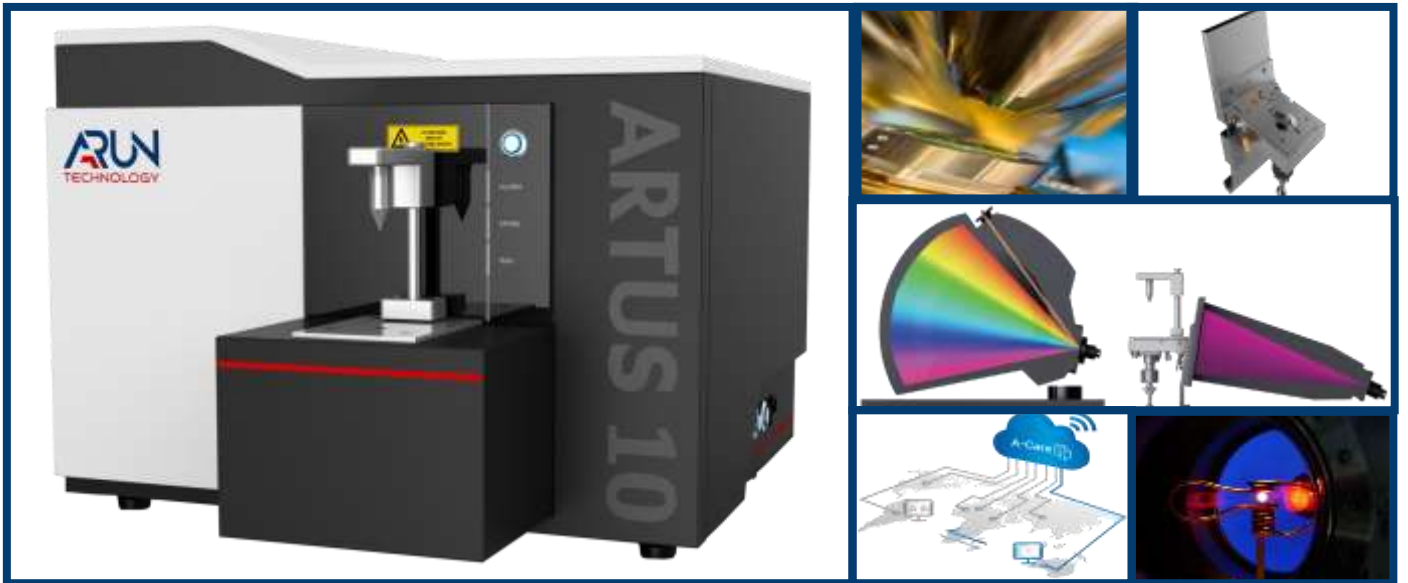
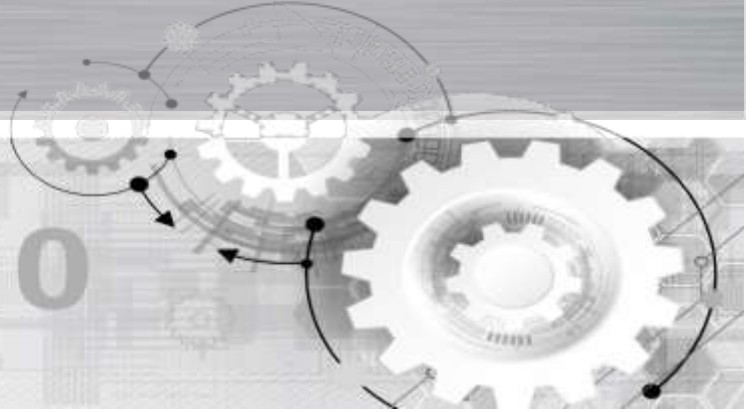


**ARUN**  
TECHNOLOGY  
MADE TO MEASURE

**ARTUS 10**



INNOVATIVE SPECTROMETERS FOR METALS ANALYSIS

# PERFORMANCE VALUE AND EASE OF USE

The **ARTUS 10** is the first direct reading spectrometer using CMOS and thermoelectric cooling technology. It is the ideal spectrometer for industries that process incoming steel, non-ferrous, unknown and composite metals material for in-process testing and final quality control. It meets the needs of users looking for a high-end solution.



