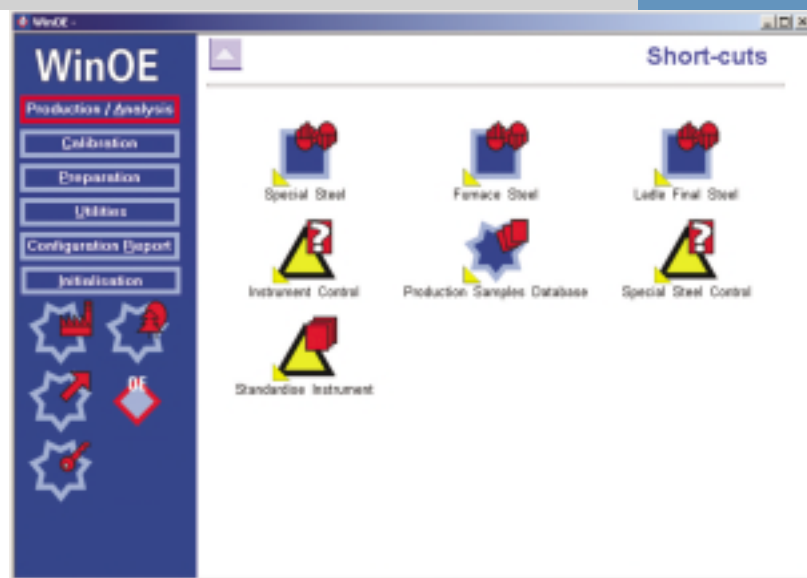


WinOE version 3

Analytical Software for ARL
Optical Emission Spectrometers

The comprehensive and user-friendly WinOE software supports the spectrometer operation and data handling. Designed to work under Windows® XP Professional, it integrates the latest HTML/Internet technologies.

Shortcuts make it possible to start analysis with either a mouse click, a keystroke or via a touch screen.



Durable benefits

WinOE maximizes your productivity by optimizing all analysis and instrumental factors. It offers the following benefits:

- Speed, time is cut everywhere
- Simple operation: very fast learning, no specific knowledge required
- Comfortable use: guided operation and highly automated functions go towards minimizing errors. (e.g., powerful registration, instrument check with black-box SPC, tasks controlling the whole analysis started with just one mouse click or one key)
- Stability and reliability experienced by thousands of existing users
- Reduces operating costs and increases the instrument availability thanks to optimized control and standardization, recalculation, etc...
- More traceability functions help complying with ISO 9000, reducing the risk of non-quality and the high associated costs
- Rich functionality: allows Thermo Electron Corporation to provide a complete solution, eliminating in most cases the need for extra software or specials
- Investment protection: regular updates and easy upgrade paths enable you to maintain your equipment up to date and to add new functions when you need them
- New applications: on-line Spark-DAT opens new opportunities for on-line metal cleanliness and inclusion analysis, for ultimate analytical performance, etc...
- Synergy with WinXRF, sister program for X-Ray Fluorescence (XRF) instruments.



Same software for both techniques rationalizes training and reduces complexity

- Everything from one single source and partner: Thermo Electron offers complete laboratory solutions integrating not only OE and XRF instruments, but also automation and laboratory management solutions.

Your needs

Are your requirements various and specific? Do you need to improve the productivity of your laboratory while assuring a high quality level? Are you in challenging new analytical fields?

Our solution

WinOE is the answer. It offers extensive functionality providing versatility, powerful communication, quality assurance tools and revolutionary analysis digital processing. With the latest release 3, Thermo Electron is first to integrate HTML/Internet technologies. These major user interface improvements make it even more simple and comfortable to use and reduce the learning phase.

Two modes of navigation are available to best suit the user. Mode switching is done on-line.

Large, user-friendly icons allow easy access to key functions at a glance.

(* WinOE features, options or other Thermo Electron Corporation products marked with an asterisk are described in separate data sheets. Please refer to them for more details.



Two modes of navigation: example of tree view

Statistical Process Control

Are costs of non-quality an issue for you?

Operating your instrument without efficient and timely control is like driving in the dark without head lights on: it may work but you are unable to anticipate any sudden obstacle. You must stop frequently to check and correct your direction. It will take you longer to reach your destination, cost you more fuel and your nerves, not to mention the high repair costs should you not be lucky... The same happens with your instrument!

