

## NID – Non impact diagnostics of industrial devices

Do you want to take maximum advantage of your industrial system's potential? Are you looking for a way to minimize its failure rate?

Take the opportunity offered by diagnostics of the state and characteristics of industrial devices with no operational intervention – non impact diagnostics.

### What is hidden in the NID abbreviation?

NID – non impact diagnostics is a modern method of detection and evaluation of operational states and characteristics of industrial devices. Non impact diagnostics means:

- **diagnostics** – identification of state
- **non impact** – no operational intervention

**Non impact diagnostics** is a method of identification of a system's state based on the evaluation of process data collected during standard operation, that is, without operation impact.

### Where can NID be used?

NID can mainly be used in continuous operations of industrial devices where every incidental shutdown causes operational problems and related financial losses. In such devices it is necessary to be particular about the correct system state diagnostics and about ensuing servicing and maintenance planning. This is the only way to ensure safe and reliable system operation, leading to maximum operational efficiency.

NID has been designed mainly for:

- power plants, heating stations and cogenerating power stations
- energy and gas distributing systems and networks
- industrial plants with continuous operation

### Which devices can be diagnosed using NID?

Industrial complexes or parts of industrial systems, such as:

- active and passive elements of control circuits (dampers, valves, pumps, fans, ballast tubes...)

- technological complexes (fuel-pulverizing mills, steam super heaters, heat exchangers, ...)
- functional complexes (boilers, generating units, hot-water systems, ...)



### Which advantages does NID have?

NID uses records stored during standard device operation – it is not necessary to carry out operational, time or financially demanding tests.

NID works with ordinary process data – it is not necessary to install special measuring devices.

NID enables continuous monitoring of the development of the device's characteristics and with this it maintains conditions for the early identification of changes and prevention of fault occurrences.

The standard process of NID application on a diagnosed device includes the following points.

- Discussion of application purpose of NID, form and range of information available
- Discussion of technical conditions and options of stored process data
- Selection of suitable segments of collected data
- Processing of transferred data and information.
- Evaluation of results, definition of conclusions and recommendations
- Transfer of results, discussion of results with the device owner
- Technical help with the implementation of recommended countermeasures, optional check of expected results.

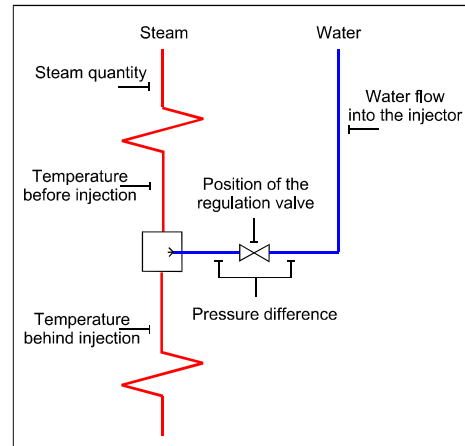
NID can be used on the chosen device once or repeatedly.

**Single NID application** is used for defining the actual state of a device with knowledge as a necessary condition for maintenance of the device's optimal state and its maximum commercial utilization.

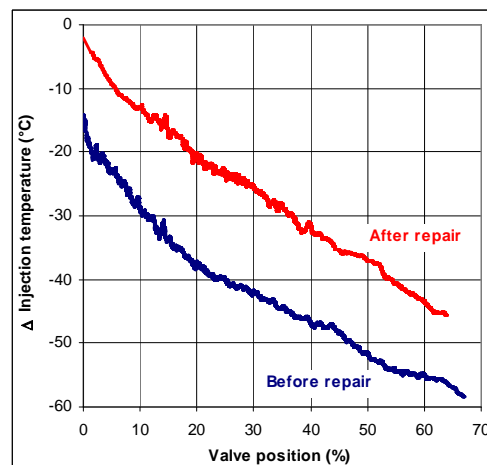
**Repeated NID applications** enable monitoring of the development of the state (wear) of a device and maintaining conditions for optimal process and maintenance planning. Repeated NID applications before and after device repair can also be used for the evaluation of repair quality and success. When NID is applied repeatedly, only chosen points of the procedure are used, NID becomes a routine operation and can be carried out fast and at very low cost.

### Example of NID use

To illustrate NID capabilities, here is the NID application when looking for causes of insufficient quality of steam temperature control. The solution is based on the technological diagram and defined process measurements.



Using NID, it was diagnosed that the state of the injection valve was unsatisfactory as there was significant leakage, causing problems with reaching the temperature and with the quality of output steam temperature control (before repair). After repair, using NID methods again, the good condition of the valve was diagnosed – the repair had brought the expected result.



NID procedures are used in the OSC Company as a routine operation for the identification of properties of devices which are necessary for other plant work. Targeted NID procedures are carried out at selected power plants of the Czech Power Grid.

OSC, a.s., company covers with its activities the area of production and distribution of electricity and heat. The Company provides a wide spectrum of engineering services, repair and consultancy services, and supplies complex, key ready sets of technical means for up to date control systems, systems for data and information processing and transfer, and simulation systems; the Company also develops special electronic elements and devices.