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TES s.r.o. | Pražská 597 | 674 01 Třebíč | Czech Republic



COMMISSIONING OF POWER SYSTEMS

The main purpose of the power systems' commissioning is to verify that the equipment fulfils the design requirements for operation and meets all the guaranteed safety requirements. Since the commissioning is an essential stage of the preparation of the plant for operation in terms of (nuclear) safety, it should be planned well in advance and in tight cooperation with the appropriate (nuclear) safety authority. The commissioning should be performed by a team of highly qualified and experienced professionals.

Our company was founded in 1992 by a group of experts who contributed to the construction and commissioning of all Czech and Slovak nuclear power plants during the nineteen-eighties. Our experience and expertise have been further extended and improved as a result of contributing to the commissioning of the Temelin nuclear power plant at the beginning of new millennium and reconstruction and refurbishment of other nuclear as well as fossil power units in recent years.

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Preparation of project documentation

During the project preparation phase we provide the assessment of specific parts of the project documentation. Based on the results of the assessment we submit relevant recommendations for changes or amendments. Upon the results of the design preparation phase we develop the commissioning documentation defining the programmes for commissioning stages and testing.

Commissioning of NPP		
Non-active	Active	
Commissioning programmes – pre-complex testing		
	Commissioning programmes – complex testing	
	Critical reactor and low-power tests	Power tests

Commissioning

Commissioning itself is a process related to the execution of individual tests according to the commissioning documentation including test preparation, proof of readiness of particular components or devices and the performance of testing, coordination and technical support and other necessary follow ups.

We usually take part in the commissioning as a member of the commissioning group in mutual cooperation and coordination with the suppliers and NPP operating personnel.

Technical support of commissioning

In the course of commissioning we perform additional measurements of technological and electrical components and systems while using other than standard built-in measuring instruments. It provides for a comprehensive check up aiming to prove the functionality of the tested component or system.

To facilitate scheduling of particular tests as well as mitigate safety risks when performing the implementation, we also provide computational support conducting predictive and verification thermal-hydraulic and neutronic calculations.

Evaluation of Commissioning

Immediately after the completion of each test we undertake an operative review and produce a summary final report on each stage of testing.

The operative review focuses primarily on the identification of possible non-conformances and their causes and proposes for repair of the plant component or system and/or modification of the commissioning programme to assure that the previously defined testing objectives are reached and acceptance criteria are met.

Summary reports give an evaluation of the objectives of each stage, a summary of the observations made, as well as an assessment of the appropriateness of the testing performed for subsequent plant operation.

The summary report may also include verification calculations and analyses especially when a particular regime can't be measured due to safety reasons.

Independent engineering supervision

Being a member of the commissioning group we usually carry all the aforementioned procedures as implementers. It is possible (and legislation in some countries even requires) that in addition to all cooperating parties within the commissioning group there must be an extra independent body present to oversee the commissioning procedures (usually performed in the form of technical support for national regulatory authority).

The company TES, thanks to its capital structure, keeps its independency on other subjects and therefore we are able to undertake the role of an independent engineering supervision body.