Blade and vane components made with Ni-base superalloys play a vital role in hot section of gas turbine engines. Removal of porosity in cast Ni-base superalloys is a critical process consideration since porosity from casting process can have deleterious effects on the performance and integrity of superalloy component. Still, the cost-efficient processing of Ni-base superalloys that are technologically acceptable, or superior, can contribute significantly to the life-cycle cost of gas turbine engines. The purpose of this thesis was to explore the possibility of eliminating the hot isostatic pressing cycle in a CM247 Ni-base superalloy processing. For cast CM247, conventional processing includes a hot isostatic pressing, which is primarily used to densify cast alloys by eliminating porosity. Two modified heat treatments without any applied pressure for CM247 were explored. Following these heat treatments, the porosity within each the sample was analyzed by electron microscopy. Results showed that HIP-ing removed 67.4% of the porosity from the as-cast CM247. The modified heat treatment examined in this study removed 97.9% of the porosity from the as-cast CM247. These experimental results were analyzed by considering the energetics of the HIP and modified heat treatments. Analysis demonstrated that most of the energy imparted on the casting for porosity removal can be due to temperature and not pressure, and justified how the modified heat treatments reduced porosity more effectively than the standard HIP cycle. Findings of this study can be immediately implemented for easier and more cost-effective processing of CM247 Ni-base superalloy.