

Markovian approach to improve the reliability and the availability of the Algerians refineries

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Abstract- In Algeria, there are 3 refineries located on the Mediterranean coast, supplied each by a pipeline coming from the Sahara in the south of the country. The bad state of these pipelines results in a partial or total unavailability of the refineries that can cause, in long term, a country paralysis concerning the final manufactured products. To avoid this, it is very important to find a solution that can, at the same time, move away the spectrum of products unavailability but still remains an optimal solution. The technical problems alternating the grid systems are various; they can occur at all points of the network for example: unavailability of the machines, unavailability of the filling shifts at ports, bursting or leaks in the pipeline.

To satisfy the request of the refineries, we must:

- Either take the lack of products from the quantities intended for export what can penalize the Algerian transport company foreign customers;
- Or take from the refineries strategic stock.
- Or try to improve the availability, therefore the reliability of the system

In this article, we suggest to make a probabilistic approach in order to solve the problem of the availability of the products in general and in particular, of the refineries located on the Mediterranean coast.

Among the solutions, there are:

- Reinforcement of storage in the refineries;
- Creation of oil pipelines;
- Improvement of the operating and maintenance conditions for the installations of the pipelines feeding the refineries.

Keywords-Reliability, Availability, Redundancy, Markov Chains, Optimization.