

ABSTRACT

This thesis focuses on the analysis and comparison of the weldings of natural gas, metal and plastic, pipelines. As far as the metal pipes are concerned, arc weldings are studied (MMA, MIG/MAG, FCAW, TIG, SAW and PAW), while for the plastic pipes, methods such as friction welding, butt fusion welding and adhesives, are examined and contrasted. Subsequently, TIG welding emerged as the ideal method for connecting metal pipes and Friction Stir Welding (FSW) for plastic pipes. Ultimately, the optimal parameters are estimated through research and the tool of Friction Stir Welding is designed. In FSW the tool contains a rotational 'pin' and 'shoe', which were designed in 'Solidworks'.