

## METHOD FOR ESTIMATING THE COMPOSITION OF DISTILLATION COLUMNS AND CONTROLLING SAME

### Description:

It is known that the operation of a distillation column implies the feeding of a mixture with components to be separated, such that through the regulation of both the reflux flow rate of the top product of the column as well as the heating of the bottom product is obtained a desired product concentration profile. From one point of view, the purpose of distillation is to obtain a defined quantity and purity of the product both at the top and at the bottom of the column in a minimum time, which also ensures minimum cost. However, in a distillation column, the selection and implementation of the optimal control strategy that defines both reflux and heating is relatively complex. Today, advanced control systems are playing a critical role in the operation of a processing plant. Typically, advanced control systems rely heavily on real-time process modeling, and this requires extensive development of efficient process models that, as a requirement, have to exhibit real-time response. Due to the fact that detailed process modeling is not feasible in many cases, great efforts have gone into the development of approximate dynamic models. Thus, the present invention is related to the techniques used in the dynamics and control of processes, and particularly it is related to a method of estimation of composition and control for distillation columns. More particularly, the present invention presents a composition and level estimation system for a distillation column by using control techniques based on neural networks and genetic algorithms. The estimation is performed on the head and tail composition of the column based on neural networks using easily measurable secondary variables.

### Keywords:

[Chemistry](#), [Column](#), [Distillation](#)

### Sectors:

[Environment and Energy](#), [Chemistry](#)

### Areas:

[Chemistry](#)



### Advantages:

Among the advantages of the present invention are: • It is a very precise method • It is a method capable of controlling the composition in order to achieve the specifications of the final product during the distillation process. • It is a much cheaper method that gives a quick response.

### Uses and Applications:

The present invention is applicable to the field of chemistry, especially in those processes in which it is necessary to control the process in a distillation column.

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