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Study by Radiotracer of a Phosphoric Acid Production Line

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The principle of the study is based on the impulse-response concept. The pulse is obtained at the studied reactor inlet by injection of the radiotracer. The study involved a phosphoric acid production line, consisting in particular of two digesters (D1 and D2) and four crystallizers (C1 to C4). Technically, the interest of the study is to establish the residence time distributions to:

- Define mean residence times in the various reactors diagnosed;
- Define the arrival times, at all studied compartments: digesters D1 and D2, crystallizers C1 to C4;
- Identify the flow pattern in each reactor (perfect mixer, piston, ... etc);
- Identify potential process failures (dead volumes, shorts ... etc).

The study was conducted in two phases:

- First injection of radiotracer, at the inlet of digester D1;
- Second injection of radiotracer, at the inlet of crystallizer C1.

The radiotracer used is ^{131}I , as liquid Na^{131}I .

The two injections of radiotracer, have established with precision the residence time distributions in the studied reactors and flow regimes prevailing there. From the response-curves, product arrival times and mean residence times were also determined.

Country/Organization invited to participate

Morocco

Primary author: Mr ALAMI, Rachad (CNESTEN (Centre National de l'Energie des Sciences & des Techniques Nucléaires), Morocco)

Presenter: Mr ALAMI, Rachad (CNESTEN (Centre National de l'Energie des Sciences & des Techniques Nucléaires), Morocco)

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