EFFECT OF CARBURIZATION, ON THE MECHANICAL PROPERTIES OF
EN-8 STEEL IN DIFFERENT QUenchING MEDIUM, AT
DIFFERENT QUENCHING TIME INTERVALS.

BSR VENU MADHAV, ABDUL AHAD MOHUUDDIN & MOHAMMED ATIFUDDIN
Department of Mechanical Engineering, Chaitanya Bharathi Institute of Technology, Hyderabad, India

ABSTRACT
EN-8 is widely used for many general engineering applications. Typical applications include shafts, studs, bolts, connecting rods, screws, rollers. The Main Purpose of the Paper is to study the effect of heat treatment of carburizing specimens of EN-8 (medium carbon steel) \(^\text{[1]}\) by varying two parameter i.e. quenching time and quenching medium. The carburization process is carried out for 8 hours at a constant temperature of 940°C followed by quenching with different media like air, water and oil for various quenching times i.e. 60, 70 and 80 mins. The specimens so obtained are subjected to tests, for determination of tensile strength, Hardness and case depth. The results of these tests show that, as quenching time increases, there is an improvement in mechanical properties like tensile strength and are more for, water-quenched and least for air-quenched steels. Oil-quenched show intermediate values. From the experimentation, it is also clear that, as the depth of the carbon layer increases, hardness and tensile strength are also increasing. The experimental results are also supported by microstructure study, which show the formation of martensite, that causes improvement in hardness and tensile strength.

KEYWORDS: Medium Carbon Steels, EN-8, Carburization, Quenching Medium, Quenching Time, Hardness, Tensile Strength, Case depth & Microstructures

Received: Sep 30, 2017; Accepted: Oct 18, 2017; Published: Nov 04, 2017; Paper Id.: IJMMSEDEC20171