

Special Facilities Building

Debden Industrial Estate, Langton Road,
Loughton, Essex, for Rank Precision
Industries Ltd

ARCHITECTS

SBT (Scott, Brownrigg & Turner)

STRUCTURAL ENGINEERS

Leonard & Partners

STEELWORK CONTRACTORS

Modern Engineering (Bristol) Ltd

Buildings section

Judges' Comments

A building designed to meet exacting parameters of lighting, humidity, temperature, and vibration. Structural steel was used to achieve economy with speed of construction and the exposed beams and columns provide architectural character.

The client required a production area of 10,000ft² for the manufacture of high precision scales on glass and metal to an accuracy of 1 micron. This needed an environment where the humidity is 45RH \pm 10%, temperature is 20 \pm 0.5°C and general filtration is 5 microns; in the clean room filtration is 0.5 microns. The various processes and clean requirements necessitated a central vacuum cleaning system, a production vacuum system, filtered compressed air, hot and cold filtered water, demineralized water, chilled water, piped gases, precaution against and collection and treatment of sixteen highly inflammable chemicals and nine types of toxic or corrosive chemicals. Nearly half the cost and 70 per cent of the volume are devoted to services. The critical requirements of vibration and temperature are reflected in the external appearance — separate plant room and steel structure and virtual elimination of windows and cold-bridges. The building evolved to meet these stringent requirements has a structural steel frame. This was chosen for economy, speed of erection and appearance. The frame is semi-rigid and the perimeter columns and beams are external in order to isolate the non-load-bearing brick walls from the steelwork to reduce ground and air-borne vibrations and eliminate differential thermal movement and cold-bridges. External universal beams have site welded end connections and the roof is 'domed' to facilitate drainage and eliminate screeds. Steel is used for the roof deck of the plant room and for the cladding of the duct between buildings.