Pro-active SPC: you control your quality!

Thermo Electron was first to implement on line SPC techniques for instrument control. But not any SPC: the best package to check your instrument most pro-actively by throwing light on abnormal response patterns to warn you before it goes out of control.

It works fully on-line, is totally integrated in WinOE and supports the most complete set of SPC rules. SPC also increases your productivity: the optimization of the control and standardization frequency maximizes the instrument availability and cuts operating costs (equipment and sample usage). You save time while you assure a predictable and higher quality level.

Automation and laboratory management

If you require more automation and integration into your process, Thermo Electron has optional solutions available:



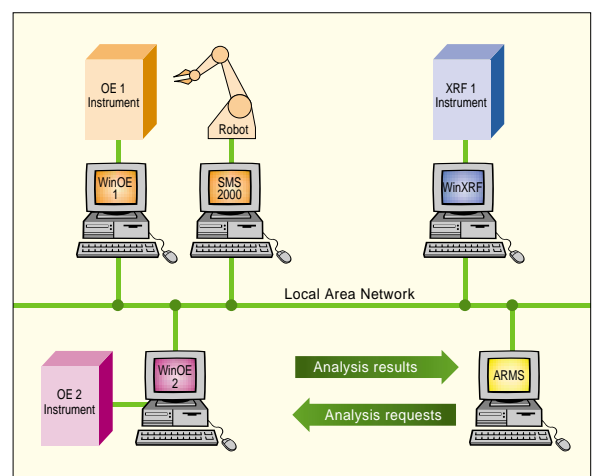
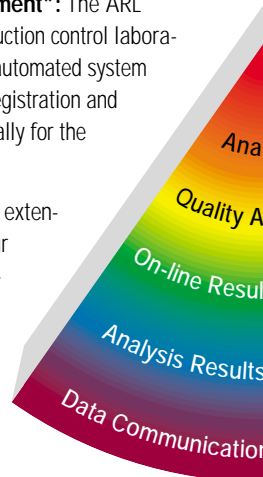
Remote Sample Definition*

allows WinOE to receive sample identifications and analysis parameters from another application, avoiding the operator having to re-input them. You save time while you eliminate typing errors.

Full instrument automation* with the ARL SMS-2000 robotic system. For even higher speed, more productivity, less operational costs, improved quality and reliability of results.

Laboratory Management*: The ARL ARMS provides to production control laboratories a very fast and automated system managing the sample registration and result processing centrally for the whole laboratory.

You can combine these extensions together. Ask your Thermo Electron representative for more information.



WinOE is ready for integration to instrument, laboratory and even process automation

On-line Spark-DAT*

Revolutionizes process control analysis

With Spark-DAT, the digital acquisition and treatment of every spark signal means a dramatic growth of analysis information material. Fully integrated in WinOE, it operates on-line supplying values in seconds, where classical techniques can take hours!

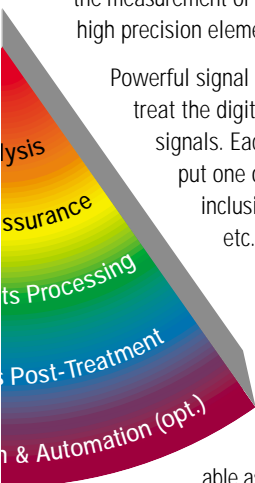
With on-line Spark-DAT, new analysis opportunities are possible: on-line metal cleanliness determination and inclusions control, ultimate elemental and phase analysis performance, highest speed of analysis, etc.

WinOE allows a mixture in one program of both conventional elemental analysis and the measurement of inclusions, phases or high precision elements by Spark-DAT.

Powerful signal processing algorithms treat the digitally acquired spark signals. Each algorithm can output one or more values such as inclusions, elements, phases, etc.

Spark-DAT is designed for evolution. New and future algorithms can be added at any moment.

Algorithms are available as standard or as options. You may even provide your own!



Thermo Electron upgrade policy makes happy customers year after year...

Keeping your instrument up-to-date protects your investment. You make it compliant with the today's hardware, software and communication system environments. You take benefit of the latest improvements in the technology and you receive a full range of very useful new functions brought with each release.

