MassHunter Basics

Agilent ICP-MS

Familiarization Slideset

Rev.3.0.2 – February 2021

MassHunter Basics Modules

- After installing Agilent ICP-MS with MassHunter Workstation, your Agilent representative will familiarize you with your ICP-MS and MassHunter using the MassHunter Basic Modules.

- This slide set lists main items to be explained during the Standard Familiarization by Agilent service provider.

Standard Familiarization Time

Topics	Approx. Video Time	Standard Familiarization Time
1.1 MassHunter Overview	0:08:00	0:10:00
1.2 Turn On ICP-MS	0:02:00	0:05:00
1.3 Plasma On and Startup	0:07:00	0:10:00
1.4 Performance Report	0:02:30	0:05:00
1.5 Creating a Batch	0:06:30	0:10:00
1.6 Setting up a Batch (1/3) – Acquisition Method	0:13:30	0:15:00
1.7 Setting up a Batch (2/3) – Data Analysis Method	0:06:30	0:10:00
1.8 Setting up a Batch (3/3) – Sample List	0:03:30	0:05:00
1.9 Tune Overview	0:06:30	0:10:00
1.10 Running a Batch	0:02:30	0:05:00
1.11 Editing a Batch in Queue	0:04:00	0:05:00
1.12 Data Analysis Overview	0:12:00	0:15:00
1.13 Quantitative	0:11:00	0:15:00
1.14 Report	0:02:30	0:05:00
1.15 Maintenance and EMF	0:06:00	0:10:00
1.16 A Typical Workflow of Routine Analysis	0:05:00	0:10:00
Total Approx. Time	1:31:00	2:25:00

* It is not mandatory to use videos.

1.1 MassHunter Overview

Std. Familiarization Time: 0:10:00

Approximate Video Time: 0:08:00

Play the Video

Standard configuration and options for Agilent 7900

opt.101 UHMI	opt.102 Advanced Acq.	Function	Typical Application
X		Ultra HMI (UHMI)	Environmental
X		Method automation	General
	X	TRA Data Acquisition, Fast TRA	Speciation
	X	Timechart data analysis	Research, Academic
	X	Half Mass, Narrow Peak	Research, Academic
	X	Isotope Ratio, Isotope Dilution analysis	Research, Academic
	X	Organic Solvent mode for Plasma Ignition	Organic solvent
	X	Support Option Gas line (20% O2/Ar)	Organic solvent
	X	Support Laser Ablation as Sample Introduction	Laser Ablation
	X	Support 3rd Cell gas line	Research, Academic

Standard configuration and options for Agilent 7800

Function	Typical Application
TRA Data Acquisition	Speciation
Timechart data analysis	Research, Academic
Half Mass, Narrow Peak	Research, Academic
Isotope Ratio, Isotope Dilution analysis	Research, Academic
Organic Solvent mode for Plasma Ignition	Organic solvent
Support Option Gas lin (20% O2/Ar)	Organic solvent
Support Laser Ablation as Sample Introduction	Laser Ablation
Support 3rd Cell gas line	Research, Academic

Starting the MassHunter Workstation

[ICP-MS Instrument Control]

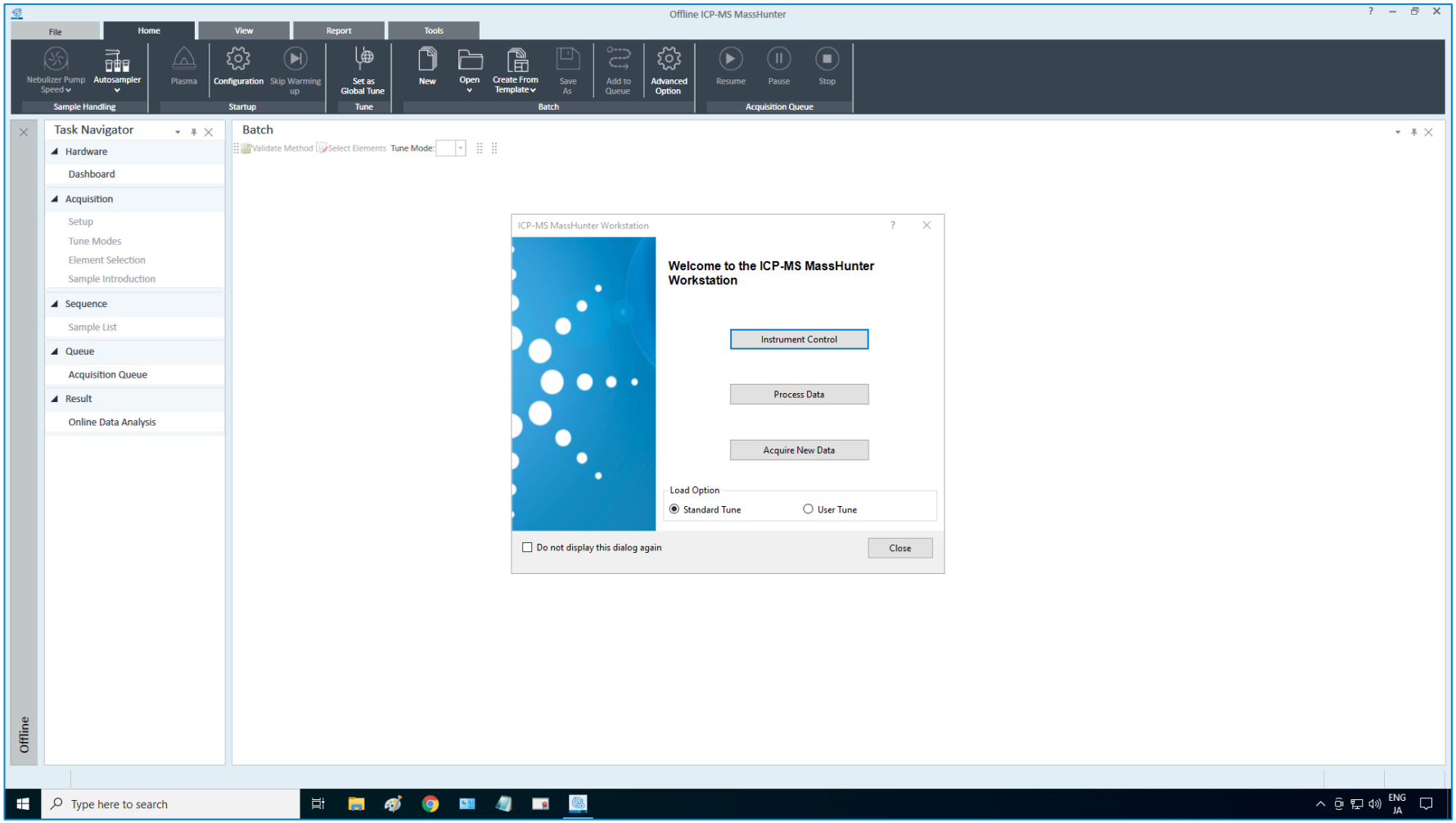
- [ICP-MS MassHunter Workstation] > [ICP-MS Instrument Control]

[Offline Data Analysis]

