

The Thermo Scientific NDT[®] Software Suite

A Simply Superior Solution for Reviewing, Comparing, Managing and Reporting Portable XRF Data



Program with a Purpose

Following a decade of advances in handheld x-ray fluorescence (XRF) technology, modern XRF instruments provide operators with much better test data and the ability to take more measurements over a given time than ever before. These improvements also result in operators needing to manage and report much higher volumes of data. Meanwhile, educational backgrounds and experience levels of portable XRF users have become considerably more diverse as handheld XRF instruments have become increasingly easy to operate and capable of meeting the needs of an ever wider range of nondestructive testing applications.

Complex testing scenarios, lot-centric manufacturing processes, government regulated testing and the diverse requirements of compliance certifications make it essential for today's analytical instruments to provide flexible, sophisticated and easy-to-use data analysis and presentation tools. Thermo Scientific NITON XL3t and XL3p XRF analyzers provide users with the most powerful data management capabilities ever created for use with portable XRF instrumentation.

Complete Software Suite

The NITON Data Transfer (NDT) Software Suite features a set of data management tools to meet the requirements of different testing applications, including metal alloy analysis for manufacturing and scrap metal recycling; RoHS, WEEE and other compliance testing; mineral exploration and mining; environmental site assessments; and lead paint inspections.

NDT provides the following discrete modules for different data management tasks:

- Instrument setup
- Downloading and managing data
- Managing user passwords and permissions
- Comparing and analyzing sample x-ray spectra
- Designing and printing reports and certificates
- Creating and editing metal alloy grade libraries
- Developing empirical calibrations
- Installing software upgrades

Anyone familiar with Microsoft Windows™ will have little difficulty navigating through these software modules.



The Thermo Scientific NITON XL3 Series—Simply Superior XRF.

Bulletproof Data Integrity

As the volume and scope of portable XRF testing have increased in recent years, demands for defensible data have also grown. XRF instrument users in many industries need to document the quality and integrity of the data produced by their instruments to comply with governmental regulations and/or minimize potential testing liability. Thermo Scientific NITON NDT software and the proprietary operating system used in NITON XL3 analyzers have been designed to preserve and protect the data from each sample analysis, ensuring that it cannot be unintentionally or intentionally compromised.

All data contained in NITON XL3 Series analyzers is stored in binary format using proprietary data structures: readings are stored with extra numeric data that determines the structural layout of each reading; individual readings are stored with different layouts requiring varying quantities of memory; there are no repeat patterns in the binary files, so it is impossible for someone viewing the binary data to determine where one reading ends and another reading begins; once data is transferred from the NITON XL3 instrument to a PC, the .ndt file is stored in the same binary format to ensure data integrity; and NDT software does not allow users to alter results in any way.

