The current Master`s Thesis was aimed to decrease Enefit 280 downtime. In order to achieve stated aim it was necessary to perform next tasks: to analyse Enefit 280 downtime reasons, to calculate economic loses due to downtimes, to search solution for increasing failures in pyrolysis unit, to research failures for this production unit which can lead to unplanned downtimes, to find out technical solution implementation for problems solving, to research reasons which can lead to plant failures, to increase Enefit 280 availability and to calculate pay-off period for technical implementation. Every day of the Enefit 280 downtime incurs the great losses to the enterprise.In the thesis were considered the ways of equipment downtime reducing and to introduce some changes in the maintenance plan for increasing efficiency of the system.
The purpose of this work was to analyse the plant Enefit 280 downtimes and find the ways for it reducing downtimes and increase availability of the system.
Implementation of the new technical solution of the pyrolysis system allowed to extend the system work cycle between scheduled shutdowns.
For this aim was used a historical data from ERP system IFS Applications and other allowable work materials connected with equipment repairing and maintenance. For maintenance Reliability indexes definition was used calculation methods based on a Reliability Engineering principles. Also for processes analysis was used All Fusion Process Modeler 7.2, IDEF0, NTD (Node Tree Diagram) and ABC (Activity Based Costing).
The new technical solution is recirculation the EHDO to the retort where it gets converted into lighter (and more valuable) products. In current work was considered how these changes influence on reliability indicators and downtime of the system. In order to decrease Enefit 280 downtimes due to failures, it was important to study failures reasons in pyrolysis unit and to search technical solution. Analysis shows, that system worktime may be prolonged to 13 days, it will bring additional 3250000 € and screw conveyor modification will bring additional 1007500 € for 13 days. Total cost for technical solution implementation will be 94196.5 €. Enefit 280 will recoup technical solution costs for 9 working hours.
In order to figure out the economical scale of the problem, it was important to show economical loses due to plant failures. All economical numbers and sums were described and shown in different tables to compare and anylyse economical loses and profits. As a result technical solution implementation will recoup only 9 hours plant working.
All things considered. In current thesis were used contemporary and modern methods for improving manufacturing process and reducing plant failures in pyrolysis unit. Moreover, has managed to raise Enefit 280 capacity and productivity. Using modern software and experience obtained in current thesis, there is an opportunity to assist future manufacturing process development, making necessary reconstructions and technical solutions implementations at minimum costs and economical losses.