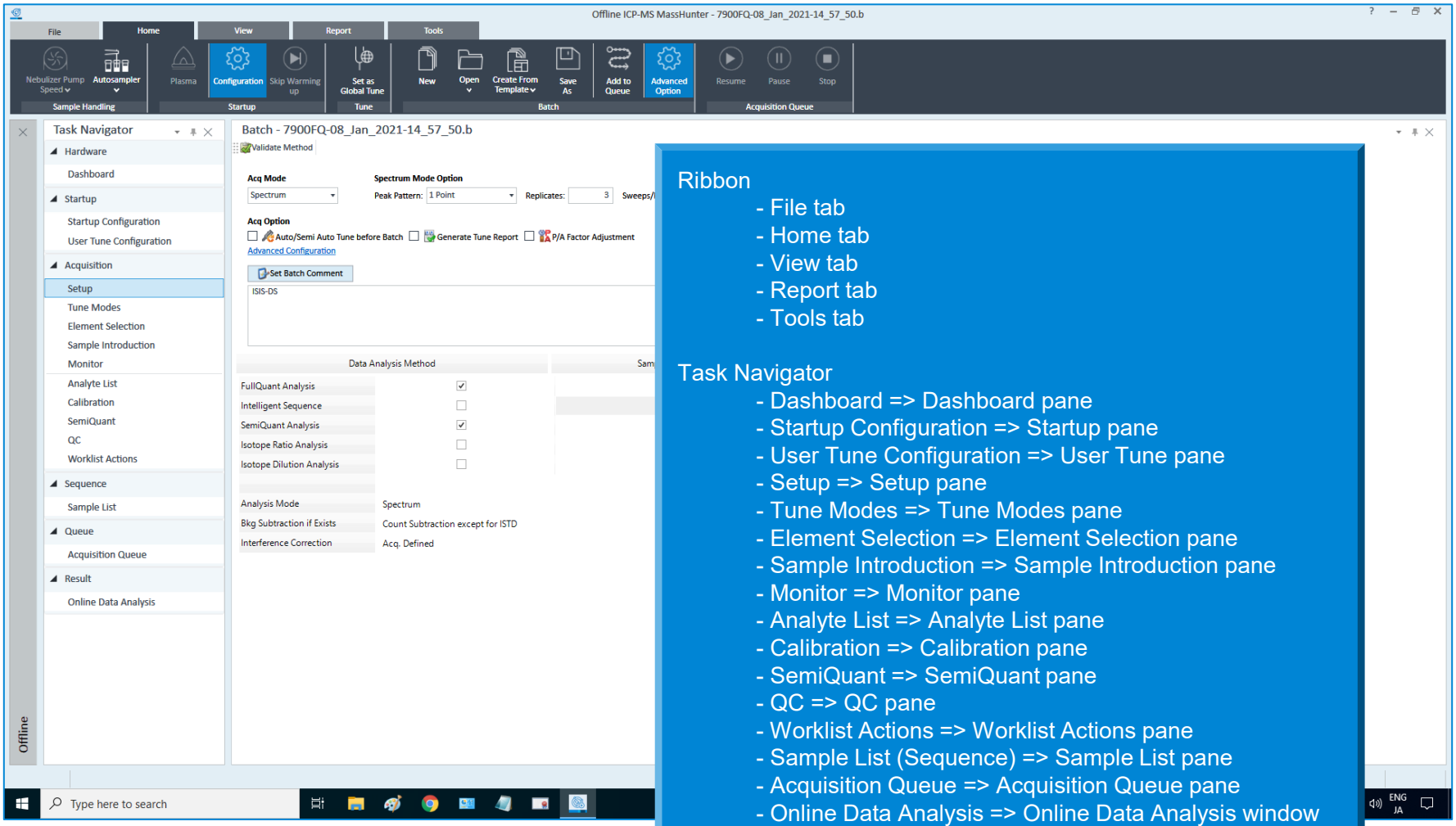
- [ICP-MS MassHunter Workstation] > [Offline Data Analysis]

or open from the desktop icons

Operations on the Welcome screen



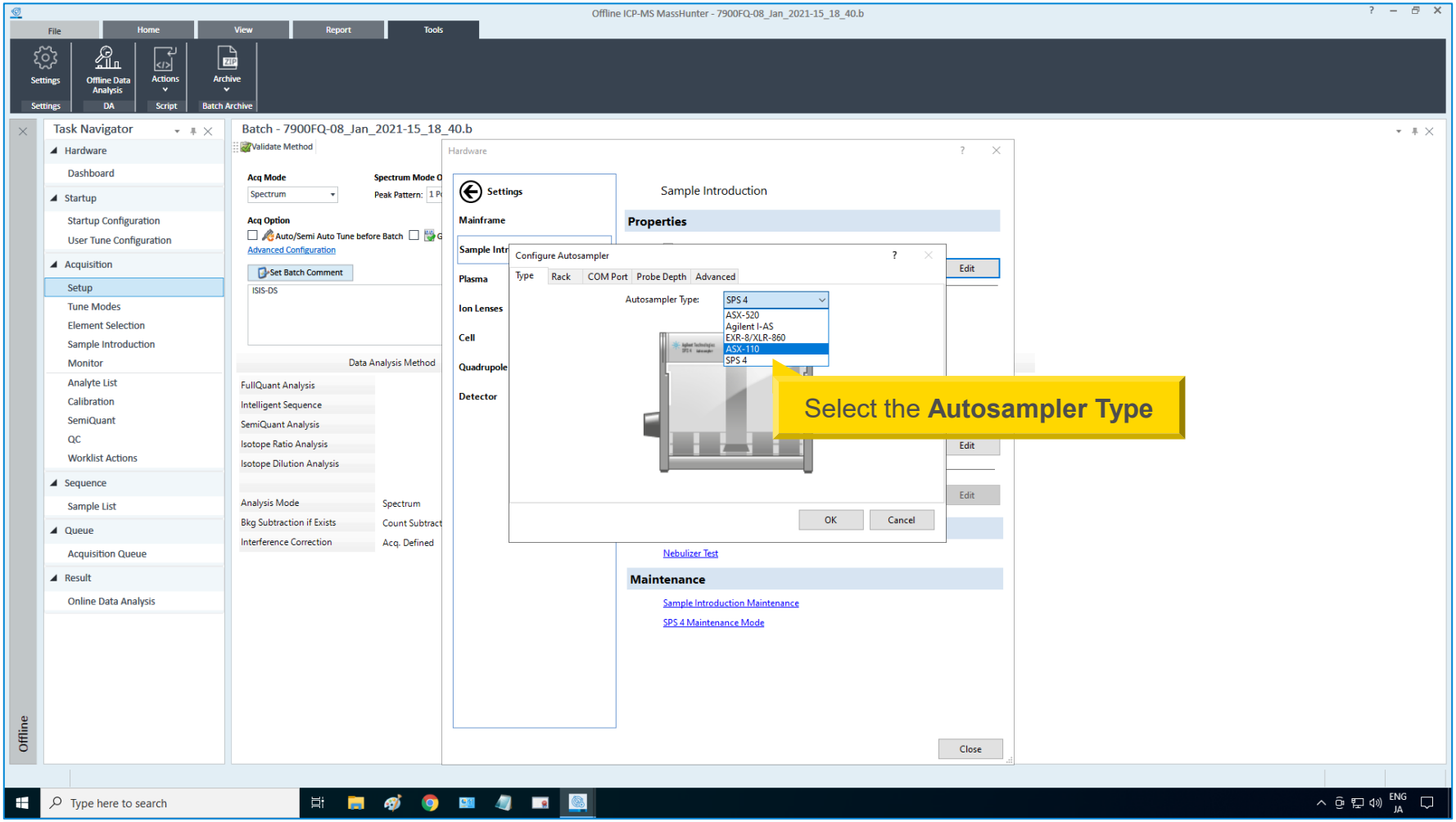
Ribbon and Task Navigator



Ribbon
- File tab
- Home tab
- View tab
- Report tab
- Tools tab

Task Navigator
- Dashboard => Dashboard pane
- Startup Configuration => Startup pane
- User Tune Configuration => User Tune pane
- Setup => Setup pane
- Tune Modes => Tune Modes pane
- Element Selection => Element Selection pane
- Sample Introduction => Sample Introduction pane
- Monitor => Monitor pane
- Analyte List => Analyte List pane
- Calibration => Calibration pane
- SemiQuant => SemiQuant pane
- QC => QC pane
- Worklist Actions => Worklist Actions pane
- Sample List (Sequence) => Sample List pane
- Acquisition Queue => Acquisition Queue pane
- Online Data Analysis => Online Data Analysis window

