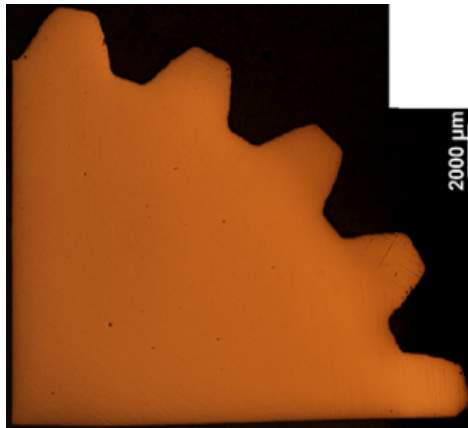


Heat Treatment of Additively Manufactured Parts



As a novel manufacturing technology additive manufacturing has a lot of advantages. Heat treatment is widely used to improve the properties of conventional manufactured steel parts. The response of additively manufactured steel parts to heat treatment may be different from that of conventional manufactured steel parts. It is imperative to understand the heat treatment process of additively manufactured steel parts and determine the heat treatment process parameters.

20MnCr5, AISI 8620, and AISI M2 were selected to investigate the heat treatment effects on additively manufactured parts. The parts were fabricated by selective laser melting. 20MnCr5 and AISI 8620 parts were carburized and the properties were compared with the carburized wrought parts. AISI M2 part which was hardened (quenching and tempering). These were compared to the properties of carburized wrought parts. The objective of present project was to determine the heat treatment process parameters for selected additively manufactured steel parts to achieve properties which are comparable to corresponding conventional manufactured (wrought) steel part.

