

Design and Manufacturing of Super Insulation Wrapping Machine for Cryogenic Tank

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Abstract: Super insulating wrapping machine is use for wrapping the cryogenic insulation around an inner tank disposal within an outer tank of a cryogenic tank system. Cryogenic tank systems have an inner vessel disposed within an outer vessel for creating a space there between such that a vacuum can be maintained between inner and outer tank for insulation purpose. Heat is transferred by conduction, convection, radiation. Because there is a vacuum, there is no media for conduction & convection of heat. Outer tank may be insulated in variety of conventional fashion; the inner tank is wrapped with cryogenic insulation. Also the radiation is reduced by keeping reflecting surface of aluminium towards outside of inner vessel. So the heat conduction is at minimum extent which helps in liquid nitrogen in inner vessel with minimum loss in storage. It is mostly used to store liquid nitrogen (02). The liquid us temperature of nitrogen is -320.8 OF. Cryogenic insulation is very specialized insulation which requires very special properties. As opposed to usual insulation, Cryogenic insulation must be capable of operating at very low temperature between about -130 OF to -4500F while retain in functionality, especially functionality at those temperature. In order to have consistency in wrapping of super insulation and to increase productivity the super insulation wrapping machine is design with variable tensioning arrangement the insulation wrapping is done with adequate tightness. The overlap of each turn off insulation is maintained such that there is no direct heat transmission by radiation

Keywords: Cryogenic tank, Liquid Nitrogen ,Wrapping Machine

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