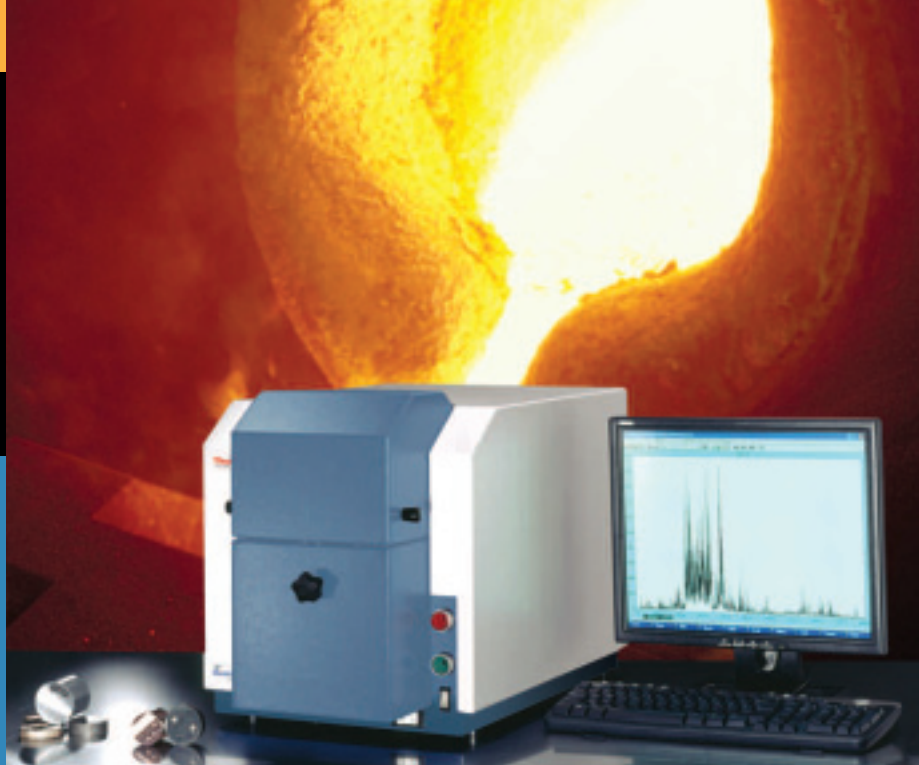


**Thermo Scientific  
ARL QuantoDesk  
Benchtop Optical  
Emission Spectrometer**



***The Smallest, Flexible CCD-Based Metals Analyzer***



High reliability



Minimal argon consumption



Simple operation and maintenance



Adequate sensitivity, precision, stability and accuracy

## ARL QuantoDesk

The benchtop CCD-based spark optical emission spectrometer

CCD technology permits cheaper, smaller and more flexible desktop instruments as compared to traditional PMT instruments. In its broadest definition, a charge coupled device (CCD) image sensor converts an optical image into an electronic output. Our company uses this advanced technology in spectrometers, namely the ARL QuantoDesk

### Your need...

You are looking for a bench-top instrument which offers you:

- Excellent accuracy and stability
- Lowest operating costs
- Flexibility for multi-matrix analysis
- Space saving thanks to its small size
- Qualitative analysis features, in addition to its quantitative analysis capabilities
- Good results even at high ambient temperatures

### Our solution...

The ARL QuantoDesk optical emission spectrometer is the instrument of choice.

It is a very compact desktop spectrometer for metals analysis based on CCD (Charge Coupled Device) technology. A single CCD replaces the photomultiplier detectors used in traditional spark spectrometers and gives the instrument full flexibility.

The ARL QuantoDesk provides the capability to perform a rapid check close to the furnace where its performance meets the analytical needs of quality control departments. Its simple architecture allows for high accuracy, stability and reliability, making it the solution for numerous industrial applications in rugged environments.

### Proven applications

The ARL QuantoDesk is ideal for the following industries:

- Large foundries and primary metals producers as back-up instrument of stationary instruments, used as a first line analyzer, close to the process or as a research instrument
- Small/medium foundries for production control, ISO quality control or as a research instrument
- Metals processors looking for quantitative analysis, grade identification, sorting of metals, quality control
- Metals recyclers
- Independent test houses, contract laboratories
- Stockholders and metals warehouses

The ARL QuantoDesk can be calibrated for all applications without any optical compromise. Wide ranges of standard factory calibrations covering all the common alloy ranges and grades are available. The customer can add new calibrations at any time or extend existing calibrations without any additional need for hardware changes.