## Custom CMOS Sensor Technology: For the Ultimate in Spectrometer Performance

CMOS image sensors offer extremely low noise, rapid frame rates, wide dynamic range, high quantum efficiency, and high resolution.

The newly designed **ARTUS 10** includes a new scientific-grade CMOS sensor which enables shorter analysis time in seconds. The reduced analysis time means operator process time is reduced. The customized sensor detector gives improved resolution of the inspection system.

By using Optimal Element-Oriented (OEO) technology; any pixel position signal can be extracted separately to achieve independent parameter optimization and acquisition analysis for each element. UV elements (C, P, S, N) are easily detected.

## Added Algorithms: For More Efficient Detection

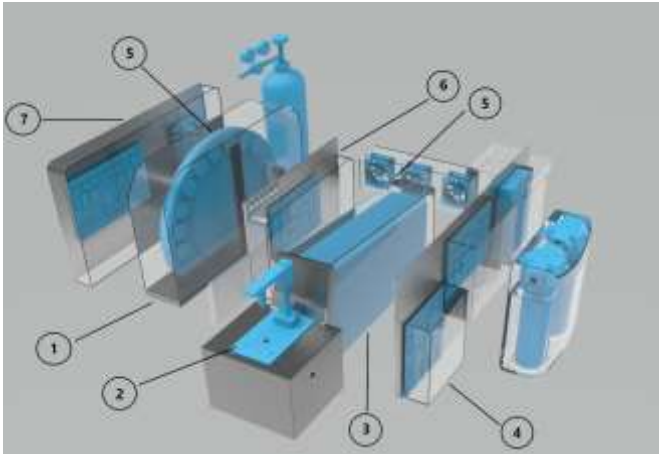
The OEO and Real Time Management & Control (RTMC) algorithms make for a more efficient performance in CMOS detection. The intelligently matched spark discharge waveform results in improved detection of the variable elements. The intelligent algorithms eliminate background interference for enabling optimal analysis performance. Aberrant Spark Removed (ASR) technology eliminates abnormal sparks for improved analytical accuracy.



The **ARTUS 10** accommodates for a stronger abnormal shape adaptability. This makes it easy to deal with sample defects such as porosity. This reduces the probability of operator error during analysis.

For filaments as small as 0.1mm diameter and large pieces up to 200g can be measured. For samples with varying shapes such as tubes or wire; relative sample holder solutions are available.

## MULTI-CMOS DETECTOR DESIGN



The **ARTUS 10** has an extremely high detection sensitivity system. Why? When the CMOS photosensitive detector is combined with the dual optics and refrigeration system, a verification limit of parts per million can be achieved. The addition of a Thermal Electric Cooler in some models, means lower detection levels are reached.

1. Visible optical system
2. Excitation system
3. Ultraviolet optical system
4. Digital light source system
5. Detector refrigeration system (optional)
6. Data processing system
7. Argon control system

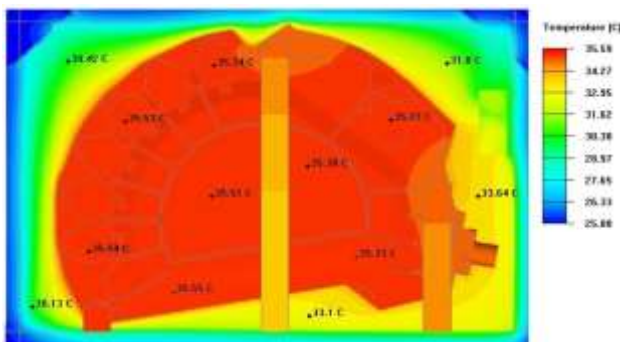
## DUAL OPTICAL SYSTEM DESIGN



The **ARTUS 10** dual optical system design has a dual wide spectral range and high-grade resolution. This enables more accurate analysis of non-metallic UV elements (C, P, S, N). There are no vacuum pump moving parts, light distortion or oil contamination.

The **ARTUS 10** thermostatic optical system temperature field uses the best heating components. Its single point ambient temperature is less than 0.1 degrees. The optimized thermal design scheme delivers responsive temperature compensation.