Use Auto Sampler



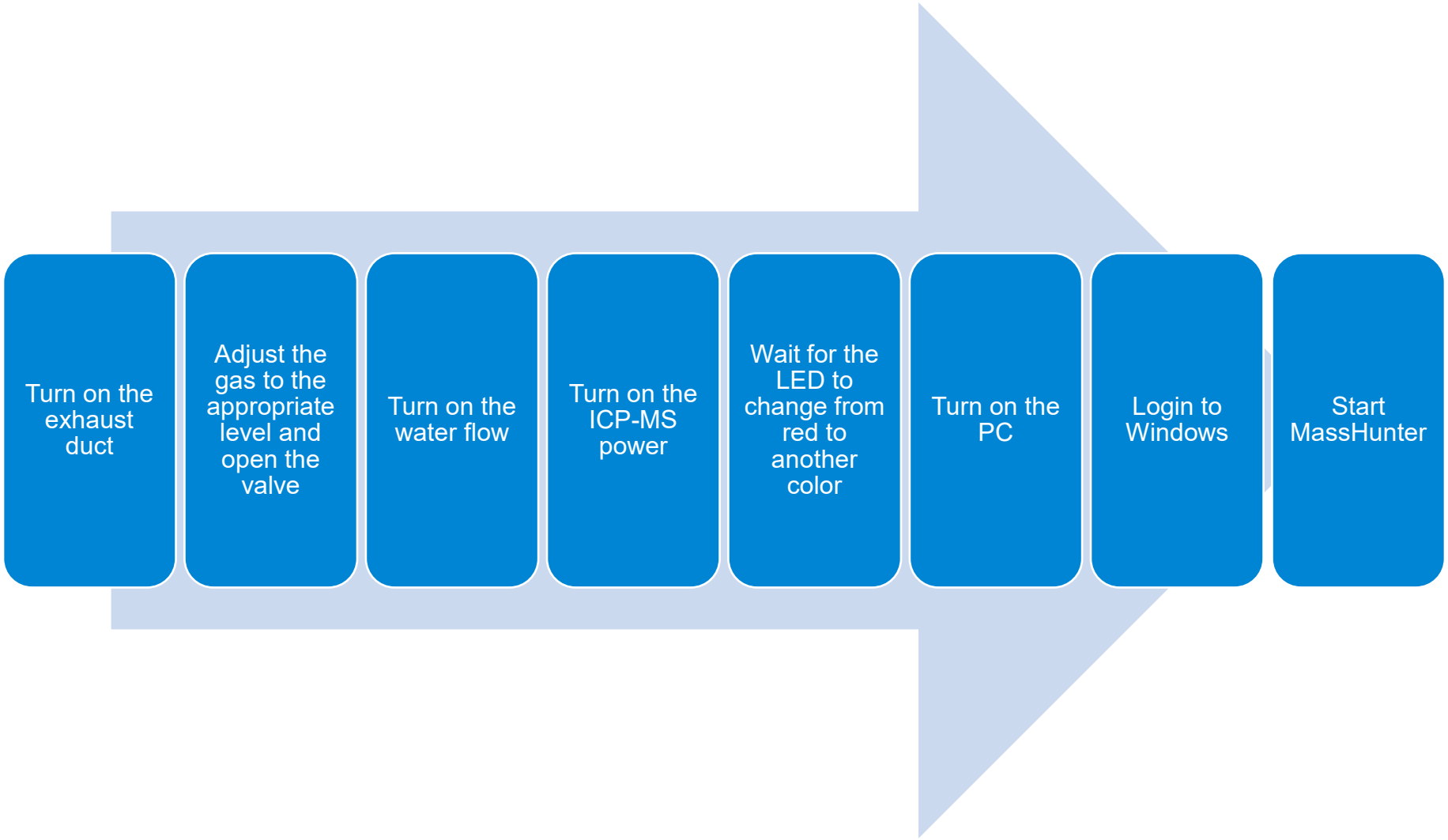
1.2
Turn On ICP-MS

Std. Familiarization Time: 0:05:00

Approximate Video Time: 0:02:00

Play the Video

Turn On ICP-MS



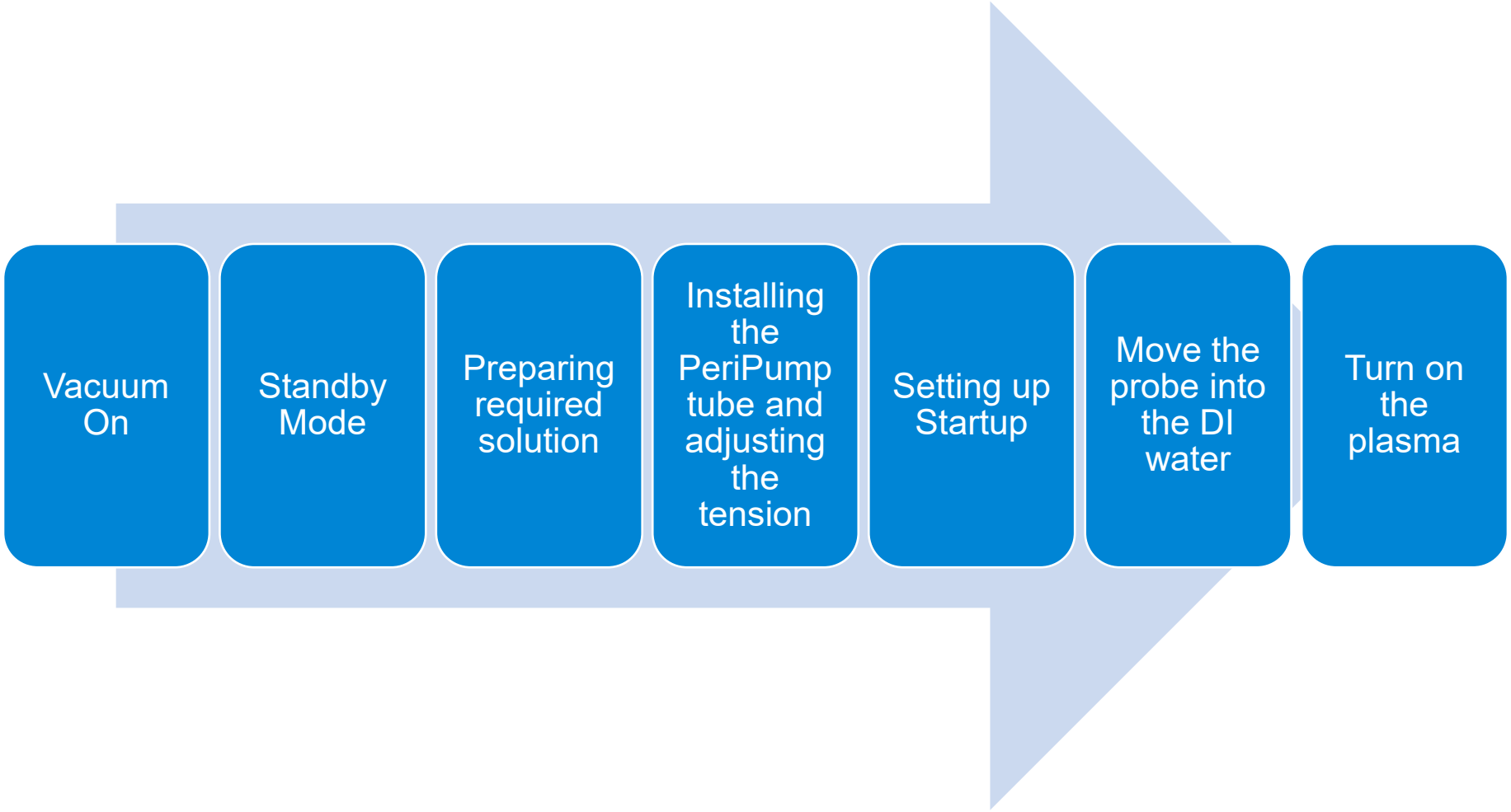
1.3
Plasma On and Startup

Std. Familiarization Time: 0:10:00

Approximate Video Time: 0:07:00

Play the Video

Plasma On


Vacuum On
Standby Mode
Preparing required solution
Installing the PeriPump tube and adjusting the tension
Setting up Startup
Move the probe into the DI water
Turn on the plasma

Others

- [Status Viewer]
- [Skip Warm-up]
- [Plasma Off at End]