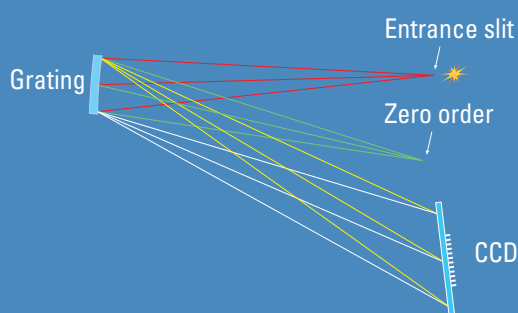
The ARL QuantoDesk is currently being used in many application areas:

- Ferrous alloys
  - Low alloy steel
  - Cast iron
  - Stainless steel
  - Manganese steel
- Aluminum alloys
  - Low alloy aluminum
  - Al-Si alloys
  - Al-Si-Cu alloys
- Copper alloys
  - Brass
  - Bronze
  - Cu-Al
- Nickel alloys
- Titanium alloys
- Zinc alloys
- Lead and Tin alloys
- Magnesium alloys

The ARL QuantoDesk achieves a typical repeatability, expressed as relative standard deviation on the major elements of between 0.5 % and 2 %.

To keep you informed about our latest developments, please visit

[www.thermo.com/oes](http://www.thermo.com/oes).



### Flat field optical system with:

- Simple configuration without mirrors or intermediate optics
- Simple detection system
- The simplicity of this system facilitates manufacturing of very stable and reliable instruments

## Key features

- Simple and easy to use, permits cost-effective sample analysis
- Small size and light-weight, easy to move when necessary
- Up and running within a few hours of delivery
- Minimal argon consumption to flush the stand and the spectrometer in comparison to its peers.
  - *Standard "Quick purge" function to save argon costs. Permits operation in less than 20 minutes after the instrument has been switched off for a night or several days*
  - *No vacuum pumps and small exhaust filter, minimize maintenance costs*
- Full wavelength coverage, provides the ability to perform qualitative analysis on unknown elements and reduces the need for external analytical services
- Peltier cooled CCD to increase the precision of the measurement and to make the instrument less sensitive to high environmental temperatures
- Identical source to proven stationary instruments:
  - *Multi-frequency spark source*
  - *Variable, computer controlled excitation conditions*

## User-friendly WinDPI software

The WinDPI analytical software includes three modules providing all the features necessary for:

- Routine analysis
- Calibration
- Qualitative analysis

The ARL QuantoDesk can be used in a variety of different operating modes:

- Quantitative analysis
- Positive Material Identification (PMI)
- Grade identification / Alloy verification
- Mix-up control or Pass / Fail mode
- Qualitative analysis

**Analytical module: simple, customizable**

WindPI has a simple user-friendly interface to reduce the overall learning phase. The on-line help of WindPI gives your operators the necessary assistance to carry out all their routine tasks quickly and efficiently. Large, user-friendly icons provide easy access to every function.

WinDPI can be customized with different configurations:

- Automatic averaging
- Automatic storage of results
- Statistical information (means, standard deviation, relative standard deviation)
- Specific customer language

The following features are available on the analytical module of WinDPI:

- Simple standardization
- Type standardization
- Customization of the grades library
- Check of results against material grade specifications

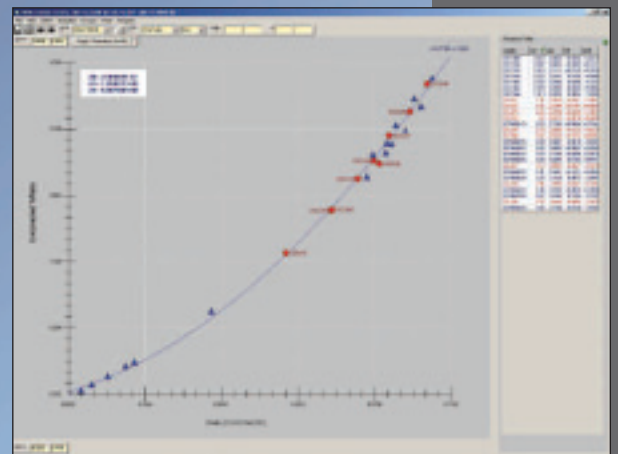
## Calibration module: MVR facilities

The same Multi-Variable Regression (MVR) tool used in the high-end optical emission instruments is available. This feature permits:

