



295-Reliability and service in the power industry

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Introduction

Introduction of new technologies promotes specialization and isolation of the highly professional service markets in economy. Nevertheless, today service structures carry out mainly internal orders on repair of the equipment of the power enterprises in the status of affiliated dependent or indirectly affiliated organizations.



Figure 1 – Compressor 100atm

Method/Approach

The research method in the performance of the organization – analysis of theoretical approaches to the service organization in the power industry, as well as the identification of methodical maintenance service activities and the development of recommendations for improvement of the services, technological innovation (innovation aspects).

Division of interests between the Customer and the Contractor

<i>Power grid (energy)company</i>	<i>Service organization</i>
• minimization of expenses for service; • high quality service (or a level of quality that ensures reliable operation of equipment); • long-term relationships with manufacturers; • high competence of the staff; • speed of service.	• high demand for services; • low cost, high return; • long-term relationships with customers; • growth of the market.

Experimental setup & test results

The main results of research:

1. Definition of «service».
2. Formulated benefits and risks from the implementation of service activities (service).
3. Structured in the interests of energy companies and service organizations, taking into account the modern condition of the electric power industry, the basic requirements for the service activity, its potential, and maintain a balance of interests of market actors (commercial, reliability, and energy efficiency).
4. Developed an approved model (long-term) for maintenance of electrical equipment, allowing the classification of services and organizing the structure of service activities at PJSC «FGC UES».

Facility	Equipment
Substation	GIS (gas-insulated switchgear)
	Gas-insulated circuit-breakers
	Disconnectors (modern types)
	Autotransformers, transformers, reactors
	Instrument transformers
	Sergi system
	Compressors
	Online equipment diagnostics (testing) systems

Figure 2 – The list of equipment eligible for the service in FGC UES

Conclusion

Model service organization in PJSC FGC UES :

- Execution of service in the format of bilateral contract (**long-term form of service (5 years))** between the Customer and the Contractor.
- The service contract included mandatory training of the Customer’s staff and established responsible division of works on maintenance and repair between the parties (simple repairs to be made by trained and certified personnel of the Customer; complicated and emergency repairs to be performed by certified personnel of the Contractor or the Subcontractor).

The transition to the approved model of service in PJSC FGC UES has shown its transparency and the availability of a mechanism of control over investments and the resulting effect, which is a decisive factor in the development of the industry as a whole.



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Experience in implementation of the service model, aimed at improving the quality and efficiency of maintenance and repair in terms of cost optimization is one of the most important areas of activity for PJSC «FGC UES», achieved a positive effect.

Comparative analysis on the repair of compressors (FGC UES)

Description	2010	2011	2013	2014-2017
	External contractor	Service company (Outsourced service contractor)		
Compressor repair	Unit price			
40 atm	537,545	386,488	425,096	375,501
100atm	648,160	648,299	699,377	644,642
230atm	783,447	664,042	719,287	662,995

Service model found to be successful (FGC UES)

For example, in part of compressor equipment, unit costs are standardized for all branches and fixed at the pricing level of 2014, so the economic effect of 100 million rubles was recorded.