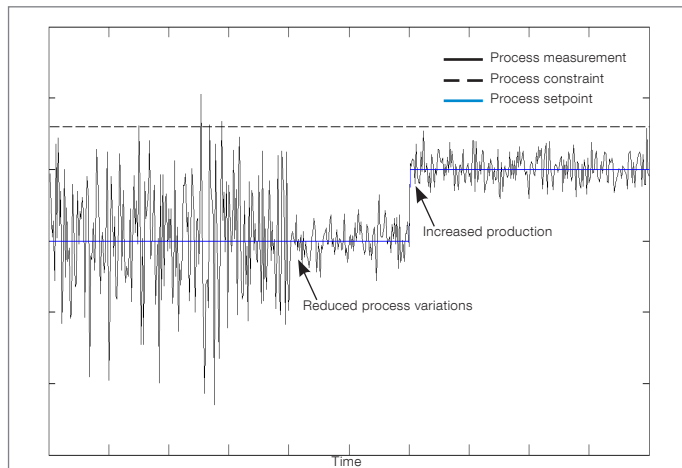


Performance Solutions and Services

Process Fingerprint Service

The Process Fingerprint Service identifies and prioritizes opportunities for increased throughput, efficiency, and uptime of your oil- and gas production asset. This is done by a structured approach to revealing the sources of process variations and upsets and the current handling of these. By reducing process variations the operational flexibility, plant regularity and integrity will be increased, while off-spec production, energy costs, environmental impact, operator stress, and equipment wear will be reduced.



Realizing opportunities revealed by a Process Fingerprint Service have shown to be very profitable. On a North Sea offshore plant where we conducted this service followed by an implementation service, the reduced process variations related to gas compression gave a 20 % reduction in fuel gas consumption. The reduction saved both the environment and energy cost, and at the same time increased the throughput.

What is in it for you? A prioritized list of possibilities enabling

- Increased plant regularity and integrity
- Increased operational flexibility
- Increased production
- Reduced off-spec production
- Reduced energy waste
- Reduced environmental impact
- Reduced operator stress
- Reduced equipment wear

Process Variations

Most plants suffer from variations in both product quality and throughput. Some of these variations are caused by external factors, e.g. slugging from wells/pipelines. Other variations originate from the process itself, e.g. sticky valves, poorly

tuned controllers, and start/stop of process equipment. An overall goal for the Process Fingerprint Service is find opportunities for reducing the variations by moving them to parts of the process where the negative impact is less or even insignificant, or, if possible, getting rid of them. When implemented, this will allow the operators to reduce their operational margins and then run the process closer to its limits. In turn, this makes it possible to increase the production and, at the same time, reduce the risk of shutting down and off-spec production.

Mitigation of variations

The Process Fingerprint Service finds ways to reduce the required operational and quality margins to increase the production, reduce the energy consumption, or mitigate other operational issues agreed upon. The Process Fingerprint Service consists of an audit of the operation of your plant based on input from senior operators, field engineers, operation department, and maintenance department of the plant. The audit uses high frequency historical process data to find the root cause of process variations, and suggests ways to mitigate them. The suggestions include specific changes to control strategies, operational strategies, and controller tuning based on a structured analysis.

The analysis uses a control strategy overview, high frequency historical process data, controller code, operator screens, piping & instrumentation diagrams, control logic diagrams, and in-house expert software tailored for the analysis. The use of all these sources of information ensures that the analysis is based on a correct and objective understanding of the operation of the plant.

Success criteria

We have learned that the most important success criterion is to involve operational personnel from the very beginning so that ownership of the resulting changes is established within operations. . Next, it must be emphasized how important it is to have historical process data available since our assessment is carried out based on such data. It is therefore of great importance in order to ensure a success that access to the historical process data is provided by the customer. The service therefore starts out by ensuring that all relevant measurements are logged with sufficient resolution. The third learning point is that when changes are implemented, the operational personnel must be trained and supported in the new way of operation.

Execution

Depending on the complexity of the production system and the availability of process data, a Process Fingerprint Service can typically be executed in a few weeks with one to two specially trained engineers from ABB - at least one of the weeks should be on your plant. ABB also delivers services and solutions for implementing and sustaining the proposed improvements revealed by the Process Fingerprint Service. This includes services and software for monitoring of control loop performance and operational performance.

Deliverables

The Process Fingerprint Service is essentially a service providing you with an objective view on how well the control logic residing in your control system is taking care of the process control objectives together with your operators. The associated deliverable is a report containing a list of prioritized opportunities based on estimated ROIs and the supporting data as well as a proposed realization plan.

References

We have conducted more than 60 Process Fingerprint Services for oil- and gas production assets since 2000 and at more than 20 different plants. The Process Fingerprint Service and



associated implementation services have included process control audits, process control tuning, process control strategy design, and maintenance of process control strategies as well as tuning strategies. During these projects, our team has gained thousands of hours worth of control room experience which forms our key experience base together with deep insight into analysis and shaping of process dynamics.

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