- Startup when turning on the plasma
- [Configure Ignition Sequence]

1.4
Performance Report

Std. Familiarization Time: 0:05:00

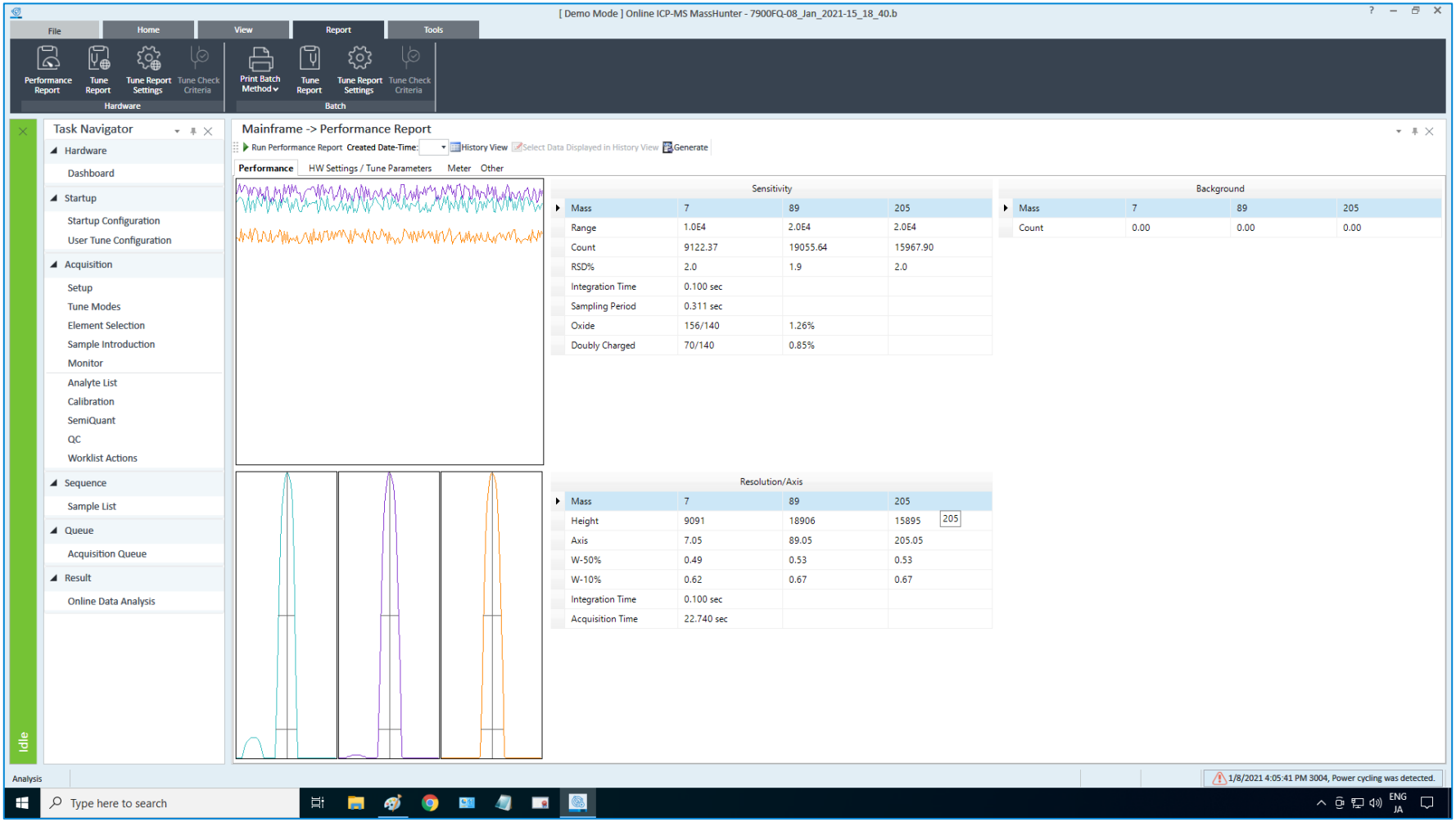
Approximate Video Time: 0:02:30

Play the Video

Performance Report

- Normally, the Performance Report runs at Startup
- You can monitor the status of the device status successively by executing this every time using the same conditions
- Ribbon > [Report] tab > [Performance Report]

Performance Report



Others

- [History View]
- [Select Data Displayed in History View]
- [Export] (Context Menu)
- [Clear Performance Report History]

