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3XX Aluminum Alloys for ICE Implementation

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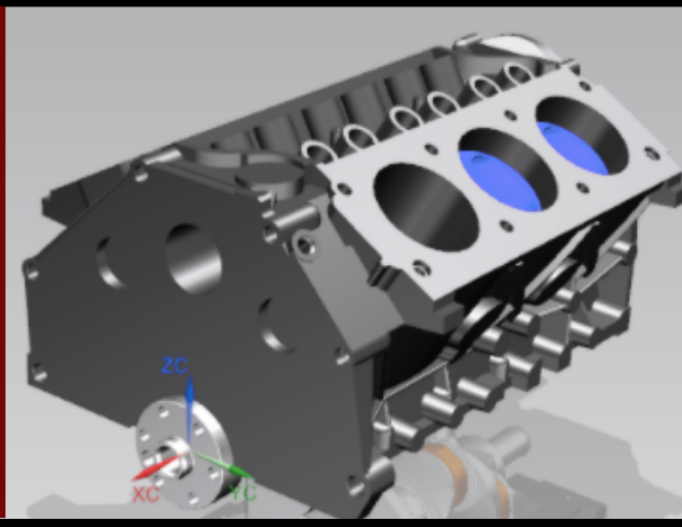
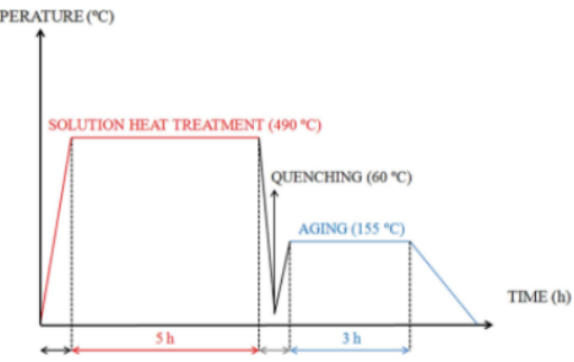
The Change of Automotive Engine Blocks from Cast Iron to 3XX Aluminum

The 3XX Aluminum used for these engine applications have seemingly slight differences, especially in their processing and material structures, that actually cause incredible performance and property differences that allow them to compete with, and even surpass, Cast Iron traditionalists.





Solution Heat Treatment: the aluminum is heated and held at a temperature for a certain period of time, then rapidly cooled. This allows other elements like magnesium to insert themselves into the solid aluminum, making it stronger. It is then aged at a certain temperature to allow the atomic structure to settle and further strengthen the aluminum.

Silicon: has a positive effect on wear resistance, and tends to increase Aluminum's fatigue life with a reduced particle size due to Silicon's hardness.
Magnesium: has the greatest effect on yield strength at relatively low percentages, with the optimal weight being at .7% .
Strontium: also increases Aluminum's yield strength while simultaneously decreasing the optimal amount of Magnesium required to maximize the strength to about .3% percent weight.