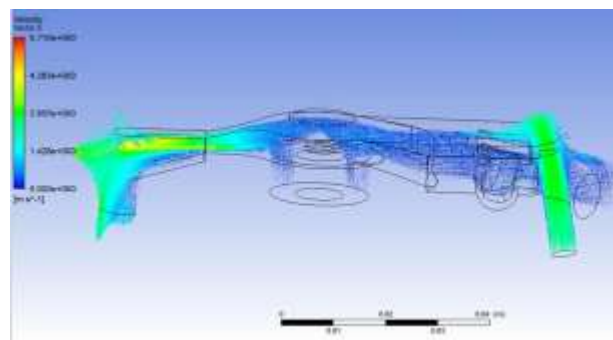
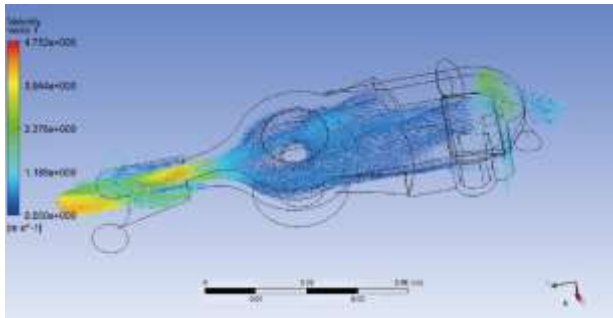
## HIGH THERMAL STABILITY



### Benefits:

- High thermal stability guarantees a stable optical system and equipment data.
- Options to choose from universal heating components.
- Optimized thermal design with intelligent temperature compensation algorithms.
- Each optical cell is tested for thermal stability (as shown on the left)

# GAS PATH FLUID DESIGN



*Fluid simulation software participates in the gas path fluid design.*

The **ARTUS 10** exciting gas channel fluid design provides a uniform-filling of the argon gas in a shorter period of time. This means a shortened excitation time and improved efficiency. A self-cleaning function in the chamber cavity, reduces continuous maintenance of the excitation area.

The ARTUS 10 light chamber is constructed from a die-cast aluminum case which receives 4 levels of stress relief treatment; ensuring long-term stability of the spectral position. The precise design of the airflow path makes everything more stable.

## Benefits:

- The argon can uniformly fill the excitation table in the shortest time.
- Reduction of sample excitation time, which improves detection efficiency and saves argon.
- The cavity self-cleaning function reduces the excitation table maintenance times.

Thanks to advantages of having a gas-packed fluid design; the **ARTUS 10** operates with an air flow of  $\leq 0.3$  L/min (plasma flow of 2L/min) and a total argon gas flow of 3 L/min. This is compared to 7 L/min required by other systems.

## Why do some spark OESs consume more argon gas?

Since argon gas has been used as shielding gas on the discharge electrode, some Spark OESs share the argon to purge the optics chamber in the spectrometer. It will also consume the argon gas.

However, some specially-designed Spark OESs can largely reduce the consumption of argon gas to the minimum, such as ARUN's **ARTUS 10** spark OES.

**AMAZINGLY  
CAPABLE  
REMARKBLY  
AFFORDABLE**



# WHY JUST ENGINEER WHEN YOU CAN PIONEER!

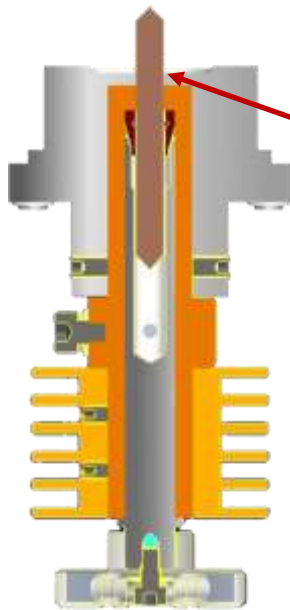


## Excitation Stand

- Optimized design of the excitation stand and lens structure

## Lens maintenance

- Improved design means tool-free access of the UV and visible optic lenses, i.e. no screws.



