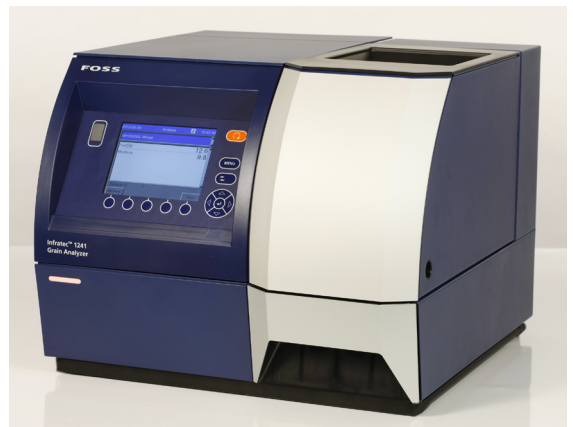Infratec™ 1241 for analysis of grain and flour
Always a step ahead of evolving industry needs

The Infratec™ 1241 – designed with your daily operating conditions in mind.

New gains in analysis efficiency

For many working in the grain and flour industry, the Infratec™ 1241 will need little introduction. Always a step ahead of evolving industry needs, the Infratec has brought the advantages of routine protein analysis to thousands of businesses – advantages including enhanced product quality, effective segregation of raw material for improved profit and the ability to run payment systems based on an objective quality evaluation.

That's why the new Infratec 1241 offers you the ultimate solution for grain and flour analysis. Proven, reliable performance and leading functionality make Infratec the right choice for your evolving grain and flour analysis demands.

Accuracy and simplicity for any type of business

A key principle behind the new Infratec is that it should be simple for any business to take advantage of rapid reliable NIT analysis – a goal achieved with the ready-to-use ANN calibrations, simplicity of use and availability of qualified local support staff. The seamless transferability between units also makes it simple to expand your operation into a network of instruments for optimal quality assurance.

Taking on your latest demands

The Infratec is a secure investment with the opportunity to expand your capability over the coming years. You can update your Infratec with up to 3 different modules. Thanks to this modularity it is easy to switch between different sample types: whole grain, flour, meals, liquids, tissue, etc. On top of that Infratec has expanded wavelength range (570 - 1050nm) that allows analysis of colour in grain and flour.

Quick startup of your grain analysis

Just plug in the instrument to your power supply and you are up and running. No experience is needed. Behind each instrument is a high-accuracy unrivalled ANN calibration that performs unaffected by sample temperature changes, ensuring accurate results from the very first analysis.

Versatility and simplicity: the Infratec™ 1241

Full flexibility

The Infratec base module can be expanded with up to three additional modules:

- The **Test Weight Module** allows rapid and accurate volume weight determination of the grain. Test weight is a widely recognized specification in grain grading because it is related to the degree of quality, and is often used as an index of milling potential. Moisture content, climate conditions, kernel size, density and packing factors affect test weight. The volume weight can also be used as a silo management tool to optimise the storage space in the silo.

