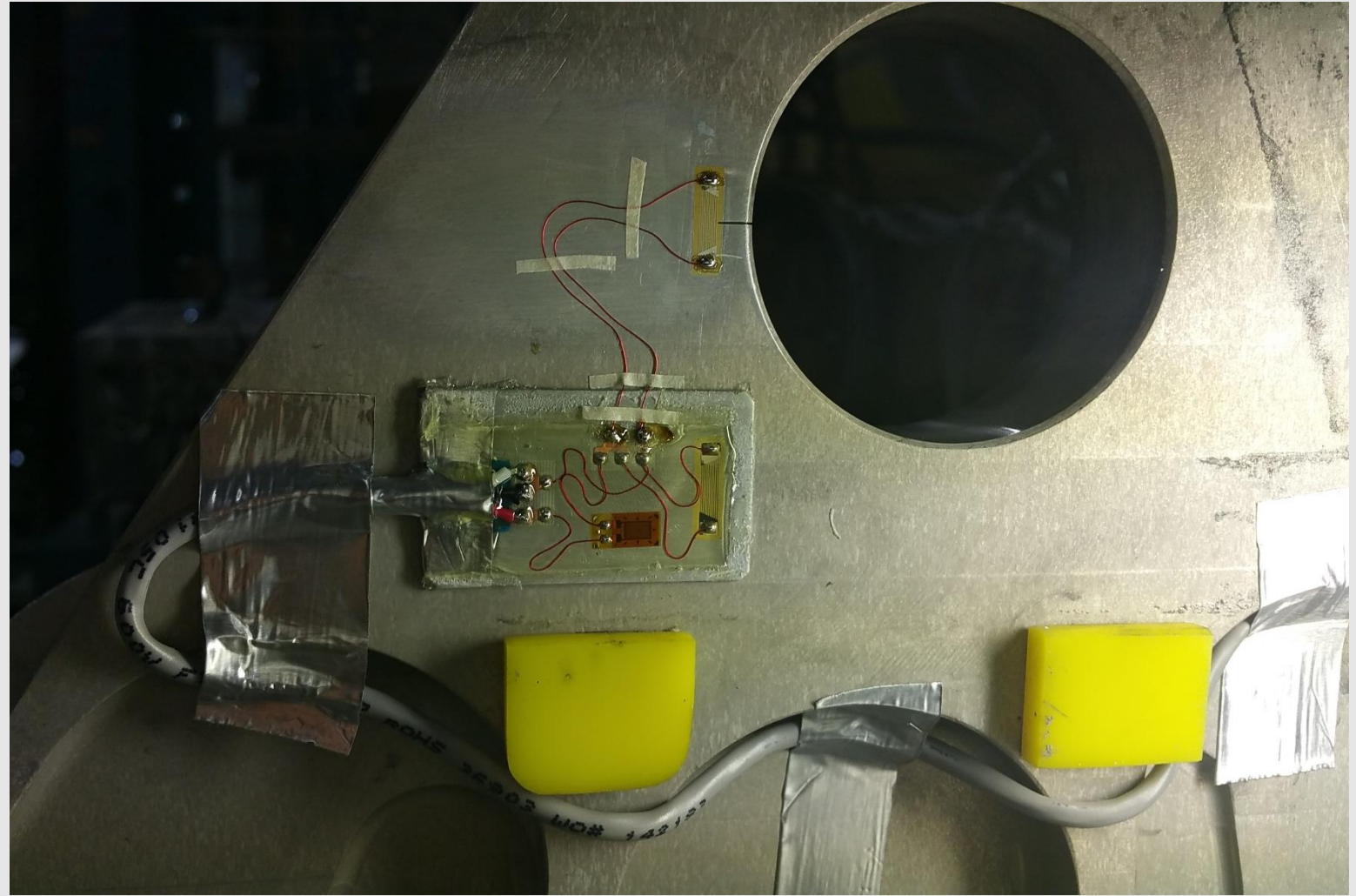
Crack Gauges Instrumentation

- A simple circuit can be constructed to configure and measure a crack gauge as strain gauge channel.



Data Acquisition for Crack Measurement

- By using a Data Acquisition System such as System 8000 from ©Micro Measurement, it will allow for maximum automation, event triggering and highest data resolution for any crack propagation measurement.



Questions and Inquiries

- At AccuRatio we can help you with any inquiries and requirement for crack propagation measurements.
- Our services available for any consultation, crack gauge installation and measurement inquires.
- Please contact us at info@accuratio.ca for any inquiries for crack measurement.