## Electrode Clamp

- Elimination of old-fashioned “thimble type” electrode fixtures
- “Clasping Type” electrode locking device

## Benefits:

- Avoid electrode movement caused by “thimble” fixing
- Better perpendicularity
- Improved data stability



# INTERACT WITH A MORE INTUITIVE INTERFACE

## Benefit: A-Care

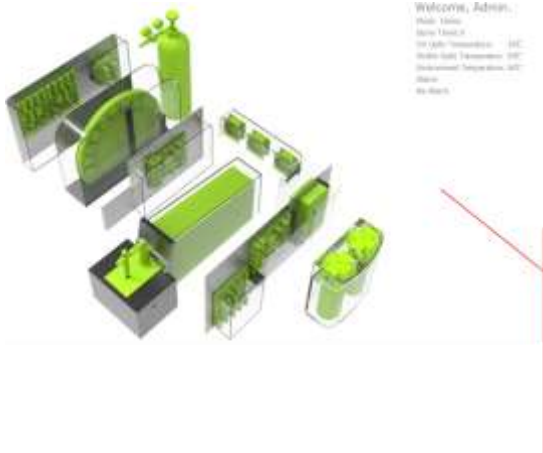
When the operator is still unclear about the abnormal state of the equipment, the A-Care Cloud service system will have transmitted the abnormal state of the equipment to the ARUN cloud server. An A-Care Engineer will be able to analyze the equipment status in order to resolve the any issue.



## Improved Software Design

- Spectrometer + Internet single interface
- A-Care Cloud Service
- Recognized cloud interconnection
- Instant automatic notification of device anomalies
- Software upgrades and maintenance can be performed remotely
- To able to switch type of samples there is no need to switch the interface.
- Single software interface enables users to learn the system quickly and efficiently.
- Graphical design of functional modules (figure below)

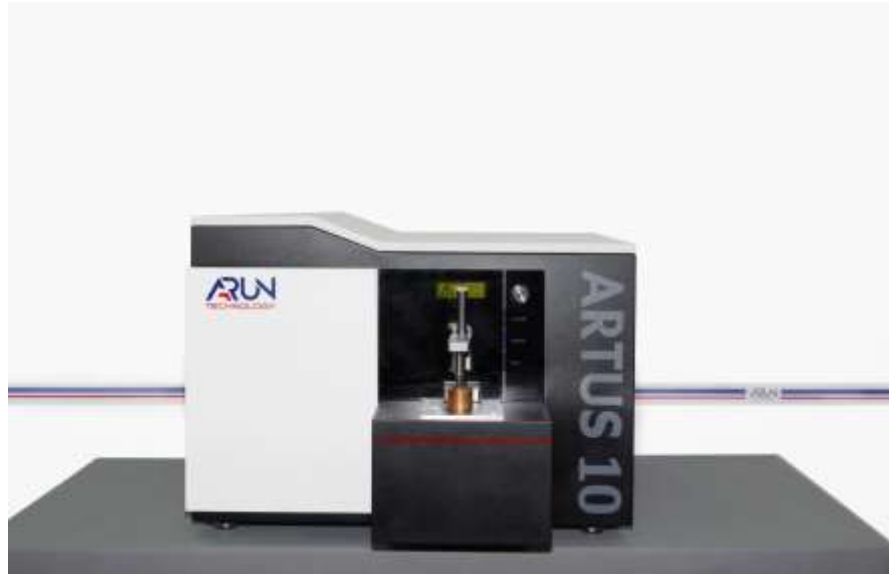
# REMOTE UPGRADE SERVICE



## EQUIPMENT RUNNING STATUS DISPLAY

- Real-time monitoring of equipment status allows for problems to be identified immediately, so operators will not be at a loss.
- Modular monitoring allows the operator to visual check the status of each module.
- The single software interface enables users to learn the system quickly and efficiently.

**FASTER  
SMARTER  
ONE PLATFORM**



## Technical Specifications

### Weight and Dimensions

Weight: 90kg  
 Packing Weight: 140kg  
 Instrument size: 706 x 513 x 810mm  
 Packing size: 980 x 990 x 770mm