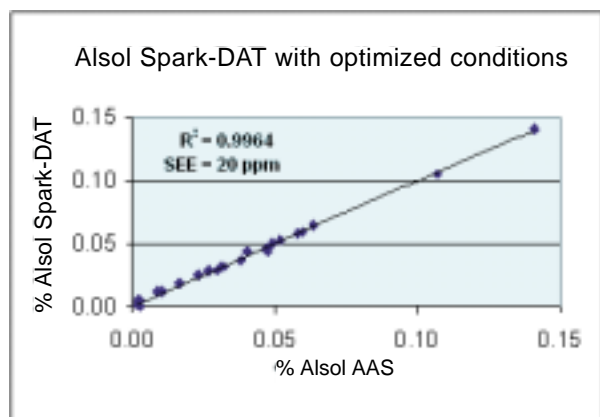
All simultaneous ARL Optical Emission systems can be updated to the new WinOE release. Spectrometers controlled by WinOE version 1.x or 2.x or by OE386 can be quickly updated to WinOE 3 directly on your site. Only an update of the computer may still be required. A wizard enables import of your current database at one go into WinOE 3. It is easy, fast and secure.

Previous spectrometers manufactured during the 70's and 80's (ARL 31000 and ARL 34000 series) would require in addition the retrofit of the electronics of the spectrometer. Have you ever dreamed of such a long-term compatibility? Are your requirements evolving over time? No problem! WinOE allows you to easily add optional features anytime. So why not do it when you need them?

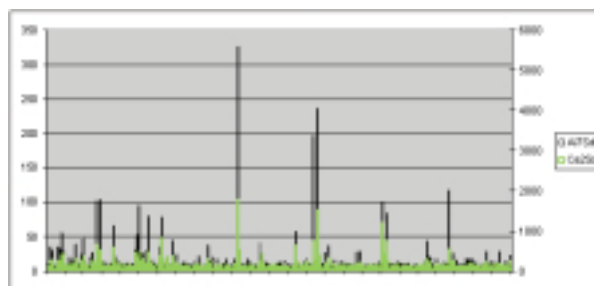
Simply ask your Thermo Electron representative for fast and detailed information.

New with WinOE 3

- Web-style User Interface
- On-line Spark-DAT
- Analysis Shortcuts
- Automatic Program Choice
- Analysis Recalculation
- Sample Results Averaging
- Even more Traceability
- Black-box SPC
- Graphical Status & Alarm Monitoring
- And a lot more Enhancements



Ultimate analytical performance with Spark-DAT



Acquisition and treatment of complete spark data open new analytical applications opportunities

Complex analysis procedures become easy WinOE tasks

WinOE assists your operators to achieve their routine tasks efficiently and quickly. This, by use of highly automated functions guiding the operation or thanks to "black-box" intelligent modules running in the background that require practically no user action. WinOE adapts itself to the way you work thanks to an unmatched adaptable software design.

Sample and analysis management

Even if your needs are very specific, WinOE has the solutions to simplify your life.

Routine analysis means performing accurately, completely and quickly specific procedures for the analysis and the processing of each sample type. However, they should be as easy as possible! The flexibility of the WinOE Analysis Tasks makes this true. The WinOE Tasks define every aspect of your sample analysis procedures. You apply each task with just one click! It then guides you through the whole analysis process by controlling a variety of parameters like:

- Registration: 10 fields of up to 12 characters each are available to describe your samples. They can be identified just before analysis or pre-defined. The Sentry* and the Remote Sample Definition* options allow you to describe repetitive sample batches or receive the sample identities from another computer
- Selection of the analytical category and of the associated files (program, quality or type standard)

- Management of the runs, reproducibility check and averaging method
- Result display formats, storage, printing and transmission, modification permission, quality check, etc.

Shortcuts can include the Analysis Task and a sample identification mask. Only one click on the icon or one keystroke is necessary to start your analysis with the appropriate procedure and with the sample identity predefined! Shortcuts are best used with a touch screen option (direct finger pointing on screen).

Quantitative analysis

WinOE Quantitative Analysis supports:

- Up to 100 elements per program including pseudo-elements with formulae calculation and manual input of elements
- Flexible run management strategies, reproducibility checks for automatic or manual averaging method
- Type Standardization: allows ultimate accuracy for specific alloy types against a calibration
- The automatic program choice function selects the optimum analytical program, quality or type standard according to the analysis result without requiring any operator input. Particularly suited for the calibration curves selection per alloy family
- Integrated on-line Spark-DAT* (option)
- Automatic result recalculation: helps you save time and operating costs (Instrument, samples and their preparation). Allows you to verify a standardization, to update a type standard or check production samples, etc. without re-analyzing samples.

