TRANSDUCERS OLD AND NEW

TURNER,R.G.

Transducers are to experimental science, what foundations are to buildings. Being at the start of the instrumentation chain, they underlie all that follows. In short, the whole edifice stands on them and as any
builder know, neglect of foundations can have serious consequences for the stability and value of the structure built on them.

This paper will look at 3 transducers.
1. The MQ-20 Piezoelectric Transducer and its Derivatives
This small piezoelectric pressure transducer originated at AWRE Foulness and has been the standard UK transducer for high pressure measurements. Its history, development and present performance will be discussed.

2. Polyvinylidene Fluoride Pyroelectric Thermal Transducer.
This new piezoelectic/pyroelectric polymer is being investigated for use as the active component of a prototype thermal detector. This combines the fast response characteristics of pyroelectric detectors with the principle of the Blackbody Cavity to give a fast response wide spectral band radiometer.

3. New Piezoelectic Accelerometers.
Good accelerometer measurements under high g shock conditions have always been a problem due to the distorting effects caused by exiting the transducer resonance characteristic. An assessment rig for attachment to a small shock tube has been constructed, and this is being used to investigate commercial accelerometers.

In particular a high g piezoelectric accelerometer with a very high resonant frequency and built in filter characteristic is being examined for possible use in small scale model trials.