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(54) **Process for determining the nitrogen content of the effluent of the pretreatment reactor in a catalytic hydrocracking plant**
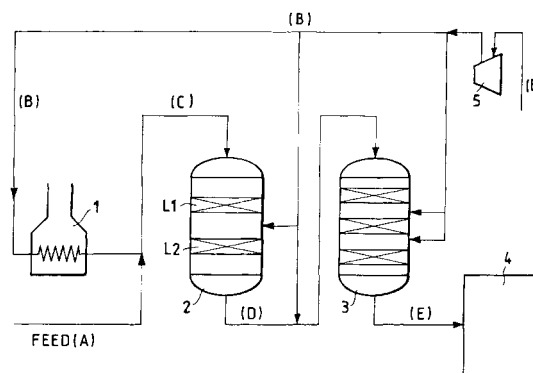
(57)   Process for determining the nitrogen content of the effluent of the pretreatment reactor in a catalytic cracking plant with hydrogen, the above reactor consisting of at least one fixed catalytic bed, which comprises the following steps:

1) collecting the process and laboratory historical data relating to a high number of runs effected by the pretreatment reactor;
2) selecting from the data of point (1) a subset of data to be used as input for a first neural network (NN1) ;
3) calculating the NABT (NABT = normalized average catalytic bed temperature) for each series of historical data using the data of point (2) and correlations available in literature;
4) constructing a first neural network (NN1) using the data of point (2) and the NABT of point (3);
5) selecting a first set of training data of the first neural network NN1, comprising the data of point (2) and the corresponding calculated NABT values of point (3), generating a set of NABT predictive data of point (5);
6) selecting a second set of training data comprising the data of point (2) and the set of NABT predictive data of point (5);
7) constructing a second neural network NN2 using the data of point (6), generating a set of nitrogen

predictive data in the effluent and the configuration parameters of the network NN2;
8) applying the predictive data of points (5) and (7) to continuous process data, thus estimating the NABT of NN1 and the corresponding nitrogen content of the outgoing effluent without effecting laboratory analyses.

Fig.1

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EUROPEAN SEARCH REPORT

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	4 April 2000	Kelperis, K

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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