Calibration

Thermo Electron factory calibration of Optical Emission Spectrometers, with CARL (Calibration ARL) assures the highest possible accuracy for delivery of a "turn key" spectrometer system ready for analysis the day it is installed. In addition, WinOE incorporates a powerful Multi Variable Regression program (MVR) allowing you to add or update calibrations any time.

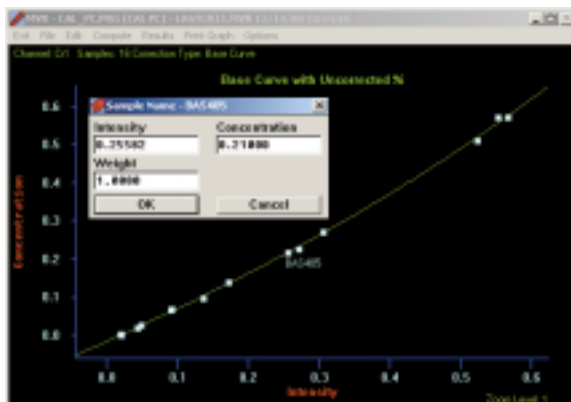
- Calibration curve computation with interference corrections, graphical and statistical evaluation tools (up to 300 standards and 12 corrections per element)
- Easy input of calibration standard data through tables. With import/export facility from/to files in CSV (Comma Separated Values) format.

Instrument Quality Assurance

SPC-Basic: your best instrument control tool

Seamlessly integrated in WinOE, SPC-Basic performs the routine instrument check using statistical process control techniques. It is absolutely simple to use and features:

- Analysis of control samples: on-line evaluation by SPC software and immediate feedback with simple messages for any elements failing the tests
- Up to 16 different rules supported with configurable parameters: automatic detection of out-of-control states using control limits, bias, trends, statistical distribution checks, etc. SPC-Basic is the best tool for pro-active correction
- Can control the global instrument and also specific analytical programs using dedicated control samples. A scheduler



Multi Variable Regression (MVR) calibration data

Severity	Element	SPC Chart	Description
Fail	Cr	X	Point above UCL
Warning	P	X	Run of N above the mean
Warning	Si	RL s	Run of N below the mean

Information on failed elements tests returned by SPC

- optimizes the control rhythm
- Flexible strategies can be configured for differential correction actions according to the SPC tests result
- SPC-Basic operates as a black box, the user interface is limited to the information feedback screen: it cannot be simpler! It requires no statistical knowledge

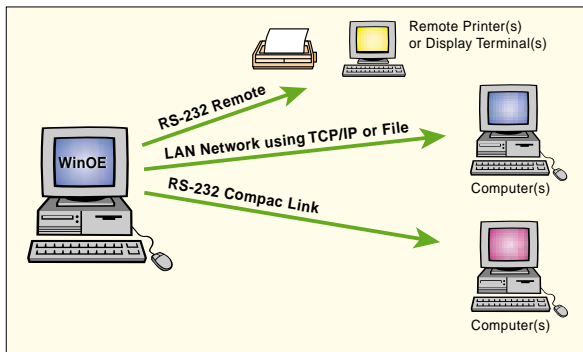
System standardization

Either full or selective standardization can be performed anytime, on operator decision, on scheduled intervals or as a response to a control request.

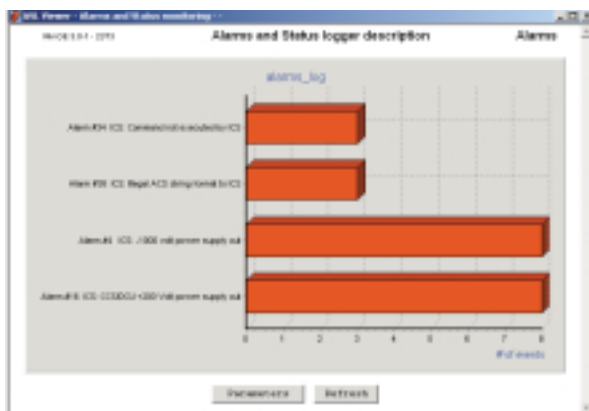
Audit trails: traces your instrument activity and your analysis operation

Some examples include:

- Monitoring and logging of instrument alarms and status using lists, graphics and statistical tools
- Monitoring and logging instrument standardization, type standardization update and calibration changes
- Results modifications are documented by a justification. They can appear in displays, printouts and transmissions and can also be saved in a log file.



