599g Castable Coating Experiment in the Primary Reformer to Avoid Fouling in the Convection Section Coils

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PT. Kaltim Parna Industry is Joint Venture Company between Indonesian and Japanese company and now operating one train 1500 T/D ammonia plant in Bontang, East Kalimantan of Indonesia. The plant was entering to commercial operation since February, 2002 and almost of the entire product was mainly exported to international market.

Since beginning of plant operation, a strange phenomena was occurred in the convection section coils, where the coils was fouled by castable material and affect in reducing heat transfer in the lower side coils and increasing the heat transfer in the upper side of the coil. The overall impact to the plant operation was very significant and the plant was operated with the lower efficiency due to some adjustment to maintain the safe operation conditions.

Currently a temporary solution by cleaning was applied in every annual turn around. After cleaning, the plant performance is getting better, but after few months operation returned again to the bad condition.

To make a permanent countermeasure, elimination of the source of the fouling material that suspected caused from the castable in the radiant section have to be done and coating the castable by special coating material will be applied.

The experiment by spot coating was applied on the last TA (February 2005) and now are on going in evaluation of the experiment result. The main results of the coating experiment are as follows:

a. The coating condition was relatively stable and expected will not harm to the Primary Reformer operation. b. The heat reflection / heat transfer to the catalyst tube increase indicated by increasing the inner wall temperature of the Primary Reformer. c. Heat loss decrease, indicated by decreasing the outside wall temperature.

From the above result, a further coating experiment in more detail and more variation will be done in the next annual turn around. After we a sure about the coating performance getting an understanding about the correlation to the plant performance, all of the surface will be coat gradually.

In the paper, explanation about the fouling impact to the plant operation, operation adjustments to temporary overcome the trouble, cleaning method of the convection section coil and result of the coating experiment in the primary reformer will be provided.