1.5
Creating a Batch

Std. Familiarization Time: 0:10:00

Approximate Video Time: 0:06:30

Play the Video

Batch

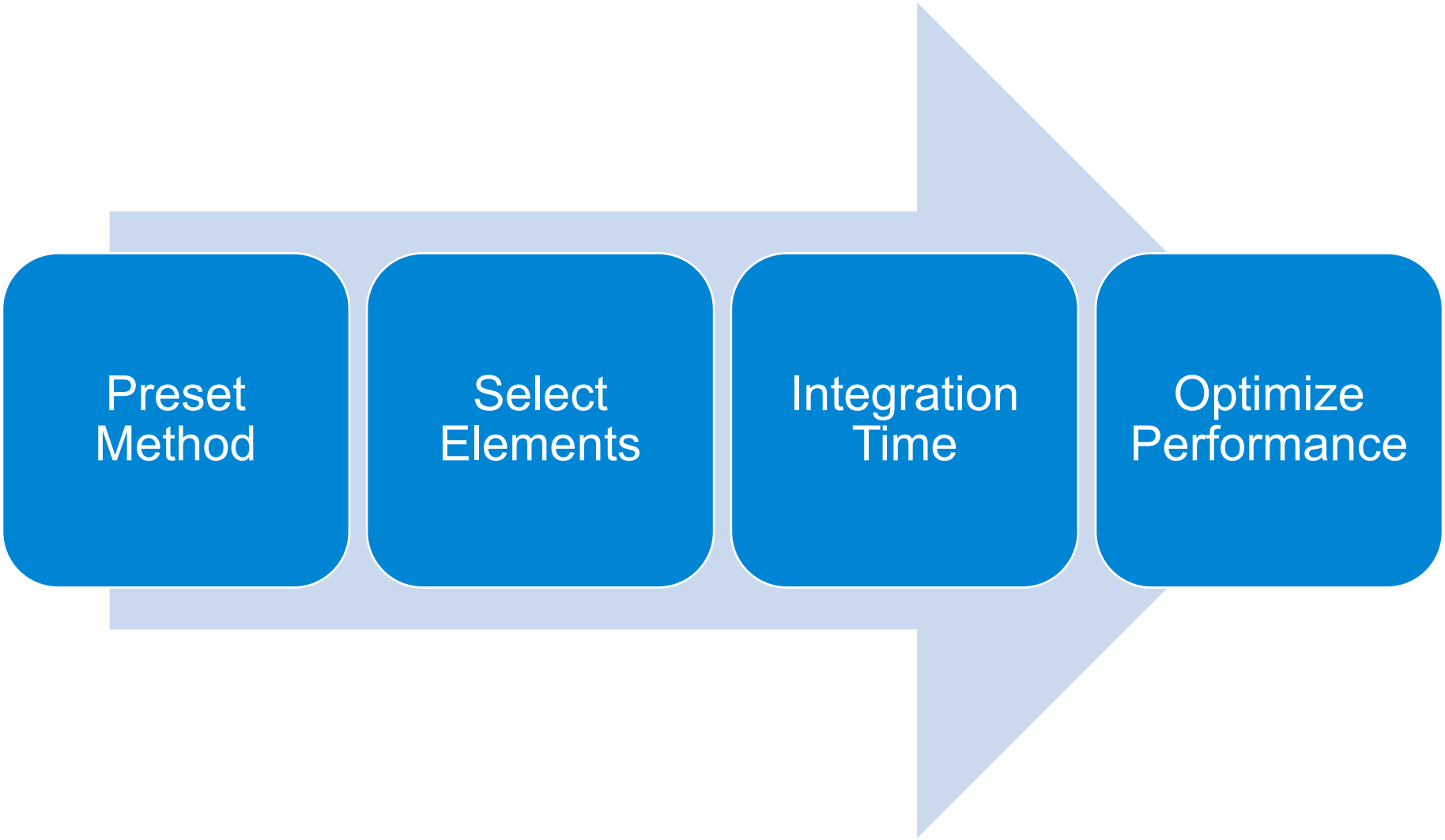
The following items are stored in a single batch folder

- Acquisition method (including tuning)
- Data analysis method
- Sample list

Methods for creating a batch

- [Method Wizard]
- [Preset Method]
- [Existing Batch]
- [Blank Template]

Method Wizard



Others

- [File] tab > [Save As Batch Template]
- [Home] tab > [Batch] group > [Create From Template]
- Select the pin of a recent batch template
  (This feature has been removed in MassHunter 5.1)
- Support for long file names
- Characters cannot be used for folder or file names

1.6
Setting up a Batch (1/3) – Acquisition Method

Std. Familiarization Time: 0:15:00

Approximate Video Time: 0:13:30

Play the Video

Acquisition Parameters (1/2)

- Delete unnecessary tune modes before
- [Select Elements]
- Check the interference correction equations
- [Acq Mode]
- [Peak Pattern]
- [Replicates]

Acquisition Parameters (2/2)

- [Sweeps/Replicate]
- [IntegTime/Mass]
- [Auto/Semi Auto Tune before Batch]
- [Print Tune Report]
- [P/A Factor Adjustment]

PeriPump/ISIS

- [PreRun]
  - [Sample Uptake] – [Time]
  - [Sample Uptake] – [Speed]
  - [Stabilize] – [Time]

- [PostRun]
  - [Probe Rinse (Sample)] – [Time]
  - [Probe Rinse (Std)] – [Time]
  - [Probe Rinse] – [Speed]
  - [Rinse 1(/2/3)] – [Time]
  - [Probe Rinse 1(/2/3)] – [Time]

- [Preemptive Rinse]

Tune

- [Plasma Mode]

- [Configure Tune Way]
  - [Auto Tune]
  - [Custom Tune]
  - [Signal Monitor]

- [Tune Report]
  - [Report Template]

1.7
Setting up a Batch (2/3) – Data Analysis Method

Std. Familiarization Time: 0:10:00

Approximate Video Time: 0:06:30

Play the Video

Startup

- [Data Analysis Method]
  - [FullQuant Analysis]
  - [SemiQuant Analysis]
  - [Analysis Mode]

Analyte List

- [Delete]
- [Load List from Acquisition Method]
- Set elements for [ISTD]

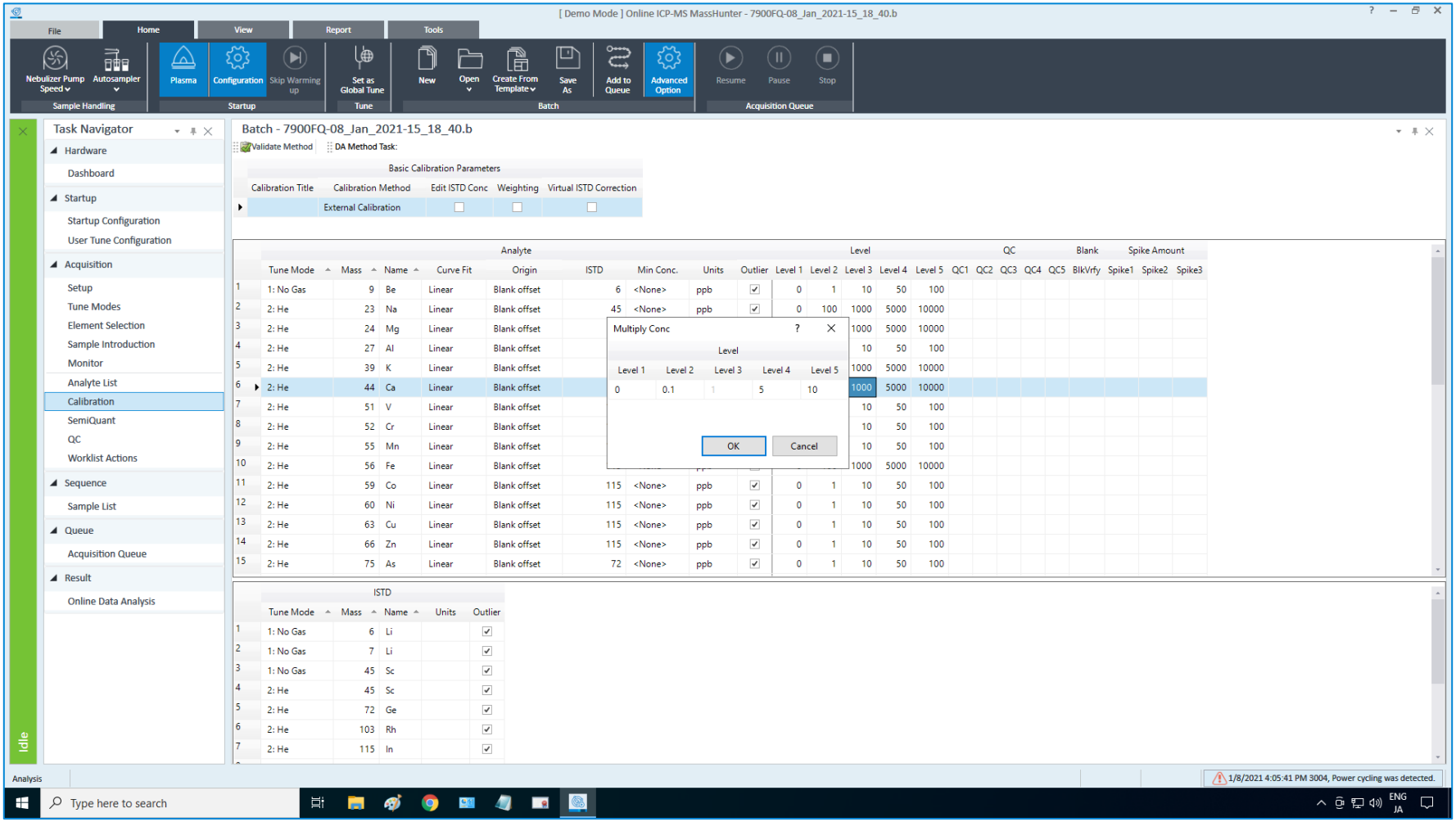
Calibration (1/3)