Open and versatile communication capabilities



Graphical representation of alarms statistics

Data communication options

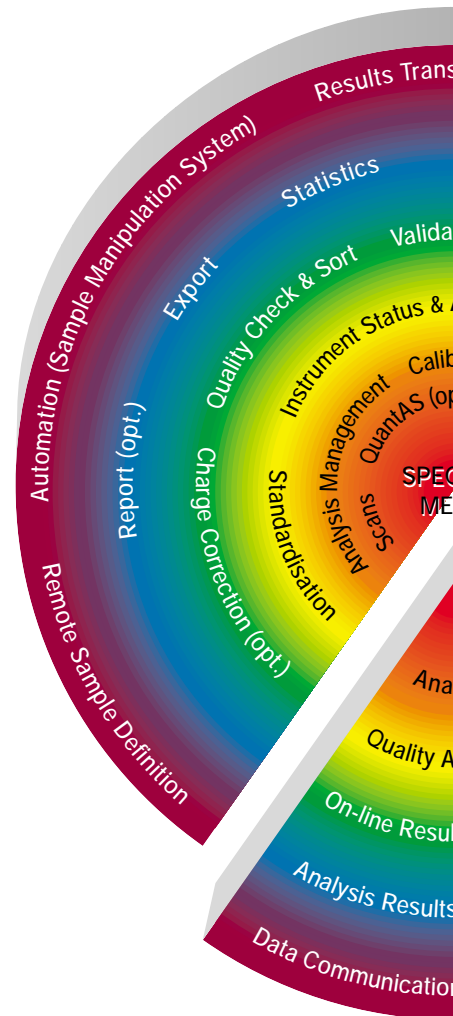
Do you need to display or print results in the process control room? Transmit them on-line to a process computer? Via LAN network TCP/IP? To your favorite spreadsheet program on your office computer? Or to a departmental file server? WinOE can do it all, automatically.

ARLnet*: Package of result transmission solutions via LAN Local Area Network to up to 18 destinations, includes:

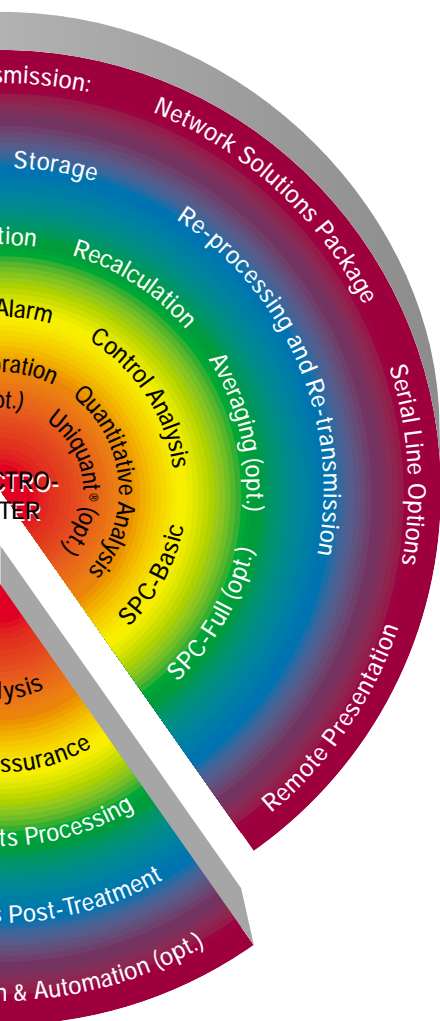
- NetTCP/IP: computer task-to-computer task transmission
- Netfile: transmission to files on local or network disks
- Network Printers
- Software Destination Switch: automatically re-routes results to an alternate destination if the main one is unreachable.

Compac*: Transmission of results to up to 5 computers via serial lines using the Compac protocol.

Remote*: transmission of results to up to 8 remote printers or visual display terminals via serial lines.



An example of many different results presentations



Analysis results processing

Valuable functions allow you to process analysis results on-line. They can supply even more information in real time, increasing your productivity.

