

SEN

inca Sensor

PROPERTY ESTIMATOR TOOLKIT

KEEP PRODUCT QUALITY IN-SPEC

Quality Control is currently realized by online analyzers and regular lab analyses. Yet online analyzers are expensive, often not available, and costly in maintenance, while lab samples are time-consuming and are frequently taken at a 4-hour interval, which is too long for closed loop quality control.

A better alternative is soft sensor technology, which allows you to estimate product quality parameters in real time, so that you can start controlling quality in closed loop. This technology gives the plant operator and the control system the possibility to react faster to disturbances and keep product quality in-spec.

TESTED!
Produces
prime quality

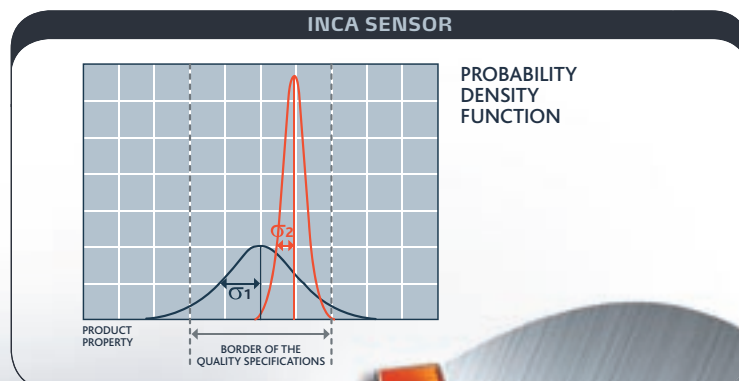
Applications of soft sensors

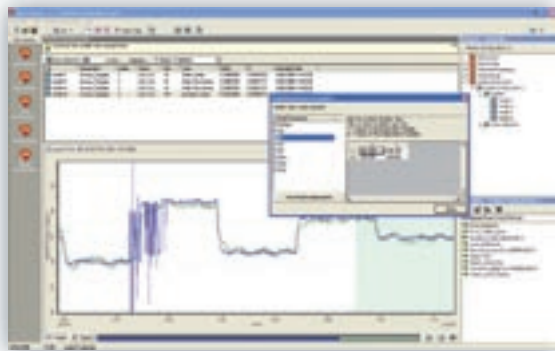
Soft sensors give you an estimate of parameters (such as these below) every second, and allow you to control them in real time:

- Polymer densities
- Polymer melt indexes
- Viscosity parameters
- Concentrations of products at the outlet of a reactor, distillation column or blender
- Color parameters
- Exhaust concentrations (NOx, CO2, dioxines, opacity, etc.)
- Very large flows (e.g. cooling water of a large power plant)
- Plant efficiency.

3 REASONS TO USE SENSOR

1. **INCA Sensor allows you to perform immediate quality control.** A combination of INCA Sensor and an MPC controller like INCA MPC helps you achieve the right balance between quality and production costs (see figure).
2. The blue PDF curve below shows how a typical plant is currently operated. The average quality parameter is located exactly in the middle of the quality specification region. With soft sensors and a powerful MPC controller like INCA MPC, the PDF curve narrows. This allows the operator or the INCA MPC controller to look for **an average quality parameter realized at lower production costs.**
3. INCA Sensor is based on linear and non-linear identification techniques, PLS, genetic algorithms and fuzzy logic. **INCA Sensor is an economic alternative to expensive online analyzers and lab tests** which are less accurate and require higher maintenance costs.





SENSOR AT WORK

Pre-processing

- **File import:** INCA Sensor retrieves data from databases very easily and supports all standard database interfaces (Excel, Text, Access, etc.)
- **Scaling:** used to increase the performance of the powerful optimizer that is behind INCA Sensor.
- Trend removal
- **(Non-) Linear operations on the signals:** before signals are sent to the offline modules, they can be processed in (non-) linear modules
- **Resampling:** enables synchronization of all process and lab signals
- **Filtering:** filter noisy signals before they are processed in other Presto modules.

Offline tools

- **Variable selection:** Helps you make a selection of input signals from the huge pool of process data, based on the desired accuracy
- **Model design:** Several techniques are used to develop the inferential sensor such as generalized non-linear modeling; PLS; fuzzy logic; graphical analysis and evaluation.

On-line tools

- Communicate with all common RTDB's, PLC's and DCS systems
- Fully configurable, requires no programming
- Real-time pre-processing and spike rejection
- Operator interface to update lab measurements
- Prediction calculation and update
- Generate confidence levels for the predicted outputs, indicating the reliability of the predictions
- Fully configurable alarm generation
- INCA Sensor operates as a stand-alone toolkit or within the IPCOS Integrated Solutions Platform environment.