REPLACEMENT OF LOW CARBON COLD ROLLED STEEL SHEETS INSTEAD OF IF STEEL FOR EXTRA DEEP DRAWING USES

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Heavy trucks, bulldozers and Excavators need oil filters having long depth with respect to the diameter. The Processing of that type of oil filters is considered sensitive as it contains extra deep drawing (EDD) process. Usually IF steel (0,004 % C) sheets are used for processing the extra deep drawing product.

The current research project aims at replacement of low price - low carbon steel sheet (0,05 % C) instead of high price IF steel sheets for processing extra deep drawing oil filters.

The project include a series of phases starting with compact slab processing (CSP) of low carbon steel, which can be directly forward to a tunnel furnace for temperature homogenization. Homogenized slabs are forward to rough rolling mill where the thickness is extensively reduced to suit finish rolling stands. A design of the finish rolling is essentially needed to create consecutive dynamic recrystallized ferrite grains. Finish hot rolled sheets are usually water quenched

on the run out table (ROT) before coiling. Water quenching secure creation of ultra fine ferrite grains.

Finish hot rolled sheets would be transfered to cold rolling mill to reach the final thickness. It is essentially to consider decrease of the amount of the thickness reduction from pass to the other to avoid edge cracking due to increase of strain hardening.

Final cold rolled sheets are subjected to process annealing cycle at a temperature near to Ac1.The project includes microscopic investigation and mechanical testing at the different project phases.