- The **Flour Module** allows the flour mill to obtain critical information about the wheat blending process and milling with a simple and rapid analysis of the flour. Just fill up the cup with flour and place it into the hopper, in less than 1 minute your will get Moisture, Protein, Wet Gluten, Water Absorption and Ash results. This information provides your with full knowledge required to take an early action if needed. In the Oilseed crushing industry, the flour module will help ensure that your extraction process is within target, by analysing finished soymeal.
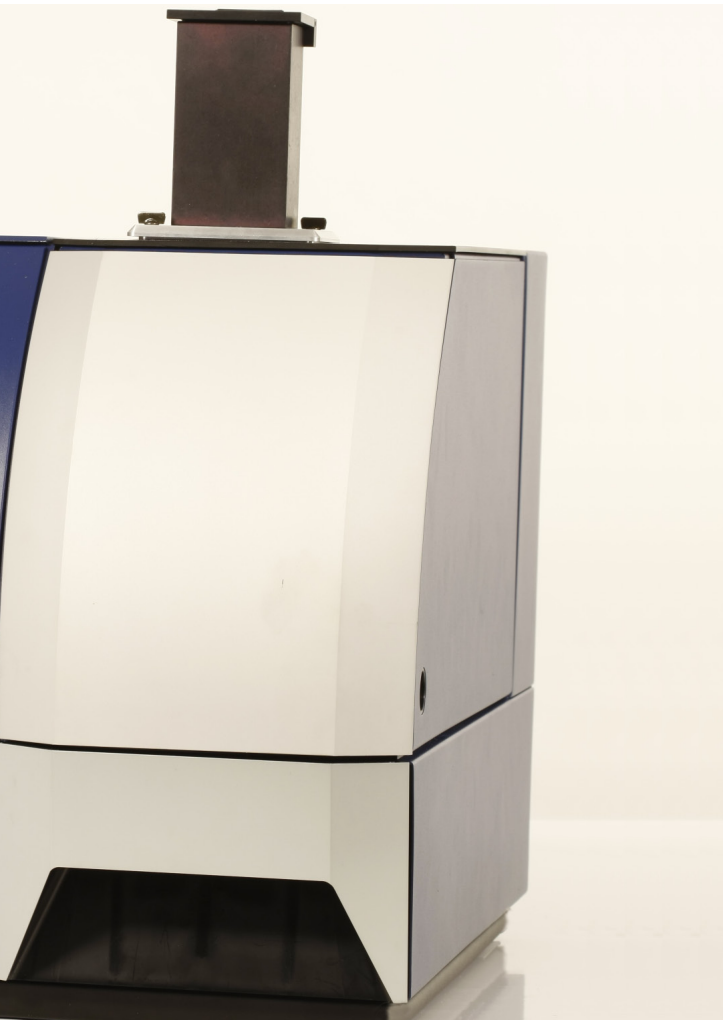
- The **Sample Transport Module** is the most versatile on the market. You can measure products like high moisture green malt, plant tissue, sunflower meal, spirits and beer, from a sample in some cases as small as one ear of grain. Everybody, from plant breeders to breweries can benefit from the Sample Transport Module - without destroying the sample!

Installing the Test Weight Module in the Infratec™ 1241 adds volume weight to the parameters you can measure - all at once!

Infratec™ - the only investment that grows with your demands

advantage

Infratec™ 1241 equipped with Sample Transport Module

Infratec™ 1241 Flour Module

Ease of use and speed of analysis

Virtually anyone can make accurate measurements with Infratec™ 1241. Just pour the sample into the hopper, press the analyse key and read the result in less than a minute. Analysing different sample types is easy – just select the type and continue to run. The instrument automatically takes care of all the settings required for correct results, and the considerably higher throughput contributes to increased production efficiency.

Simple operation
– even untrained personnel can achieve consistent results:

1. Just pour the sample into the hopper.

2. Press the analyse button.

3. Read the result in less than one minute.

The world's leading grain protein tester

Infratec™ employs Near Infrared Transmission (NIT) technology to deliver precise analysis results quickly with no sample preparation.

Officially approved

Infratec™ is officially approved and established worldwide as a standard for determining Protein, Moisture, Oil and Starch in wheat, barley and other grains and oilseeds. Ready-to-use calibrations for Infratec are in use in all major grain producing countries.

FOSS is a pioneer in the development of both Near Infrared Reflectance (NIR) and Near Infrared Transmission (NIT) technologies and has more than 20 years experience. The ready-to-use ANN calibrations will allow you to put your Infratec to work without delay. Simple, out-of-the-box installation ensures a fast return on investment and stability of instrument over time minimises operational concerns. FOSS is the leading supplier of NIR/NIT analysis technology with acceptance and approvals from a wide range of commercial and governmental authorities.

Building on a proven concept

The criteria that has made the Infratec the leading grain analyser are:

- *Whole grain analysis with no sample preparation*

- *Accurate analysis*

- *Transferability of calibrations between instruments*

Meeting these demands has made the Infratec the recognized standard for grain testing. New Infratec models are backwards-compatible with the older calibration databases. In this way, databases have continuously been expanded and today the largest ones contain more than 50000 samples - a strategy that continues with the new Infratec 1241.