- [Curve Fit]
- [Origin]
- [ISTD]
- [Units]
- [Level]

Calibration (2/3)

- [Conc Multiply]
- [Add Levels]
- [Advanced Info] (In MassHunter 5.1, perform operations from Task Navigator)
  - [FullQuant Outlier]
  - [Worklist Actions]

Calibration (3/3)



1.8
Setting up a Batch (3/3) – Sample List

Std. Familiarization Time: 0:05:00

Approximate Video Time: 0:03:30

Play the Video

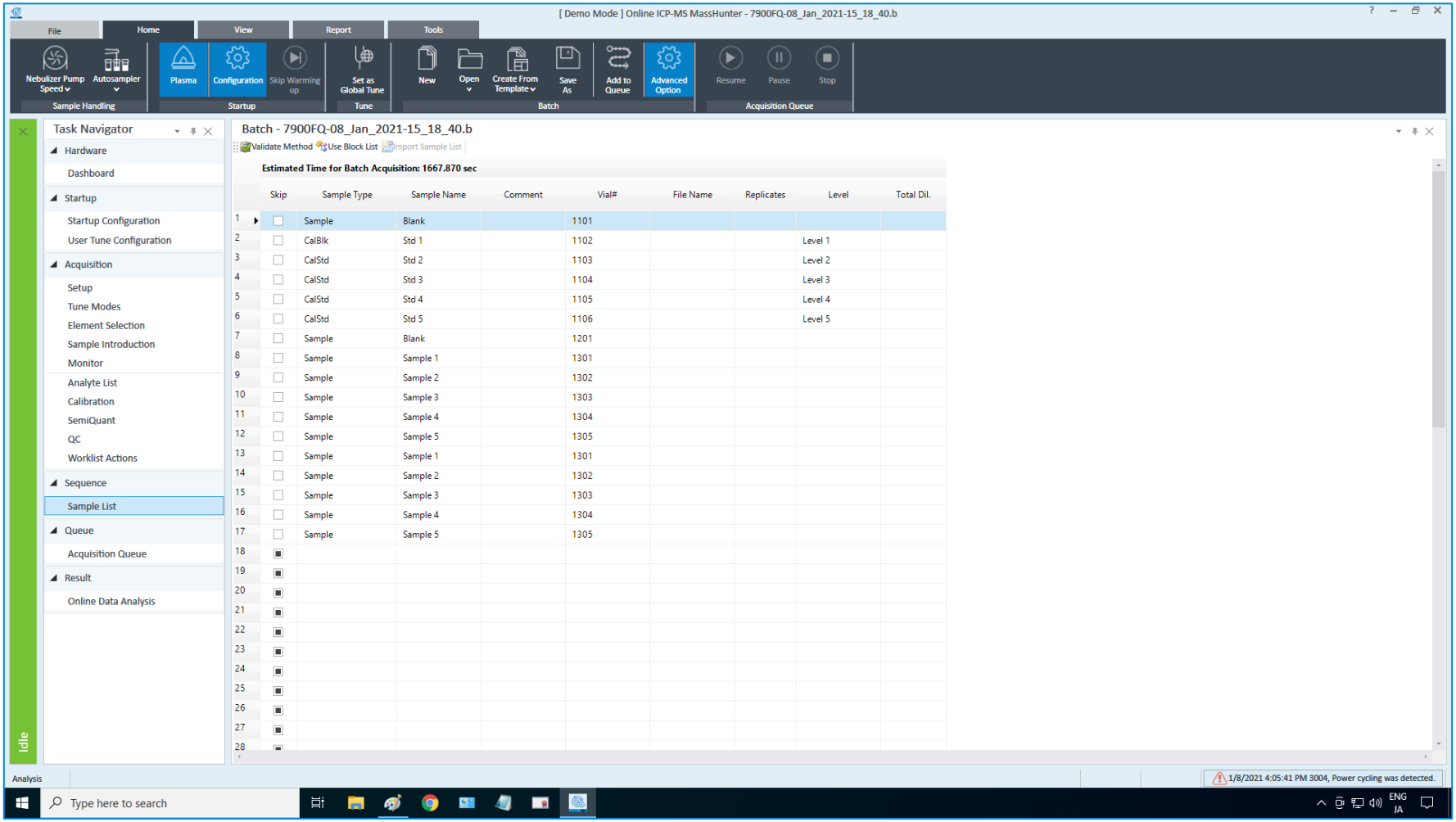
Sample List

- [Sample Type] (required)
- [Sample Name] (required)
- [Vial#]
- [Level]

- [Use Block List]

- [Validate Method]

Sample List


[Demo Mode] Online ICP-MS MassHunter - 7900FQ-08_Jan_2021-15_18_40.b
File
Home
View
Report
Tools
Nebulizer Pump Speed
Autosampler
Plasma
Configuration
Skip Warming up
Set as Global Tune
New
Open
Create From Template
Save As
Add to Queue
Advanced Option
Resume
Pause
Stop
Sample Handling
Startup
Tune
Batch
Acquisition Queue
Task Navigator
Hardware
Dashboard
Startup
Startup Configuration
User Tune Configuration
Acquisition
Setup
Tune Modes
Element Selection
Sample Introduction
Monitor
Analyte List
Calibration
SemiQuant
QC
Worklist Actions
Sequence
Sample List
Queue
Acquisition Queue
Result
Online Data Analysis
Idle
Batch - 7900FQ-08_Jan_2021-15_18_40.b
Validate Method
Use Block List
Import Sample List
Estimated Time for Batch Acquisition: 1667.870 sec
Skip
Sample Type
Sample Name
Comment
Vial#
File Name
Replicates
Level
Total Dil.
1 Sample Blank 1101
2 CalBlk Std 1 1102 Level 1
3 CalStd Std 2 1103 Level 2
4 CalStd Std 3 1104 Level 3
5 CalStd Std 4 1105 Level 4
6 CalStd Std 5 1106 Level 5
7 Sample Blank 1201
8 Sample Sample 1 1301
9 Sample Sample 2 1302
10 Sample Sample 3 1303
11 Sample Sample 4 1304
12 Sample Sample 5 1305
13 Sample Sample 1 1301
14 Sample Sample 2 1302
15 Sample Sample 3 1303
16 Sample Sample 4 1304
17 Sample Sample 5 1305
Analysis
1/8/2021 4:05:41 PM 3004, Power cycling was detected.
Type here to search
ENG
JA

