

# Age-Dependent Statistical Models to the Objects Reliability Parameters Estimation

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Nowadays highly industrialized countries are increasingly considering equipment reliability analysis in terms of its ageing. The given problem in oil and gas industries, nuclear-power branch, hydro power station, aero and space industries is especially pressing. Thus, the most of power capacities in nuclear power engineering were put into operation in the 70ies – 80ies. The designed terms of power units operation were set for 30 years. Thus, time of mass power station decommissioning is coming, and investments for replacing equipment worked out are needed. On the other hand operation experience shows that power installations and their equipment and systems can successfully function longer than the service life. Thus, activities in surveying the state of some equipment and systems, and also power units as a whole, in specifying the real level of their reliability and forecasting residual life time can result in essential material benefits.

In report review of methods, using for ageing account will be made.

Now it is possible to introduce three approaches to the ageing work out of objects reliability calculation:

- 1) the description of failure rate by function growing in time;
- 2) use of model which takes into account incompleteness of restoration with the help of degradation factor;
- 3) the account of ageing with the help of normalizing function of a flow.

The new age-dependent models of the object reliability calculation based on application of normalizing functions to a failures flow and model which takes into account incompleteness of restoration with the help of degradation factor will be considered. The question of the accuracy estimation of the reliability parameters will be shown. Examples of the objects reliability calculation with ageing effect based on real operating information will be demonstrated.