

Quality Control and Cost Reduction for Pharmaceutical and Cosmetics Plants

Industry: Pharma and Cosmetics
Product: FT-NIR Analyzer (NR800)

Introduction

For the management of raw materials in the pharmaceutical and cosmetics industries, a manual titration method has been used to measure acid value (AV), water content, and iodine value (IV). As quality control is most important in production, this manual measurement technique presents many difficulties. Each item must be calibrated for the manual measurements, and reagents and sample pretreatment are required. In addition, their analysis is time consuming and it is difficult to maintain accuracy. Yokogawa developed the NR800 FT-NIR Analyzer to address these needs. With this system, measurements are reliable and stable, and it is much easier to control quality.

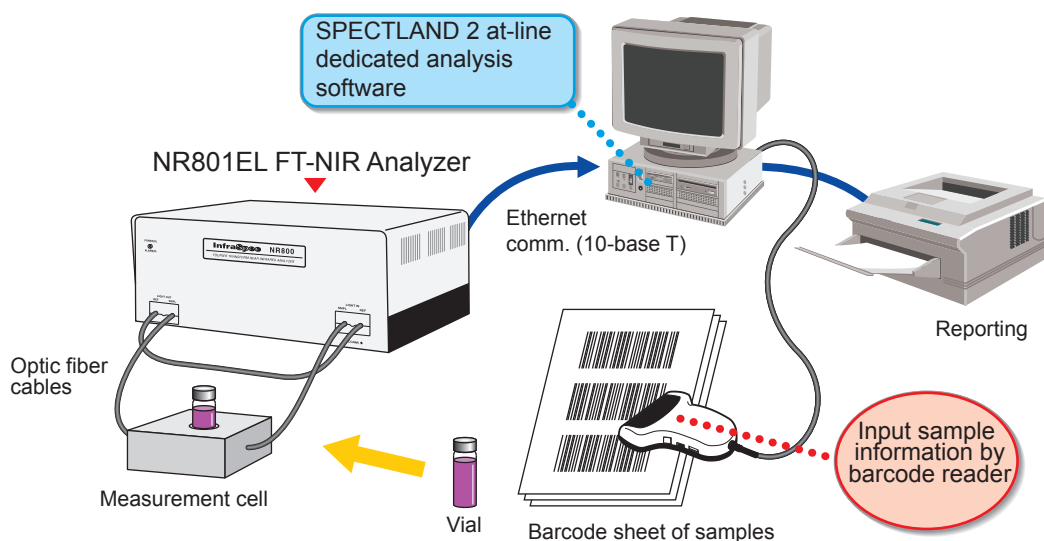
Expected Benefits

- Ensures stable, reliable, and continuous measurement
- Reduces costs and time for analysis
- Eliminates manual measurement errors
- Reduces operator workload for storing and printing out analyzed data

Process Overview

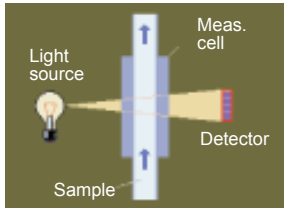
A system configuration example for vial cell measurement is shown below. The InfraSpec NR801EL is the at-line model of the NR800 series FT-NIR analyzer. It employs exactly the same core system hardware (interferometer and detector) as the NR800 process model.

This model transfer capability will drastically cut the model implementation time and cost at the project stage while providing for more flexible and efficient model upgrades during routine operations. Software specially developed for the at-line model, SPECTLAND 2 at-line, will make operation easier and more user friendly, improving work efficiency in at-line and laboratory measurement applications.

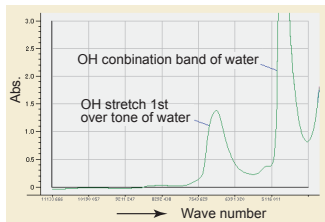


Measurement Procedure

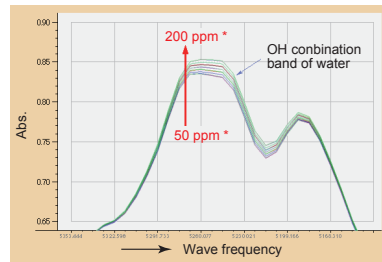
Sampling → Spectrum acquisition → Analysis by calibration model



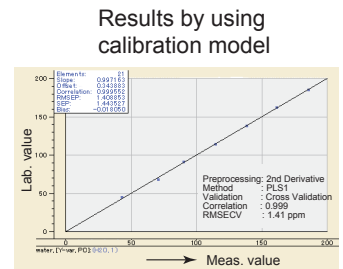
Detector diagram



Example of moisture spectrum



* moisture quantity



Solution Details

Comparison Data

Manual measurement

Measurement Items	Conventional	Reagents	Analysis Time
Iodine Value (IV)	Titration	Required	1 hour
OHV	Titration	Required	2 hours
Acid Value (AV)	Titration	Required	20 min.
Moisture	Titration	Required	20 min.

Advantage of the NR800;

- Substantial cost and time reductions for measuring raw material oil because of simultaneous multi-component measurement
- Improved quality control (QC)
- Easy measurement and storage of data
- Easy sending data to PC

Measurement with the NR800

Measurement Items	Reagents	Analysis Time
4 properties at once	Not required	1- 2 minutes

About NR800

The NR800 is a FT-NIR analyzer offering unparalleled reliability and stability for a wide range of process and laboratory applications. Its high wavelength resolution, outstanding accuracy, and wide scanning range deliver a new level of process information, opening up new possibilities. Direct transfer of a calibration model from the laboratory to the process, or among processes, is also possible. And of course, ease of operation and user-friendly software are key design concepts of the NR800.

Features of NR800

- Stability and reliability
- Single detector throughout the wavelength range
- High resolution
- Calibration model transfer
- Double beam configuration
- Up to 4 multi-stream channels with no optical multiplexer

