ratios will be required for the maintenance of optimum engine cycle efficiency.

Increases in heat addition imply higher turbine inlet temperatures which require new materials and blade cooling to prevent deterioration of engine component strength.

Higher compression pressures imply greater aerodynamic sophistication and higher engine rotational speeds; these must be achieved with simple designs.

Pollution of the environment due to propeller, fan, combustion, compressor, bearing and jet efflux noise as well as gaseous and particle by-products of combustion, will have to be rigorously controlled at the design stage.

Improvements in manufacturing productivity will be achieved through:

(i) simplicity of design - simpler air flow paths, fewer engine components,

(ii) the use of materials with better machinability and formability - which still satisfy the needs of higher engine performance.

(iii) improvements in manufacturing processes and machines, and

(iv) increased automation in production.

Further automation of the production process is most likely to occur through:

(i) the slaving of large quantities of machine tools and production processes to a master computer with sensible multiplexing for low down-times,

(ii) the integration of inspection routines with machining operations, and

(iii) the use of on-line systems for production management information, collection, synthesis, distribution and analysis with real time diagnostics.

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