

MLZ 460 Materials Selection and Design

2022- 2023 Fall Semester

TERM PROJECT

CON RODS FOR HIGH PERFORMANCE ENGINES

A connecting rod in a high performance internal combustion engine is a critical component: if it fails, catastrophe follows. Yet to minimise inertial forces and bearing loads, it must weigh as little as possible. This implies the use of light, strong materials, stressed near their limits. When cost, not performance, is the design goal, con-rods are made of cast-iron. But here we want performance. What, then, are the best materials for con-rods? The design requirements are summarised in the table below.

The design requirements

Function	Connecting rod for reciprocating engine
Objective	Minimise weight
Constraints	Must not fail by fatigue, or buckling or fast fracture