Result validation and modification.

Flexible result presentation according to a variety of layouts. Values are displayed along with up to 27 attributes, user definable colors and font styles: you get a lot more information than just figures!

Storage, printing and transmission

Quality Check: to check a result against pre-defined upper and lower limits of a target alloy or product specification.

Quality Sort: quickly identifies an alloy or product by matching the specifications.

Metaverage* (option): averaging of sample analyses according to pre-configured schemes. Averages are then processed as normal results.

Charge Correction* (option): calculation of furnace charge additions to correct the process.

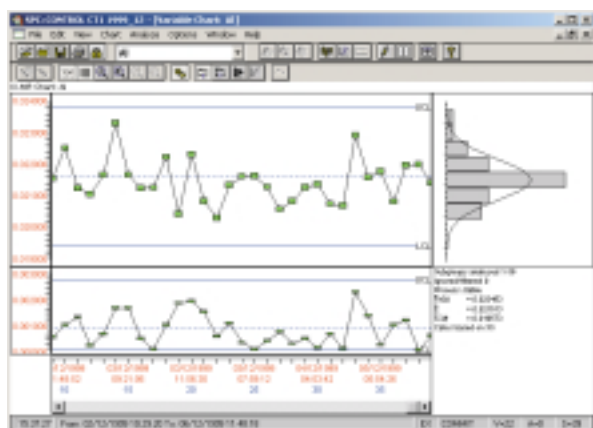
SPC-Full, full Statistical Process

Control package* (option): a very useful complement to SPC Basic. Allows on-line graphical display, evaluation and printing of the instrument control samples data as well as of production samples (control charts). Provides the following features in addition to those of SPC-Basic:

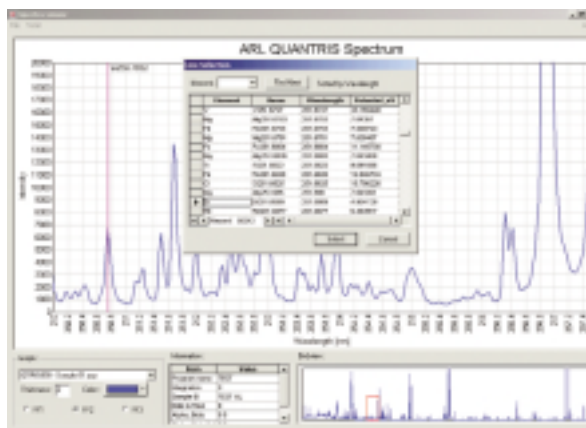
- Comprehensive charting capabilities and limits calculation
- Allows automatic control charts display after each analysis
- Monitoring of instrument standardization
- Instrument status values
- On-line transfer of production samples results for production process control. With automatic feedback to WinOE.

SPC-Full allows Quality Assurance Managers to document permanently their Quality system, e.g. for audit purposes, study and revision procedures.

Spectra viewer: This function displays spectra acquired by the ARL QUANTRIS and allows spectra manipulation (e.g. zoom), peak search, etc. This evolving tool suits nicely e.g. to help developing or checking analytical programs or for metallurgical research (available with ARL QUANTRIS only).



Typical X-R Chart from SPC-Full option



Display and manipulation of spectra

Post-treatment

WinOE includes a **results storage database** for basic post-treatment with selective retrieval using filters. The user can re-apply on-line functions such as result editing, quality check, transfer to SPC, etc, and re-transmit results. Moreover, it offers basic statistics calculation and the export to databases, spreadsheet or text processor applications (e.g. MS-Access, Excel, etc.) using a variety of compatible export formats.

The **Report option*** (specialized software) allows you to create printed reports of analytical results using Thermo Electron or your own formats.

Utilities / Configuration

WinOE provides comprehensive instrument configuration facilities together with full software customization functions. They allow use of your instrument according to your exact needs and contribute to the system performance.

Some other utilities and tools:

- Security and data integrity with user accounts, password protection and up to 8 different access levels
- Language supported: English, French, German or Spanish, called through a single icon
- Translate* (option): text and message customization or translation into any language with a character set supported by Windows® XP Professional.

Moreover, further languages are readily available on request. Ask your Thermo Electron representative

- Database maintenance: import/export, backup. Periodic results databases simplify the management of their archiving
- Wizard to easily import your configuration database if you update your existing WinOE software
- Reporting the software configuration and the user files.