1.9
Tune Overview

Std. Familiarization Time: 0:10:00

Approximate Video Time: 0:06:30

Play the Video

Tune

Tune

- Optimizing instrument performance for a specific analysis

Types of Tune

- [Auto Tune]
- [Custom Tune]
- [Signal Monitor]

Auto Tune

- Usually, select [Auto Tune]
- When auto tune is complete, the result is saved in the batch

- Performing a Startup optimizes the hardware setting parameters; these provide the instrument's basic performance settings. In addition, performing an auto tune for each batch optimizes the parameters for the relevant acquisition

- [Auto Tune] cannot be selected for a batch that was created from a blank template

Custom Tune

- You can select each lens parameter to tune and then perform auto tune
- You can also adjust each tuning parameter manually by operating the slider or changing the value while you monitor the signal
- The result of manual tuning is saved in the batch

Signal Monitor

- You can monitor the signals
- While each tuning parameter can be changed, they are not save in the batch

Differences between Startup and Auto Tune

- Startup consists of some hardware settings and lens tune
- The purpose of Startup is to monitor the instrument status in a specific condition
- The Performance Report for Startup is important to monitor trends in instrument performance

Relationship between Hardware Settings and Auto Tune parameters

- Some hardware settings that were optimized in Startup will be also used in data acquisition

- When you use a preset method, Tune parameters for Auto Tune are acquired from the preset method. The optimized tune parameters are saved in the batch

- The standard lens tune parameters in Startup are not used for Auto Tune

Others

- Creating a tune report
- Tune in batch acquisition
- Vial settings when running tune
- For detailed custom tune operations and other special tunes, refer to “2.1 Custom Tune and Other Tunes” video

1.10
Running a Batch

Std. Familiarization Time: 0:05:00

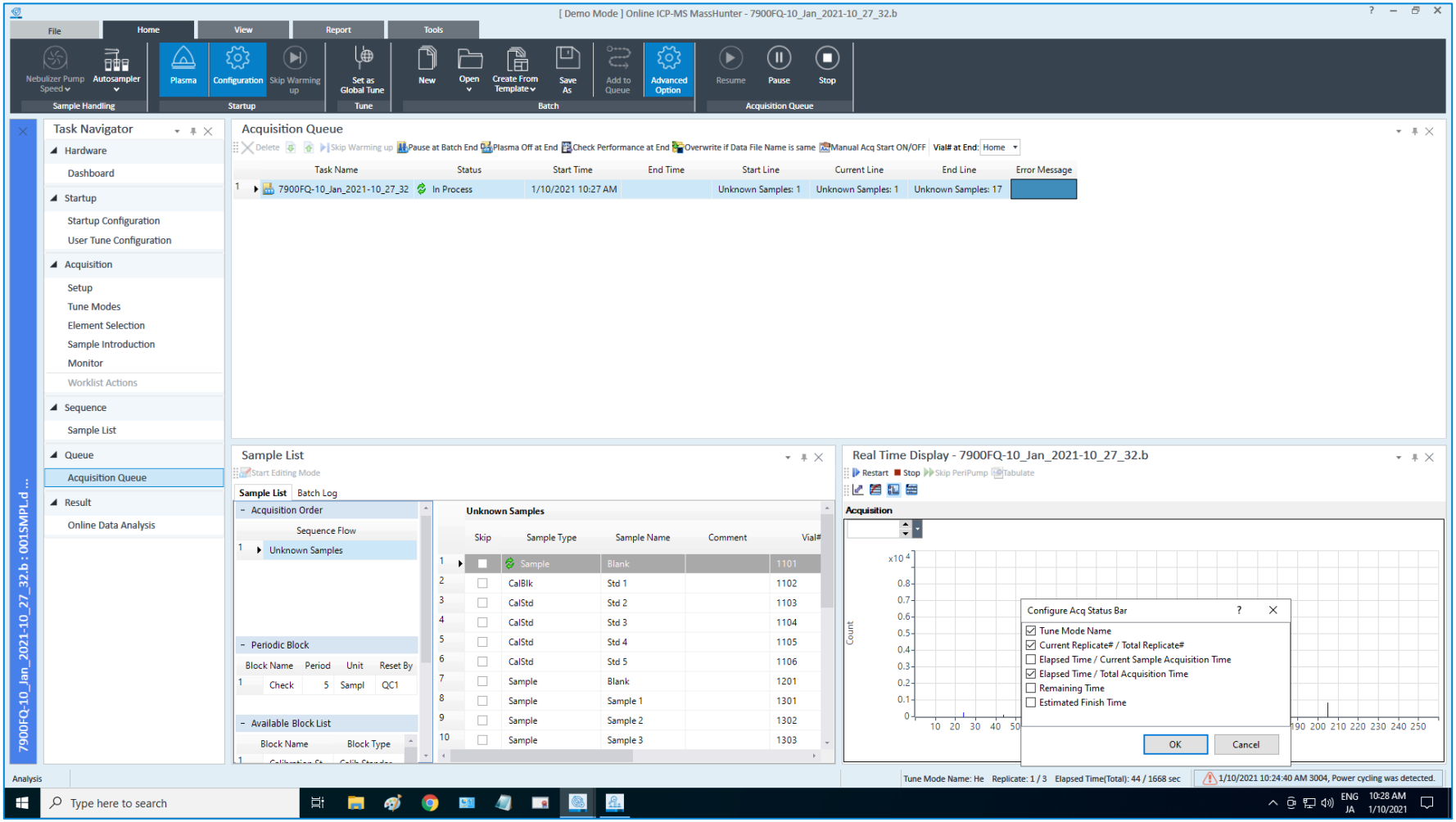
Approximate Video Time: 0:02:30

Play the Video

Running a Batch

- [Validate Method]
- [Save Batch]
- [Add to Queue]
- Status bar

Acquisition Queue



1.11
Editing a Batch in Queue

Std. Familiarization Time: 0:05:00

Approximate Video Time: 0:04:00

Play the Video

Queue

- Ribbon > [Home] tab > [Batch] group > [Add to Queue]
- [Skip Warm-up]
- [Plasma Off at End]
- [Vial# at End]

Adding or deleting a sample during acquisition

- Select the first empty line in the [Sample List] pane from the Acquisition Queue
- Click [Start Sample List Editing Mode]
- Add/delete samples
- Click [Exit Sample Editing Mode]

Others

- Reacquiring the previous batch
- Editing an acquired batch and acquire it again