Ultimate File Flexibility

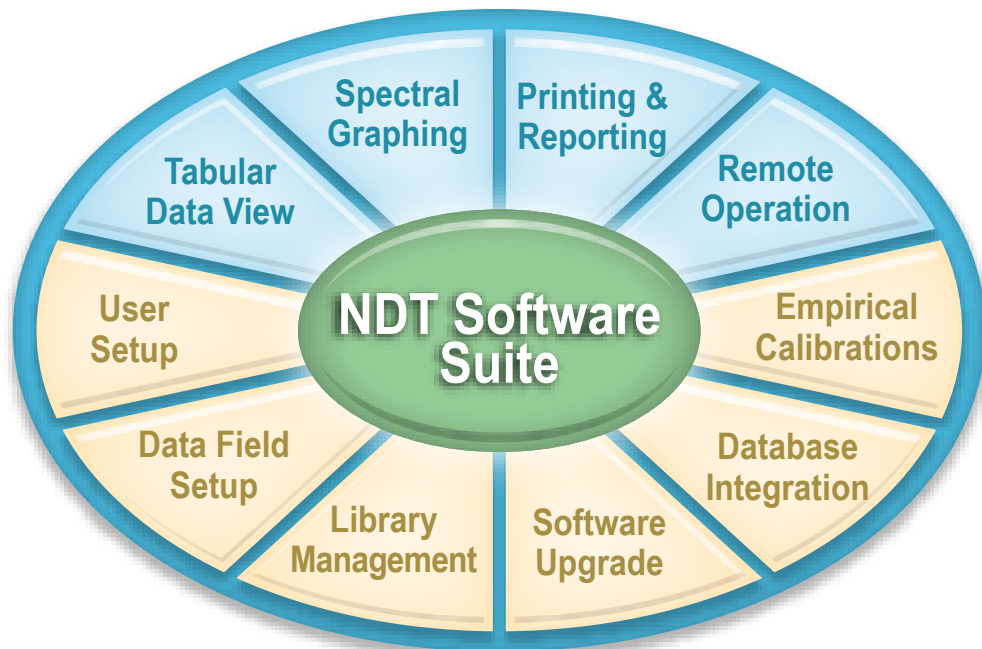
Data integrity is critical, but ease of use is nearly as important. For this reason NDT software uses standard Windows™ software conventions throughout. Data files are copied using simple Copy and Paste functions directly from the NITON XL3 instrument to the user's PC. The same functions are used to transfer data tables and x-ray spectra into MS Word, Excel and other popular software programs. A single-click Convert to Excel feature contrasts with the cumbersome data synchronization procedures required with PDA-based portable XRF analyzers. NITON XL3 series users who prefer to work without using NDT software for data management and reporting can still maintain archived copies of .ndt files on their PCs to preserve and protect the integrity of their data.

NDT Modules

User Setup

As more and more organizations are seeking tighter control over assets, processes and procedures, financial and quality auditors are working to reduce potential risks associated with sample testing and other routine business activities. The NDT software provides these organizations with better ability to control sample testing processes by determining

NITON Data Transfer



Software Components

whether and how different individual users are permitted to operate NITON XL3 instruments by limiting even basic instrument operation to trained users; by preventing certain users from deleting readings; by designating which users are authorized to change instrument testing modes; by controlling access to custom instrument calibrations; and by configuring Pass/Fail criteria for given types of samples. With the NDT software, user access can be configured on a person-by-person, feature-by-feature basis in the User Setup software module.

Data Field Setup

Thermo Scientific NITON instrument users can measure up to a thousand samples or more in a single eight-hour shift. With such high volumes of readings, it is typically necessary to add identifying information to each measurement. The NDT software Data Field module enables NITON XL3 users to set up a virtually unlimited number of additional data fields for each analytical mode, and walks users through the setup process step by step. The Data Field module enables users to define and name data fields, create and sort field entries and specify field parameters. For example: if you were doing heat-by-heat quality inspections after alloy production; create a field named "Heat" and activate the "Incremental" feature. Enter the Heat number on the NITON display once, and subsequent readings will be tagged with the identical description and an incremental number. Are specific data fields required for your standard operating procedures (SOPs)? If so, select the "Required" feature which prevents a measurement from being taken unless the required data field is populated. Is a particular data field expected to change frequently from measurement to measurement? If so, activate "Clear Every Reading" in conjunction with "Required" to insure that new data must be entered for each reading.

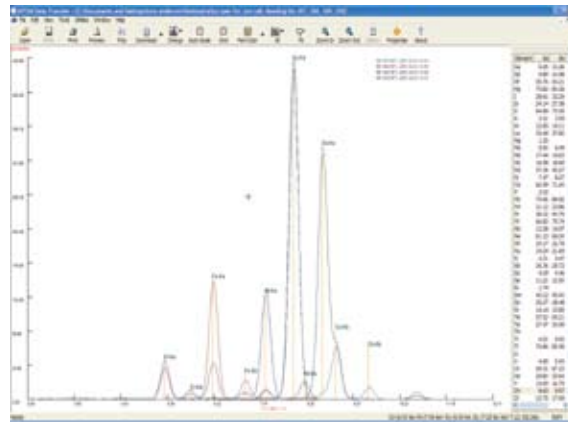
Tabular Data View

NDT features easy-to-use tabular data viewing that enables users to quickly sort readings by multiple parameters, navigate between readings and customize data viewing environments. Drag and drop functionality is included for viewing, analyzing and reporting data.