Standard WinOE features

- Graphical user interface through HTML pages and Internet Explorer
- Routine analysis of unknown samples
- Analysis shortcuts integrated in WinOE software. They can also be duplicated on the windows desktop with your own icon and can be called by shortcuts keys
- Automatic analytical program choice
- Multi-variable regression for calibration curve determination
- Flexible results display and printing
- Manual input of values
- Results validation and editing, with audit trail
- Quality check & quality sort
- Concentration results recalculation
- Results storage and basic post-treatment. Statistics. Export to other applications
- Instrument control with on-line integrated SPC
- System standardization, with audit trail
- Type standardization, with audit trail
- Instrument alarms and status monitoring with logging and graphical display tools
- Flexible sample identity
- User accounts: password protection and user definable rights
- Language: English, French, German or Spanish
- Software and instrument configuration. Utilities, database maintenance tools.

ARL Report Generator			Quality:	Type:	Program:	ARL
Element	Min.	Max.	Average	Sd	Sd%	Comment
C	0.3962	0.4000	0.3984	0.00111	0.28	
S	0.0462	0.0535	0.0494	0.00224	4.54	
Si	0.2674	0.2708	0.2689	0.00101	0.37	
P	0.0320	0.0329	0.0326	0.00028	0.87	
Mn	0.5993	0.6057	0.6025	0.00183	0.30	
Ni	1.5456	1.5617	1.5550	0.00461	0.30	
Cr	1.2875	1.2957	1.2921	0.00259	0.20	
Mo	0.2073	0.2097	0.2085	0.00071	0.34	
V	0.0037	0.0038	0.0037	0.00004	1.15	
Cu	0.2198	0.2223	0.2212	0.00064	0.29	
Ti	0.0011	0.0012	0.0011	0.00002	1.94	
As	0.0235	0.0243	0.0240	0.00024	0.99	
Sn	0.0209	0.0217	0.0213	0.00025	1.18	
Al	0.0271	0.0279	0.0276	0.00027	0.98	
Nb	0.0019	0.0022	0.0020	0.00012	5.92	
Ca	0.0001	0.0001	0.0001	0.00000	3.72	
N	0.0091	0.0095	0.0092	0.00014	1.46	
10 samples Analysed between: 05.05.200 15:56:08 and 05.05.2003 17:02:38						
Notes:			Report date: 02.06.2002			

Powerful report according to a variety of layouts

Spectrometers

WinOE 3 is available with all current ARL Optical Emission spectrometers: ARL Metal Analyzer, ARL 3460, ARL 4460, ARL QUANTRIS and ARL Laser Spark. It is also available as an update kit on ARL 2460, ARL 3560B types, on earlier spectrometers equipped with the RetB retrofit package and on certain Hilger instruments.

Software options

- On-line Spark-DAT (available with the ARL 4460 spectrometer only)
- ARLnet: LAN network results transmission package
- Remote Sample Definition through LAN network
- Sentry: sample entry software
- Compac: serial results transmission to computers
- Remote: serial results transmission to terminals
- Metaverage: sample results averaging
- Charge: for charge correction calculation
- Report: generation of printed reports
- SPC-Full: full graphical statistical process control package extension
- SPC-Remote: for viewing and processing SPC studies produced by the SPC of WinOE on another computer
- Translate: software texts translation and customization

WinOE computer specifications

- Runs on Windows® XP Professional with Internet Explorer 6.0
- Recommended specifications: Pentium 1 GHz, 256 MB RAM with 17" screen or higher
- Minimum: Pentium III 500 MHz, 128 MB RAM, 500 MB free disk space and SVGA graphic adapter
- I/O: minimum 1 free RS-232 port and 1 parallel port. Ethernet interface

Computer options

- Screens: 19" CRT, 15" TFT, 17" TFT, 15" TFT touch screen (direct finger pointing on screen)
- Printers: Color Deskjet, Laser
- 2,4 or 8 serial lines interface
- Mini-modem for long-distance transmissions via serial line
- Dot-matrix remote printer with continuous paper feeding
- VT-520 compatible text terminal for remote display
- Computer UPS (Uninterrupted Power Supply)



Thermo Electron SA, Ecublens/Switzerland is ISO 9001 certified.

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