Milestones in FOSS grain and flour analysis

1987: Introduction of Near Infrared Transmittance (NIT) with PLS calibrations

1989: Approval by Federal Grain Inspection Service (GIPSA – FGIS) for official testing of Protein and Oil in soybean

1990: Approval by Federal Grain Inspection Service for official testing of Protein in wheat

1991: Introduction of Quality Assurance through instrument Networking

1996: Artificial Neural Network (ANN) calibrations launched

1999: Global ANN calibrations introduced

2000: Network support via the internet

2001: Physikalisch-Technische Bundesanstalt (PTB), Germany, approved the Infratec™ 1241

2002: Establishment of flour networks
The French Labatoire National d´ Essais and GIPSA (USA) approved the Infratec™ 1241

2003: Official approval for protein testing in Australia by the National Measurement Institute (NMI)
EU approval of Test Weight Module according to the European Council Directive 71/347/EEC for determination of volume weight in grain.

2004: NTEP adds Protein and Oil to the existing approval for Moisture covering corn, wheat, durum wheat, rice, barley, soybeans, oats and sorghum.
GIPSA – FGIS approves FOSS ANN calibrations

2006: Official approval for protein and moisture testing in wheat by the Ministry of Agriculture in Japan

2007: New Infratec™ 1241 launched with improvements including 25% higher throughput, increased wavelength range and simplicity in data transfer to other systems.

2010: New Infratec™ 1241 design and new software for internet networking (MOSAIC)

Proven performance ...

Long term instrument and calibration stability

Infratec™ gives accurate results over many years of use. Other analysers need frequent re-adjustments in order to keep their accuracy level. Not so with the Infratec 1241. At the heart of the analyser is a patented stabilising technique that ensures that calibrations are transferable between instruments. This ensures that Infratec delivers unquestionable accuracy over years of use with an absolute minimum of re-adjustment, regardless of location and operating conditions.
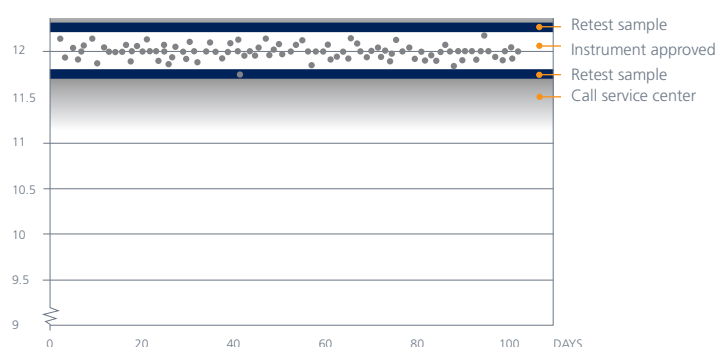
Proven instrument stability during 100 days of operation, with no adjustments made.

Infratec 1241 and the global ANN prediction model for moisture and protein in wheat and barley are continuously validated according to ISO 12099.

Unaffected by temperature

Grain is analysed during widely varying conditions, from hot summer days during harvest to deliveries during winter. Regardless of conditions you can plug the Infratec 1241 unit in, turn it on and after a 6 minute selftest you'll be producing accurate results. The accuracy is unaffected by sample and ambient temperature changes. Thank's to Infratec's patented stabilising technique you get correct results under all conditions.

12°

-4°

PROTEIN %			
WHEAT SAMPLE	INFRATEC™		
	- 5ºC	+5ºC	+24ºC
1	10.5	10.5	10.6
2	11.5	11.4	11.4
3	12.5	12.4	12.3
4	13.5	13.4	13.3
5	15.4	15.4	15.4

