

Water/steam cycle support during commissioning

Increasing process performance and availability

MINIMIZING THE RISK OF CHEMICAL INCIDENTS

The water/steam cycle is a sensitive process that involves a high risk of chemical issues during its commissioning. Such incidents can cost up to 8 million euros in maintenance and capital expenditures. With the right support during commissioning, these risks can be significantly reduced.

INDEPENDENT EXPERT SUPPORT ENSURES FAULTLESS START-UP

Laborelec offers technical support during water/steam cycle commissioning, from pre-operational cleaning to first firing and first steam to steam turbine. In this way, we help customers achieve the following benefits:

> Enhance process efficiency

Conducting tests during the commissioning phase enables to track and trace leaks or impurities in the water/steam cycle. In this way, they can be addressed before affecting the efficient functioning of the process.

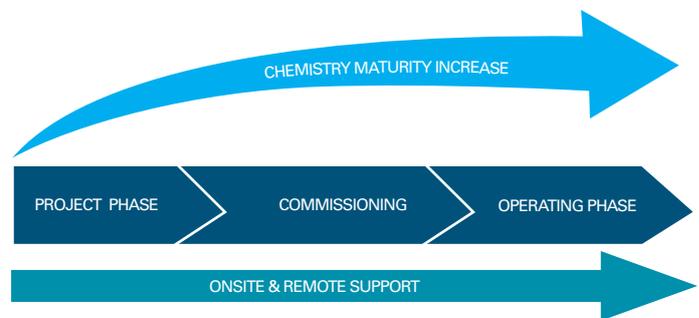
> Increase availability

Chemistry-related issues can cause delay during commissioning and result in long periods of downtime afterwards during operations. Addressing these issues before actual start-up helps maximize plant availability.

> Receive objective expert advice

During commissioning, Laborelec provides objective, technical support. Our independence from manufacturers guarantees advice that best meets the plant's needs.

WATER/STEAM CYCLE CHEMISTRY SERVICES



Laborelec is active in every step of the water/steam cycle value chain. This leaflet focuses on our activities during the pre-commissioning phase.

INTERNATIONAL REFERENCES

- > Working in close collaboration with our water/steam cycle experts, power plants in France, Italy, Hungary, Belgium, Latin and South America, Middle East, etc. avoided chemistry-related problems during commissioning.

Technical support, from pre-operational cleaning to start-up

In order to minimize the risk of water/steam cycle incidents, Laborelec offers a wide range of technical support services during project commissioning. We start with the review and validation of the commissioning procedures and then assist customers during the pre-operational cleaning, the first firing, and the first steam to steam turbine.

REVIEWING AND VALIDATING COMMISSIONING PROCEDURES

Following the right procedures reduces the risk of incidents during commissioning. Based on its long-term experience, Laborelec can evaluate commissioning procedures based on international best practices.

TECHNICAL ASSISTANCE DURING PRE-OPERATIONAL CLEANING

Laborelec offers technical support during the pre-operational chemical cleaning (PREOPIS) of the water/steam cycle equipment. Our goal is to ensure an adequate protection layer of the tubing during operations.

FIRST FIRING ENSURES PHYSICAL CLEANING

Our experts assess the effectiveness of the physical cleaning of the pipes through high-speed steam blow. This ensures that all small particles are removed from the pipes.

FIRST STEAM TO STEAM TURBINE

Before implementing the water/steam cycle, our experts conduct a variety of quality assurance analyses. During the steam turbine by-pass operation and the first steam to steam turbine period, our experts focus on monitoring steam quality, condenser performance, and feed water purity.

FIVE REASONS FOR YOU TO CHOOSE LABORELEC:

- > Wide range of technical competences in Electricity Generation, Grids, and End-Use
- > Increased profitability and sustainability of your energy processes and assets
- > Unique combination of contract research and operational assistance
- > Independent advice based on certified laboratory and field analyses all over the world
- > More than 50 years of experience

CONTACT

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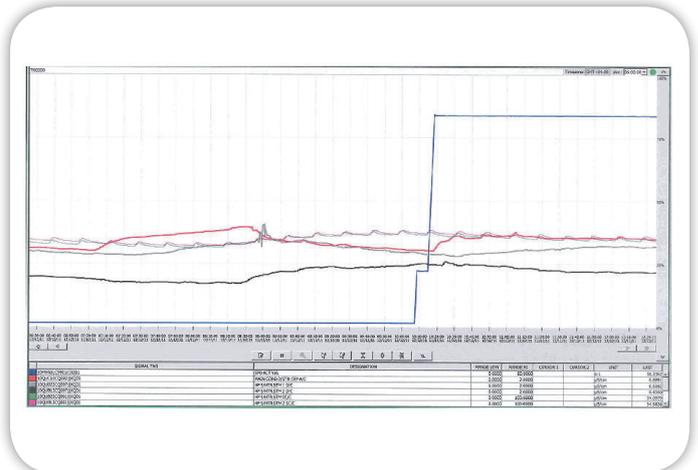
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ADDITIONAL SERVICES

Laborelec offers various additional support services:

- Degassed cation conductivity analyses, which can help decrease the water/steam cycle's start-up time
- Carry over tests to control the boiler demister's performance
- Audit during first months of operation



Our experts conduct quality assurance analyses during the initial start-up of the water/steam cycle, assessing water and steam purity for first steam to steam turbine.



Objective expert advice helps prevent the very costly incidents that can occur during the commissioning of the water/steam cycle process.



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