Spectral Graphing

X-ray spectra for each sample analysis can be graphed with a simple double-click of the mouse in order to visually verify the presence or absence of specific elements in the sample. Spectral graphing is one of the most powerful features of NDT software; histograms from multiple sample analysis can be

overlaid for direct comparison between readings. Users can easily zoom in to areas of particular interest in an x-ray spectrum, click on individual peaks for rapid element identification and access the built-in fluorescent x-ray reference list to identify specific elements in a sample. JPEG images of spectral graphs can be printed directly or "Copied and Pasted" into desktop software packages for reporting and documentation.



NDT software provides users with powerful data analysis tools.

Printing & Reporting

Users can quickly create customized certificates of analysis and include company logos for official documentation. Signature lines can be added to insure the chain of custody of data, and customized reports for any number of readings can be created in seconds. Users can quickly select which data columns to include to create reports containing more or less detail.



Inspection Experts Ltd
100 Fisherman's Lane
Southampton SO2 3EZ Hampshire

Certificate of Alloy Verification

XL3t 21728

Reading No	189
Mode	ALLOY
Time	2007-03-21 14:56
Duration	30.06 Sec
Alloy1	Inco 718 : 1.06
SAMPLE	INCO718
HEAT	178A-8
LOT	#7
NOTE	Final Inspection

	%	±	Error
Mo	3.00	±	0.13
Nb	4.92	±	0.18
Ni	51.51	±	0.81
Co	0.42	±	0.31
Fe	19.54	±	0.56
Cr	19.12	±	0.55
Ti	1.12	±	0.35

Supervised By: _____

Creating custom certificates of analysis is simple with the NDT software suite.



The analytical power of the NITON XL3 is matched by the analysis and reporting capabilities of the NDT software suite.

NDTr

In many laboratories and production lines, high performance handheld Thermo Scientific NITON analyzers have replaced traditional benchtop XRF instruments. In order to provide users in these applications with the ability to operate their instruments remotely and gain the functionality of a benchtop analyzer with a PC user interface, NITON XL3t and XL3p analyzers connect to a PC via Bluetooth™, USB or serial interface. The NDTr module provides users the ability to start and stop sample analyses with the click of the mouse at the PC. Fixed reading times can be set when desired, and individual samples can be analyzed multiple times using Batch Mode for statistical purposes. Test results can be stored simultaneously on the PC and on the NITON analyzer.

Library Management

Most users testing metal alloys mainly use the instrument to test metals that can be identified with the standard grade ID library of over 350 alloys included in every NITON alloy analyzer. When users do need to add new alloy names and/or change chemical specifications for special or proprietary alloys, the library management component enables users to sort and search alloy tables, edit names and alloy chemistries, add or delete entries and create entirely new alloy libraries that can be loaded into the instrument as needed.

Software Upgrades

In many instances it is now possible to upgrade Thermo Scientific NITON analyzers simply by downloading a software upgrade from the Internet, without returning the instrument to an authorized NITON service center. Users can add new features, install the latest software release, and even improve the performance of the NITON analyzer right from an Internet-connected PC.

Empirical Calibrations

While most applications are readily supported with the Thermo Scientific NITON XL3's robust calibration algorithms including Fundamental Parameters (FP) and Compton Normalization (CN), there are occasional samples which require specialized processing to supply the most accurate results. For these few cases, NDT provides users the ability to add application-specific empirical calibrations. These calibration equations may then be overlaid onto existing FP or CN calibration models, or used to create completely new modes to optimize analytical results for specific applications. Users can create custom linear regression equations in the NDT Empirical Calibration module, specifying the analyzed elements and elemental interferences, for real-time processing on the XL3 during sample measurement.



In addition to these offices, Thermo Fisher Scientific maintains a network of representative organizations throughout the world.

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