

A Software Complex Used to Engineer and Monitor Power Grids

Sibedge engineers have developed software solutions for the correct selection of electrical equipment parameters and monitoring the operation of large power grids.

\ Challenge

It is important in the electrical power industry to calculate the maximum allowed load on the equipment in order to prevent it from breakdown. A miscalculation may result in losses costing millions. An ideal solution was the virtual modelling of various scenarios in order to adjust the parameters correctly. Besides, it is essential to continuously monitor electric lines, collect statistics and track any accidents. Customer was developing a software complex to meet these two challenges. It was important to release the product as soon as possible, but the company could not afford to allocate the required number of professionals with the desired level of qualification. The customer came to us with a request to develop the software solutions they needed.

Industry

Energy

Location

Russia

Key points

- We quickly delved into the specifics of the project.
- We have created a software package for power engineers.
- Accelerated product launch.

Team

1 — Project Manager
1 — Analyst
4 — Back-end developer
3 — Front-end developer
1 — QA Engineer

Duration

6 months

Technologies

Python, JavaScript, React

\ Approach

Communication with client was based on the following principles:



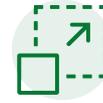
Quick Start



Transparency
of process



One-Hour
Response



Scalability



High level of trust

Immersion

A decision was taken to develop the software as two separate modules. The project required deep understanding of the specifics of electric power equipment operation, and a number of complex mathematical algorithms was to be composed for scenario modelling.

Modules

The first module included an extensive set of tools required to engineer complex energy systems and calculate allowed loads. The second one was a multi-screen control console for power grid operators. It used over 20 ways of displaying information on 25 screens combined into a large panel, so implementing a complex interface became a serious challenge for our front end developers.

Technologies

Both solutions are based on a server platform written in the Python programming language. A team of 10 engineers had been working at the software complex.

\ Result

The customer added both our modules into their software complex.

Parameters

The calculation and analysis part lent a good helping hand to power grid engineers: they could use it to automatically adjust load parameters, model in steps the grid's operation in various modes, and build interactive graphs.

Monitoring

The automatic monitoring system simplified life for power station operators. If an accident happens, the display on the screen changes, tables expand, fonts are increased, and additional information is outputted to capture the attention of employees.

Practical use

The software complex was successfully deployed in several large facilities. The number of accidents with expensive equipment decreased, and the response time to power grid outages improved, which resulted in a reduction of costs and energy losses.

Feedback

“ When choosing a partner, Sibedge’s expertise and reference played the most important role for us, as all our projects are specialized infrastructure solutions for demanding state companies. In the course of the project, we were able to build a transparent relationship based on the similarity of our views and values, which are trust, responsibility, and quality design.

I would like to mention the result of our joint work on the implementation of a system for diagnosing critical elements in the scale of power systems—the first one of its kind. During this implementation, we received very enthusiastic feedback from the end customer, which is not typical for this type of project in the area of complex specialized products. The appearance and functionality of the system made a strong impression, and it was specifically noted by a phrase invaluable to us: «Let’s throw away the rest of the software! ”

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