*Consistent accuracy is the basis for profitable grain trade*
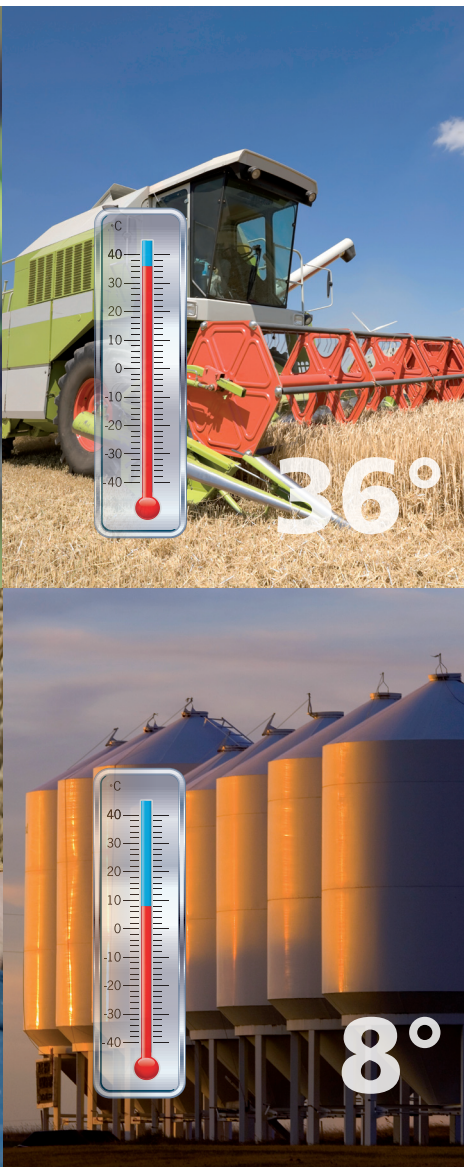
Why is Infratec™ 1241 NIT so good?

Near Infrared measurements of grain have shown superior performance when measuring in transmittance mode instead of reflectance mode. Transmittance mode measurements are made in a lower wavelength range, 850 – 1050 nm, whereas the primary information for reflectance measurements is obtained between 1100 – 2500 nm. The higher energy level of the light in the lower range allows for deeper penetration into the kernels, so not only the surface but also the inner part of the kernel is measured. All of this allows a larger sample volume when transmittance is used, thereby giving a superior representation of the sample analysed.

Advantages:
• Larger sample volume
• Measure kernel, not just surface
• Modulation of NIR signal
• Deeper penetration
• Low influence of particle size
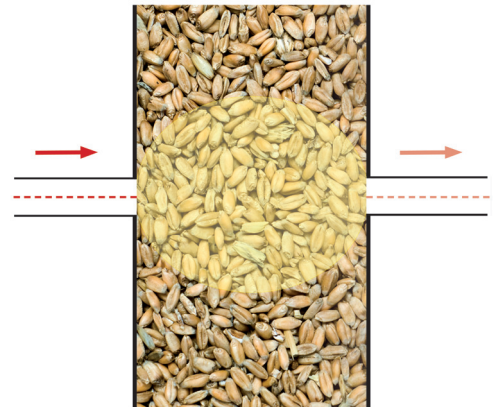
Transferability from instrument to instrument

Infratec 1241 delivers true transparency between instruments. All instruments are supplied with an accuracy within ± 0.1% Protein from the master instrument. Over years of use more than 90% of the instruments remain within these limits without the need for yearly adjustment. This secures correct grading of the grain at all times and keeps support costs at a minimum.

	1241		REFERENCE
°C	+40°C	+45°C	
	10.7	10.8	10.7
	11.3	11.3	11.5
	12.2	12.3	12.5
	13.2	13.4	13.4
	15.3	15.5	15.4
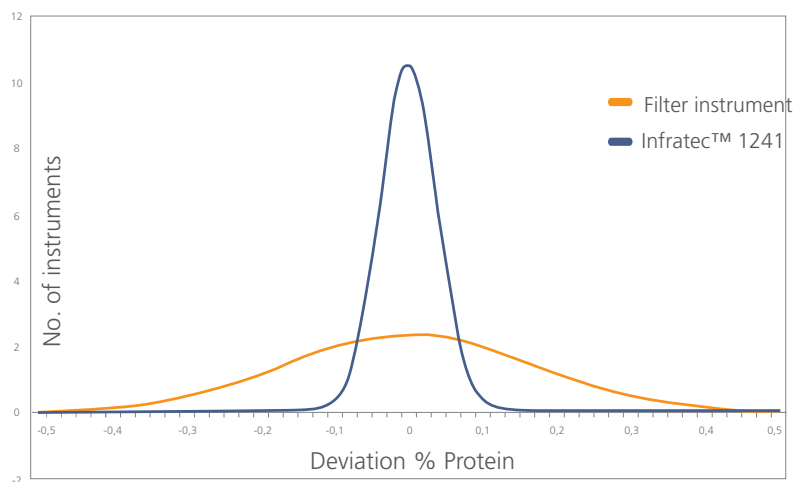
A wide range of applications

Infratec™ – supporting industry trends

A wide range of applications covering all steps in the agricultural handling chain have been developed by FOSS as well as by our customers. Analysis is simple for all sample types. Most grains or oilseeds can be analysed directly without any sample preparation. Flours can be analysed using a simple flour cup procedure. Contact FOSS to discuss your demands.