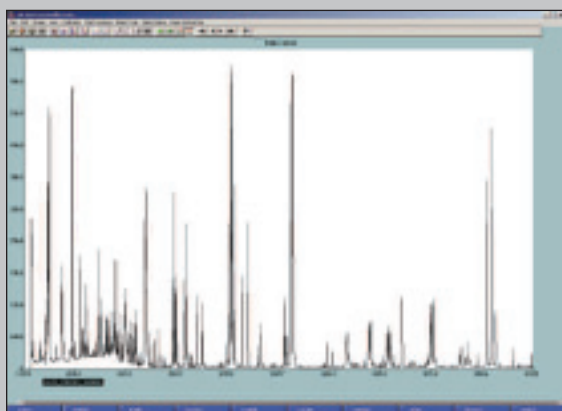
- Unlimited calibrations
  - *Either standard or customer specific*
  - *Each calibration can cover an unlimited number of elements or analytical channels in chosen matrices*
- On-site adjustments such as
  - *Calibration extensions*
  - *New lines addition*
  - *New matrices*
  - *Calibration curve corrections*

## Qualitative analysis module

This graphical module displays the spectra captured by the CCD detector and permits:



## MVR: Multi-Variable Regression



### Qualitative analysis module: Spectra captured by the CCD detector

|    | Alloy 1 | Alloy 2 | Alloy 3 | Exp.   | Std.   | Mean   |
|----|---------|---------|---------|--------|--------|--------|
| Al | 70.42   | 70.50   | 70.50   | 70.50  | 0.0017 | 0.0048 |
| Si | 19.57   | 19.48   | 19.40   | 19.41  | 0.0053 | 0.0041 |
| Fe | 0.1402  | 0.1456  | 0.1421  | 0.1424 | 0.0023 | 0.0060 |
| Co | 0.0714  | 0.0713  | 0.0617  | 0.0641 | 0.0006 | 0.0043 |
| Mn | 0.0060  | 0.0060  | 0.0060  | 0.0066 | 0.0006 | 0.0010 |
| Mg | 1.000   | 1.000   | 1.004   | 1.002  | 0.0000 | 0.0000 |
| Zn | 0.0000  | 0.0000  | 0.0017  | 0.0001 | 0.0000 | 1.3918 |
| Ni | 1.000   | 1.013   | 1.006   | 1.007  | 0.0006 | 1.0000 |
| Cu | 0.0003  | 0.0010  | 0.0003  | 0.0002 | 0.0014 | 2.3823 |
| Sn | 0.0027  | 0.0001  | 0.0004  | 0.0014 | 0.0007 | 1.0001 |
| Pb | 0.0000  | 0.0000  | 0.0000  | 0.0000 | 0.0000 | 0      |
| Se | 0.0003  | 0.0000  | 0.0003  | 0.0002 | 0.0000 | 3.2608 |

### Check of results against material grade specifications

## Specifications for the ARL QuantoDesk

### Spectrometer

Spectrometer: Flat field optical spectrograph with one entrance slit, grating and solid-state detector  
Wavelengths range: 170 to 410 nm  
Purged with a low flow of argon

Focal length: 200 mm  
Slit width: 10  $\mu$ m  
Type of detector: Linear CCD image sensor with 8'044 pixels  
Lumogen coating on CCD  
Cooled by Peltier device to reduce the noise of the CCD

Pixels: 7x7  $\mu$ m at 7  $\mu$ m pitch  
Grating type: Holographic 755 grooves/mm  
Average resolution: 30 pm/pixel  
Sample stand: Argon flushed Petrey table.

### Source

Type: Hi-Rep condensed Arc  
Frequency: 100, 200, 400 and 600 Hz  
Analytical software: WinDPI

### Requirements

Ambient temperature: 15-30 °C (59-86 °F)  
Short term variations within these limits must not exceed 2 °C/h  
Relative humidity: 30-80 %  
Voltage: 230/110 V (+10 %/-10 %), single-phase with protective ground  
Current: 1.6/3.2 A excl. PC, screen, printer  
Frequency: 50 or 60 Hz  
Grounding: <1  $\Omega$   
Argon: 99.998 %

### Consumption

Electrical power: 370 VA excl. PC, screen, printer  
Argon: 4.0 l/min during analysis, 0.9 l/min on stand-by

### Compliance to norms

73/23/EEC Low voltage material  
89/336/EEC Electromagnetic compatibility

### Dimensions and weight

Overall dimension: 398 x 444 x 750 mm or 16 x 17.5 x 29.5 inches  
Weight: Approximately 45 kg or 99 lb, excluding personal computer

### Accessories and options

Pin samples analysis kit  
Argon purification systems

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