### Electrical requirements

Line input 90 to 260 Volts AC 50-60 Hz  
 Automatic voltage stabilization

### Environmental requirements

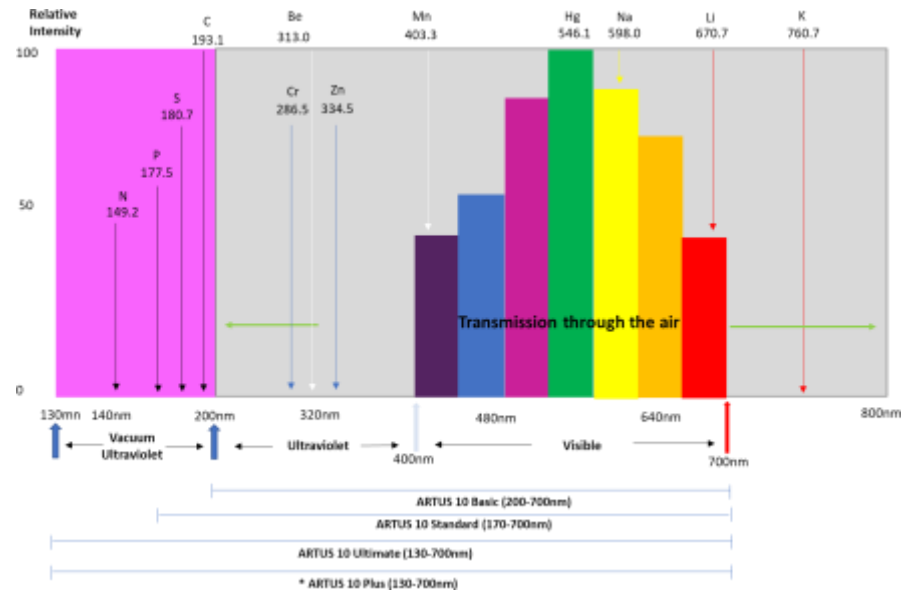
Operating temperature 10 to 30°C  
 Storage temperature -0 to 70°C

## Other Technical Parameters

<b>Optical system</b>	Paschen-Runge
<b>Wavelength range</b>	ARTUS 10 Ultimate Plus: 120-780nm <i>(with TEC option for better detection analysis of purer materials)</i>  ARTUS 10 Ultimate: 120-780nm ARTUS 10 Standard: 170-780nm ARTUS 10 Basic: 200-780nm
<b>Peak power</b>	1200W
<b>Working humidity</b>	(20-80) %RH
<b>Argon purity requirements</b>	≥ 99.999%
<b>Argon inlet pressure</b>	(0.45-0.65) MPa
<b>Argon flow</b>	≤ 3.0L/min
<b>Excitation table aperture</b>	13mm

# MEETING EXPECTATIONS FOR DESIRED RESULTS

Our spectrometers are designed to perform quick and reliable measurements. ARUN Technology offers a wide portfolio of calibrations to choose from. If you require special calibrations: those outside our published reports; consult our Applications Development Team and they will be able to advise you.

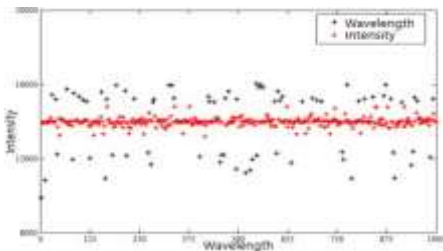
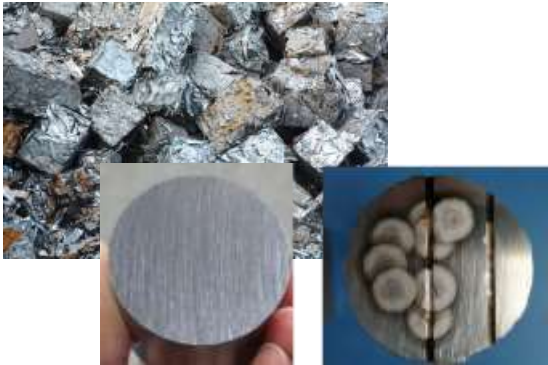