Parameters:

Moisture, Protein, Starch, Test Weight, Oil, Spirit Yield, Linoleic Acid, Linolenic Acid, Alcohol, Original Extract, Real Extract, Ash, Water Absorption, Wet Gluten, Zeleny, and more on request …

Plant Breeders/Seed Companies:
Small samples of seeds, tissue analysis, color, etc

Grain receiving stations:
Wheat, durum wheat, barley, corn, malt, green malt, oats, rye, triticale, sorghum/milo, rough rice, brown rice, milled rice, lentils, faba beans, chick peas, green peas, lupines, etc.

Flour Milling:
Wheat flour, semolina, soy meal, ground wheat, middles, rice meal and corn meal.

Oilseed Crushing:
Soybean, rapeseed/canola and ground sunflower.…

Malting, and Biofuel:
Barley, Malt, Green malt, DDGs ….

Other industries; brewing, baking, pasta, starch extraction:
Beer, whiskey, spirits, wort, cooked rice, pasta, etc. …

Infratec™ grain networks
– quality assurance made easy

Payment analysis must deliver unquestionable reliability and uniformity, regardless of location and operating conditions – a requirement that networked Infratec™ instruments have effectively addressed by giving identical measurements, wherever they are located. Therefore all major grain producing countries now use FOSS ANN calibrations and the Infratec system.

An Infratec network comprises a group of standardised instruments controlled from a Network Administration Centre ensuring that all units will give the same performance independent of operator or location. The master instrument is also used to monitor the accuracy of the calibrations. The entire network can quickly be updated or upgraded with new calibrations from the centre.

Calibration costs are reduced, administrative routines are simplified, and duplication of effort is eliminated. Infratec networks have been recognised by both commercial and governmental authorities from the introduction of the first network in 1991, and today more than 7000 Infratec instruments are linked in global networks.

Contact FOSS to learn more about how an Infratec network can be adapted to your needs.

MOSAIC Remote Software

MOSAIC is the latest in intelligent remote support. The MOSAIC concept is based on centralised configuration, support and surveillance. All you need to do is run your samples and leave the rest to FOSS or your own central team of specialists. Completely independent Mosaic networks can also be set up and managed by customers wanting to take advantage of the Mosaic software without the added services from FOSS.

It eliminates complexity at instrument level and allows a central specialist to monitor and manage remote instruments. Automated surveillance alerts and new reporting options ensure that each part of the analysis process is monitored, managed and optimised at a level of detail and accuracy not previously possible. Mosaic also presents all collected data in a way that makes it possible to react instantly on current data.

Although designed for network connection, Infratec 1241 retains all its benefits when working as a stand-alone unit.

About FOSS

FOSS produces and supports dedicated analytical solutions using patented techniques and approved methods.

Your partner in analysis, FOSS has a long and proven track record in automated grain quality analysis that is unique to the industry. We are the only supplier to offer you a complete range of rapid analytical systems with indirect and reference methods. Solutions are based on near-infrared transmittance and reflectance techniques, wet chemistry or digital image analysis. FOSS can provide you with a total solution for analysis and quality control of agricultural products throughout the production chain – from on-line process quality control to routine analysis in the reference laboratory.

New instruments, applications and calibrations are continuously developed with a constant eye on emerging customer demands. That's why products are developed in close cooperation with key customers, recognized research institutes and through industry-based technology partnerships. Today, over half the NIR/NIT analysers for agricultural applications in use around the world are provided by FOSS.

Products are sold through FOSS sales and service companies in 27 countries. In the rest of the world our products are marketed and serviced by some 75 highly-qualified distributors. You are guaranteed complete customer support including extensive training according to your requirements. When you invest in a FOSS solution, your investment is secure.