12:55

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Section 2: Digital twin of production (Big Data)

Use of network (graph) mathematical model for analysis of cause-effect relationships and probabilities of equipment breakdowns

For efficiency management of production assets, it is necessary to apply a model of equipment reliability with the use of which it is possible to estimate the probability of equipment breakdown and to assess the potential severity (negative effects) of breakdowns for the enterprise.

Application of almaGRID software is used to create a network (graph) mathematical model of interrelationship between the equipment units, their state parameters and their operation factors in order to identify the rules (concepts) for performance of maintenance and repair (MaR) which will provide the sufficient reliability of equipment to assure the acceptable level, with the minimum expenses:

- risk for personnel at work places;
- risk for public outside the enterprise;
- risk for business interruption;
- risk for environment.

Implementation of the model will allow:

- to estimate the risk of equipment/components/assemblies breakdowns;
- to perform the ranking of breakdowns as per criticality for achievement of the maintenance purposes (assurance of production continuity, client's satisfaction, industrial safety, etc.);
- to reasonably select the MaR methods (run-to-failure, scheduled maintenance, maintenance as per condition/residual operation life, proactive maintenance);
- to develop a plan of actions to reduce the risks of critical breakdowns.

There may be changes in the time schedule.
See the current information on the website