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## Metallurgical characteristics of laser peened 17-4 PH SS processed by LENS technique

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### Abstract

This study investigated the effect of laser peening on the surface integrity (surface roughness, microstructure and microhardness) of 17-4 PH stainless steel components which were built through the direct energy deposition (DED). Additive manufacturing (AM) technique was performed on laser engineered net shaping (LENS) system. Components were built through the same energy density of 312.9 J/mm<sup>3</sup> and subsequently subjected to laser peening so as to modify the surface of the material. However, one component was peened for three cycles and the other one for six cycles. The current study discovered that the surface roughness improved by 28% for three cycles of peening and 42% for six cycles of peening. Moreover, it was found that laser peening caused deformation of grains just below the peened surface which consequently resulted in increment of microhardness.