

verse effect on plant performance; indeed, there is some evidence to show that by improving gas mixing and by providing uniform support for the catalyst gauzes the overall plant efficiency is increased.

References

- 1 L. B. Hunt, *Platinum Metals Rev.*, 1958, 2, (4), 129-134
- 2 A. W. Holmes, *Platinum Metals Rev.*, 1959, 3, (1), 2-8
- 3 B. H. J. Bell, *Platinum Metals Rev.*, 1960, 4, (4), 122-126
- 4 H. Connor, *Platinum Metals Rev.*, 1967, 11, (1), 2-9; *Ibid.*, (2), 60-69
- 5 T. H. Chilton, *Chem. Engng. Prog. Monograph Ser.* 3
- 6 *Nitrogen*, 1970, (66), 41
- 7 H. Holzmann, *Chem.-Ing.-Tech.*, 1968, 40, (24), 1229
- 8 H. Holzmann, *Platinum Metals Rev.*, 1969, 13, (1), 2-8
- 9 J. E. Philpott, *Platinum Metals Rev.*, 1971, 15, (2), 52-57

Strain Measurement at High Temperatures

Safe and successful operation of pressure vessels and boilers working at high temperatures, for example in the electricity supply industry, requires a knowledge of the strains to which they are subject under such conditions. Conventional strain gauges have used a resistive sensing method but this has not been ideal at high temperatures in adverse environments.

G. V. Planer Ltd of Sunbury-on-Thames have now developed with the Central Electricity Research Laboratories a gauge which operates instead by sensing changes in capacitance. The CERL-Planer gauge is attached to the test surface by micro spot-welding at two points only. Strains cause changes in gauge length and these are mechanically amplified, thus varying the separation of the electrodes of an air capacitor. Capacity changes measured on a capacitance

bridge record the degree of strain present.

Platinum electrodes were chosen for the air capacitor because platinum is well able to withstand the operating temperatures of up to and above 650°C without being affected by corrosive atmospheres. The capacitor is mounted inside a body made of alloys stable both mechanically and thermally. Cables and other accessories are available for use with the gauges.

The illustration shows a pair of the new gauges with connections to specially terminated mineral insulated cables. They are installed on a high pressure steam turbine housing. Gauges have a strain range of 10,000 microstrain. Typically the drift of gauge type C1 at 600°C is less than 70 microstrain per week, although drifts of less than 20 microstrain per week have been recorded for this gauge.