\*with thermoelectric cooling option: lower detection limits reached

MODELS OF ARTUS 10	INSTRUMENT PART NO.	ANALYTICS CALIBRATION	FIELDS OF APPLICATION
<b>Ultimate Plus</b> ARTUS10-ULT-PLUS	AA1040019UP	All optical system refrigeration can be analyzed: Fe, Al, Cu, Ni, Zn, Mg, Co, Ti, Sn, Pb plus other 10 kinds of matrix, more than 40 kinds of elements.	<ul style="list-style-type: none"> <li>10 kinds of substrates</li> <li>more than 40 elements of ultra-pure metal impurity analysis</li> <li>acid-soluble inclusions analysis</li> </ul>
<b>Ultimate</b> ARTUS10-ULT	AA1030019U	Can analyze Fe, Al, Cu, Ni, Zn, Mg, Co, Ti, Sn, Pb and other 10 kinds of matrix more than 40 kinds of elements.	<ul style="list-style-type: none"> <li>high purity metal impurities</li> <li>metallic materials containing (N) elements</li> </ul>
<b>Standard</b> ARTUS10-STD	AA10100195S	Can analyze Fe, Al, Cu, Ni, Zn, Mg, Co, Ti, Sn, Pb and other 10 kinds of matrix, more than 40 kinds of elements.	<ul style="list-style-type: none"> <li>high purity metal impurities</li> <li>conventional metal materials</li> </ul>
<b>Basic</b> ARTUS10-BASIC	AA1050019B	Can analyze Al, Cu, Zn, Mg, Sn, Pb and other non-ferrous metal materials.	<ul style="list-style-type: none"> <li>high purity metal impurities</li> <li>non-ferrous metals analysis</li> </ul>



# EFFICIENT AND USER FRIENDLY



- Very useful for customers with mass detection requirements for steel, casting, non-ferrous, unknown and composite metals material.
- The test time is short and the single analysis time of some metals can be as short as 10 seconds.
- Powerful Aberrant Spark Removed (ASR) technology removes aberrant sparks and reduces sample preparation requirements.
- The argon-filled dual optical cell design ensures high analysis performance of long and short-wave elements and avoids pollution and drift caused by the vacuum system.
- Excellent combination of hardware and algorithms; no drift correction; more stable.
- Detection efficiency is improved and argon gas is saved by more than 2/3.
- Newly added “clasp type” electrode fixture makes it simple for maintenance.
- One-click excitation; easy to use.
- Spectrometer, internet and A-care service enables recognition of the cloud interconnection, instant automatic notification of device anomalies, remote software upgrade, maintenance and feedback.
- Functional module graphical design and software operation is simple and more user friendly.
- Graphical display of the status of each module of the instrument helps to clearly judge the operation of the equipment.
- Switching the sample control type does not require reloading the model.
- Single interface for daily operations.

**MEANINGFUL  
RELATIONSHIPS  
RESULT IN  
SUCCESSFUL  
BUSINESSES**

ARUN Technology has a network of Global Distributors who want to assist you in finding the right spectrometer. All-around success comes with the relationships built with our Distributors. Their aim is to know how your existing and future internal business processes work and how we can make sure we are supplying you with the correct instrument to fit those needs. They are also the best effective channel for information and feedback when comparing other products in the market.



# THE MOST TRUSTED NAME IN ELEMENTAL ANALYSIS

ARUN Technology Limited was first established in 1986; trading as Roxboro Technology.

In 1989, ARUN was first to pioneer by developing, manufacturing and using Charged Coupled Device (CCD) with OES spectrometers for metals analysis; bringing out a series of innovative portable and desktop units.

Today, ARUN Technology continues to deliver new instruments that offer the best in design, analytical response times, detection levels and product lifecycle.

This has been possible through the wealth of experience and knowledge of its' employees and worldwide reputation for instrument reliability.

The ARTUS 10 is the latest instrument in the ARTUS series. Its predecessor; the ARTUS 8 and the MERLIN 4 are also formidable instruments within the ARUN Technology portfolio of products.



ARTUS 8

## ARTUS 8

The ARTUS 8 provides fast, precise and accurate analyses for the perfect melt. It is our most powerful and reliable spectrometer and is well suited for the metal processing industry and perfectly suited for the metal production and inspection & contract lab industries.

Models	Wavelength
ARTUS 8 Visible	212—680 nm
ARTUS 8 Standard	174—680 nm
ARTUS 8 Ultimate	120 —680nm



MERLIN 4

## MERLIN 4

The MERLIN 4 is well suited for the metal production and inspection & contract lab industries and perfectly suited for the metal processing industry.

Models	Wavelength
MERLIN 4 Visible	206—521 nm
MERLIN 4 Ultra	175—521 nm

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