



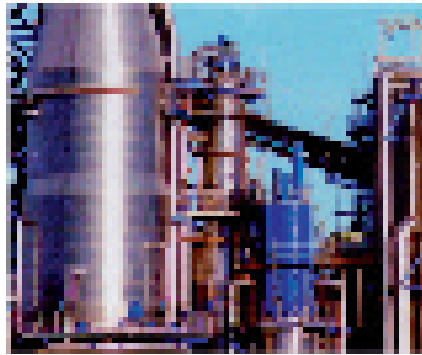
NOVE
The standard for reliable sampling

NOVE - Standard for reliable

Over 17,000 consistency samplers for furnish management

► Reliable sampling is one of the greatest challenges in consistency control. In the 1980s this problem was studied in extensive customer tests. Development work based on the results of these trials created a new, revolutionary sampler. Today, NOVE and NOVE H are the “de facto” standard samplers in numerous pulp and paper mills around the world.

The three crucial challenges in sampling are repeatability, representativity, and safety. Ball valves are commonly used for sampling. However, mill experience and several independent performance tests have demonstrated that ball valves are not a good choice: the



consistency of the sample tends to be lower than the actual process consistency. The reliability of sampling is also impaired by many factors: water layer along the pipe wall, flow rate variations, the influence of testers, process and temperature, splatter, plugging, etc.

High repeatability

An independent university study showed that it takes no less than eleven ball valve samples to reach the same confidence level as with two samples provided by NOVE. Varying process conditions as well as human factors have a considerable effect on sampling with ball valves. In contrast, NOVE is insensitive to flow variations and reduces

variations caused by operator skill and sampling practise.

Consistency samples are the only standard when calibrating consistency transmitters and evaluating their operation. Poor sampling complicates and slows down the calibration procedure. It also compromises the correlation

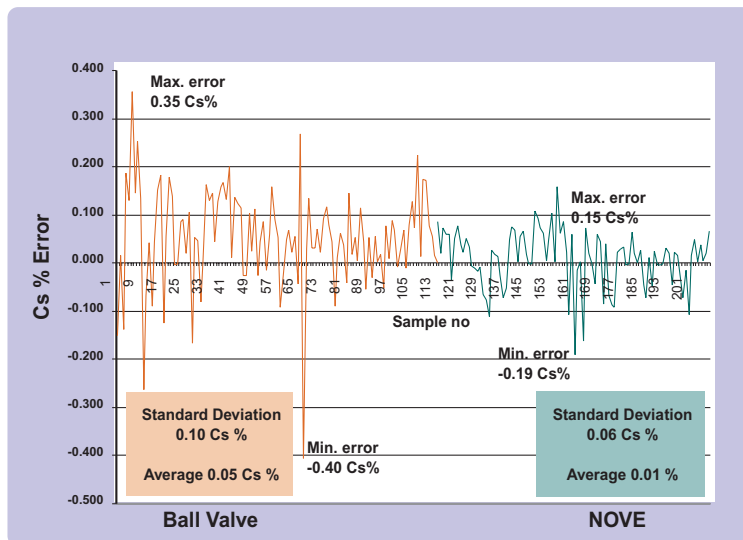
and lowers operator confidence thus requiring more frequent testing and follow-up. In addition, process optimization is based on reliable measurement and controls. Therefore, all actions that contribute to better consistency control are worth the investment. This is why NOVE is the sampler of choice for thousands of users.

Never forget safety

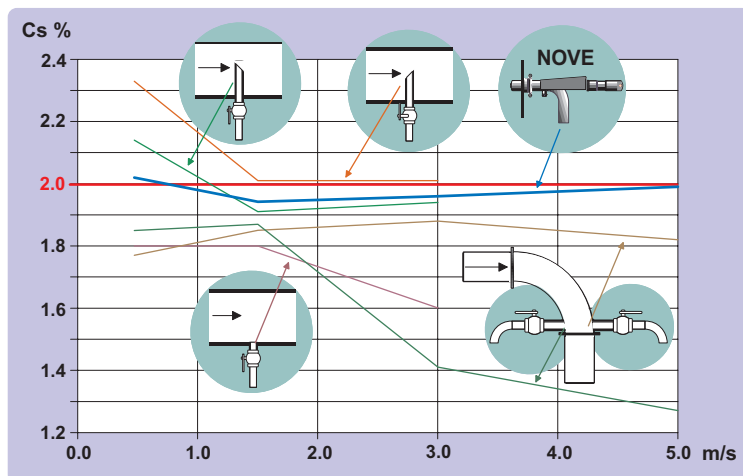
There are also other methods than ball valves commonly used for sampling. There are poppet valves with a very large opening, and multi-turn plug valves which not only yield a less than representative sample but provide inconsistent results, as they are greatly influenced by the tester. As is the case with ball valves, safety should be a major consideration when trying to operate these valves.

The high process temperatures and pressures can make sampling dangerous when using conventional valves are used for sampling. The piston stroke of the NOVE is adjustable, providing exactly the required flow rate for each application. Moreover, the sample flow terminates where the sample can be handled without unnecessary risk. The NOVE has been designed to take representative samples safely.

sampling



This trend shows the difference in mass-balance calculation using a ball valve (red) and the NOVE sampler (green). Over 50% better result was achieved using the NOVE sampler.



The figure illustrates the flow dependence of different type of samplers. The NOVE sampler is the only one with high repeatability over the wide flow range.

Representative sample

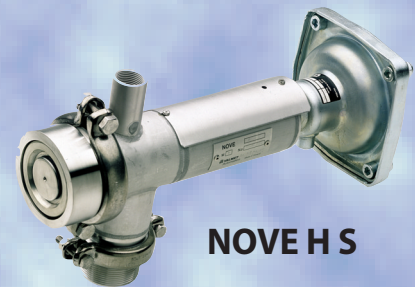
Sampler performance must not be affected by variations in process conditions. It must also allow installation in the best possible location for optimum calibration. The ideal construction of the NOVE sampler and its backflushing feature combine to ensure representative sampling year after year.

When the process conditions so require, the pneumatically operated NOVE P is the solution for otherwise inaccessible locations. Thus the NOVE sampler can always be installed in the place that provides the best sample.

For all pulp grades

The NOVE sampler is suited for screened pulps up to 8% Cs. At higher consistencies (up to 18% Cs) and unscreened pulps, the patented NOVE H is the sampler of choice. Safety of operation and non-plugging sampler head construction were leading considerations in the development work, and accessories such as the MUKI sample collection pot ensure easy and safe sampling even in difficult applications (e.g. digester blowline).

Intensive research and development work for the benefit of our customers has made the NOVE sampler family the market leader in pulp and paper processes. The delivered samplers are solid proof of our success in this challenging area.



Smart sampler

Consistency transmitters are getting smarter all the time, and this opens new possibilities for closer communication between the transmitter and sampler. Today's NOVE samplers can be equipped with an open/close detector which enables automatic synchronization of the sampling operation: the transmitter reads when a sample is taken, and stores the measurement result for later analysis or calibration. This function contributes to superior consistency management and process control.

Example of NOVE installation.

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- 1 Manual switch for sampling
- 2 Sampler open/closed detector (option)
- 3 Backflushing water valve
- 4 Flushing valve
- 5 Funnel