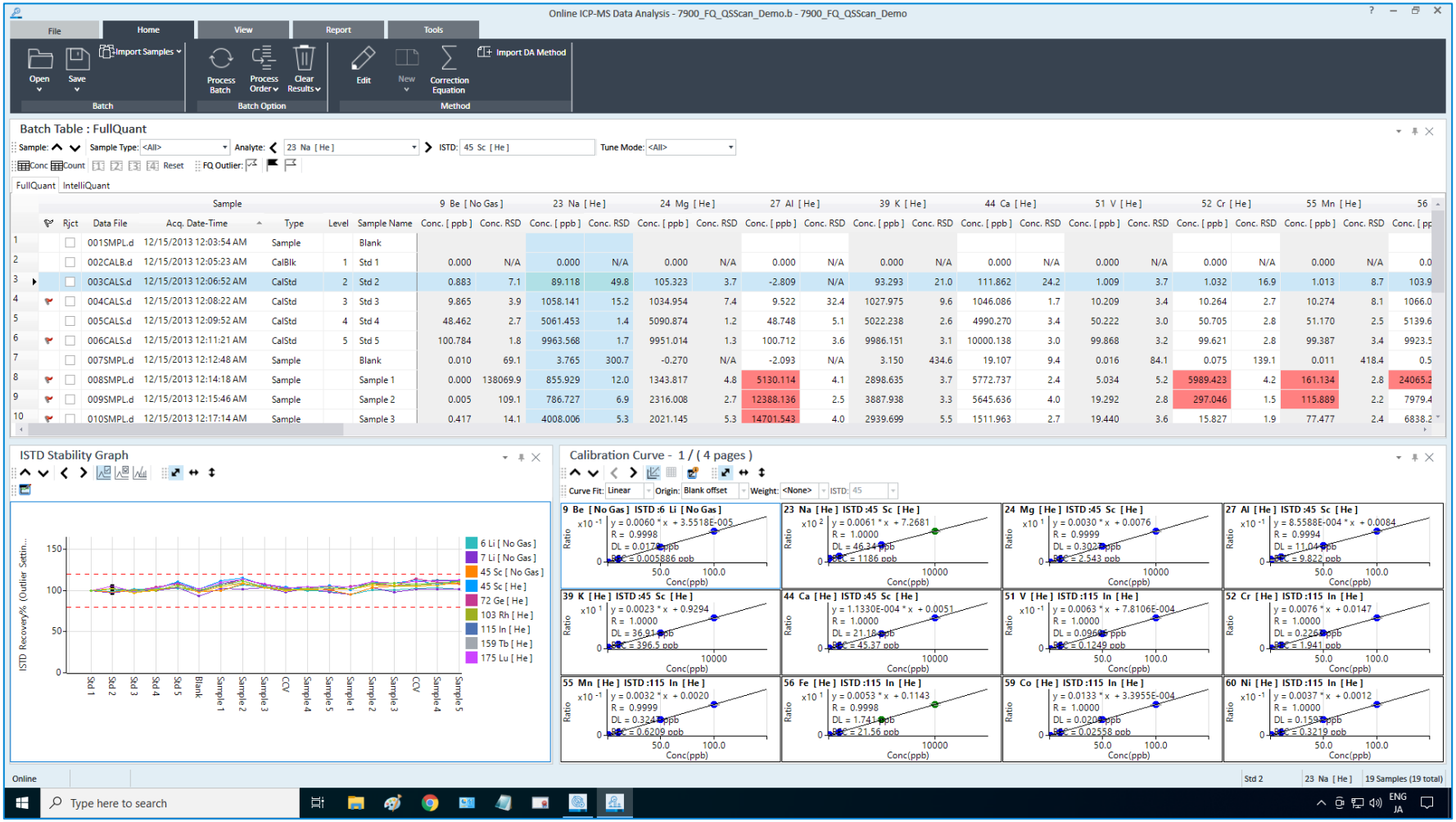
1.12
Data Analysis Overview

Std. Familiarization Time: 0:15:00

Approximate Video Time: 0:12:00

Play the Video

Batch-at-a-Glance



Batch-at-a-Glance

- [Process Batch]
- [Specify Process Order]
- [Conc] and [Count] modes
- Showing replicate data – [Detail]
- [User Columns Settings]
- [Number Configuration]
- [FullQuant Outliers]

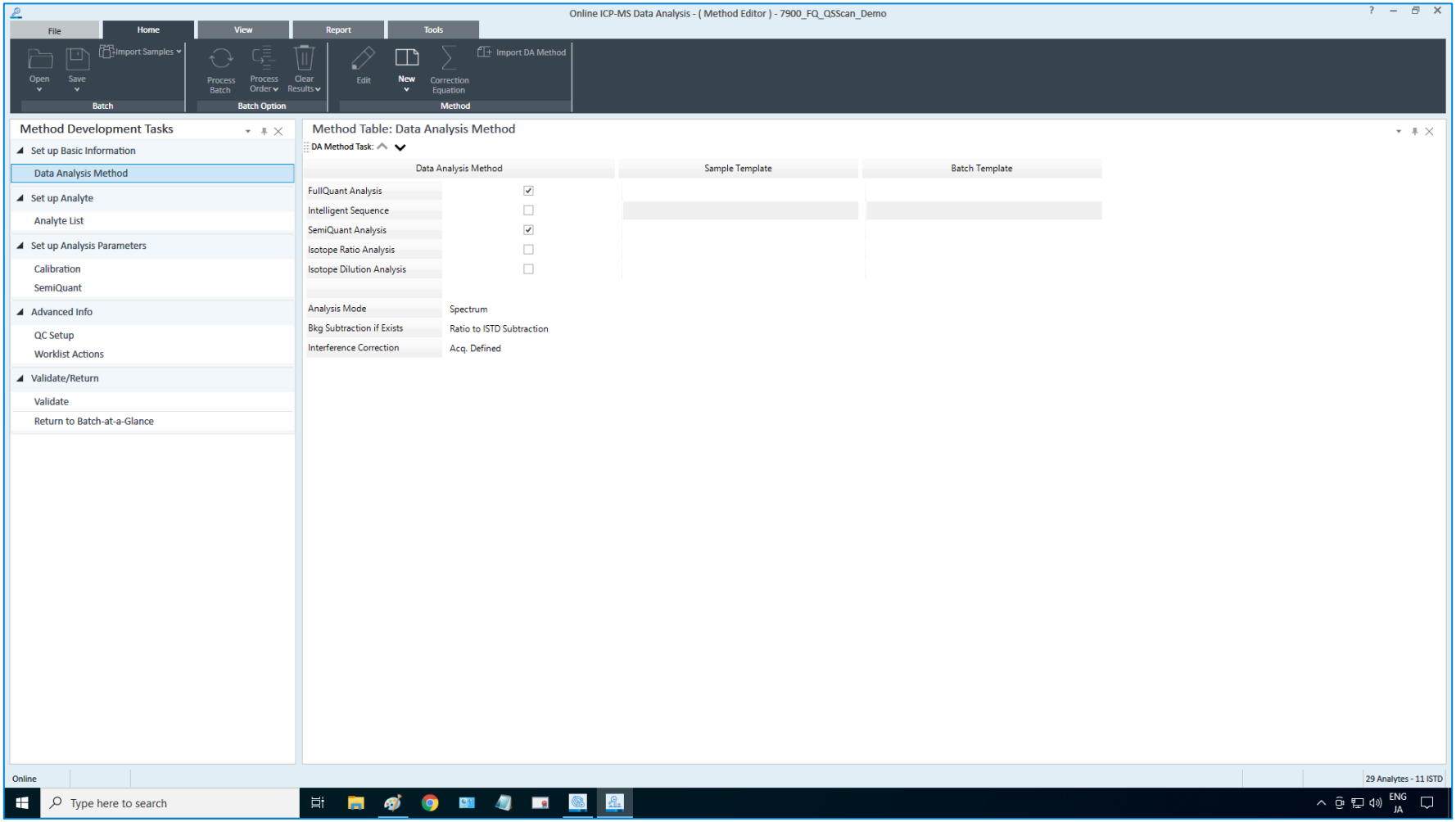
Spectrum Pane

- ISTD Stability Graph
- QC Sample Stability Graph
- Spectrum/Chromatogram
- Adjusting the scale – right-click and drag the mouse
- Shifting the axes – left-click and drag the mouse
- Expanding a selected area – right-click and drag the mouse

Calibration Curve Pane

- Single Calibration Curve
- Twelve Calibration Curve
- [Next Element] and [Previous Element]

Method Editor



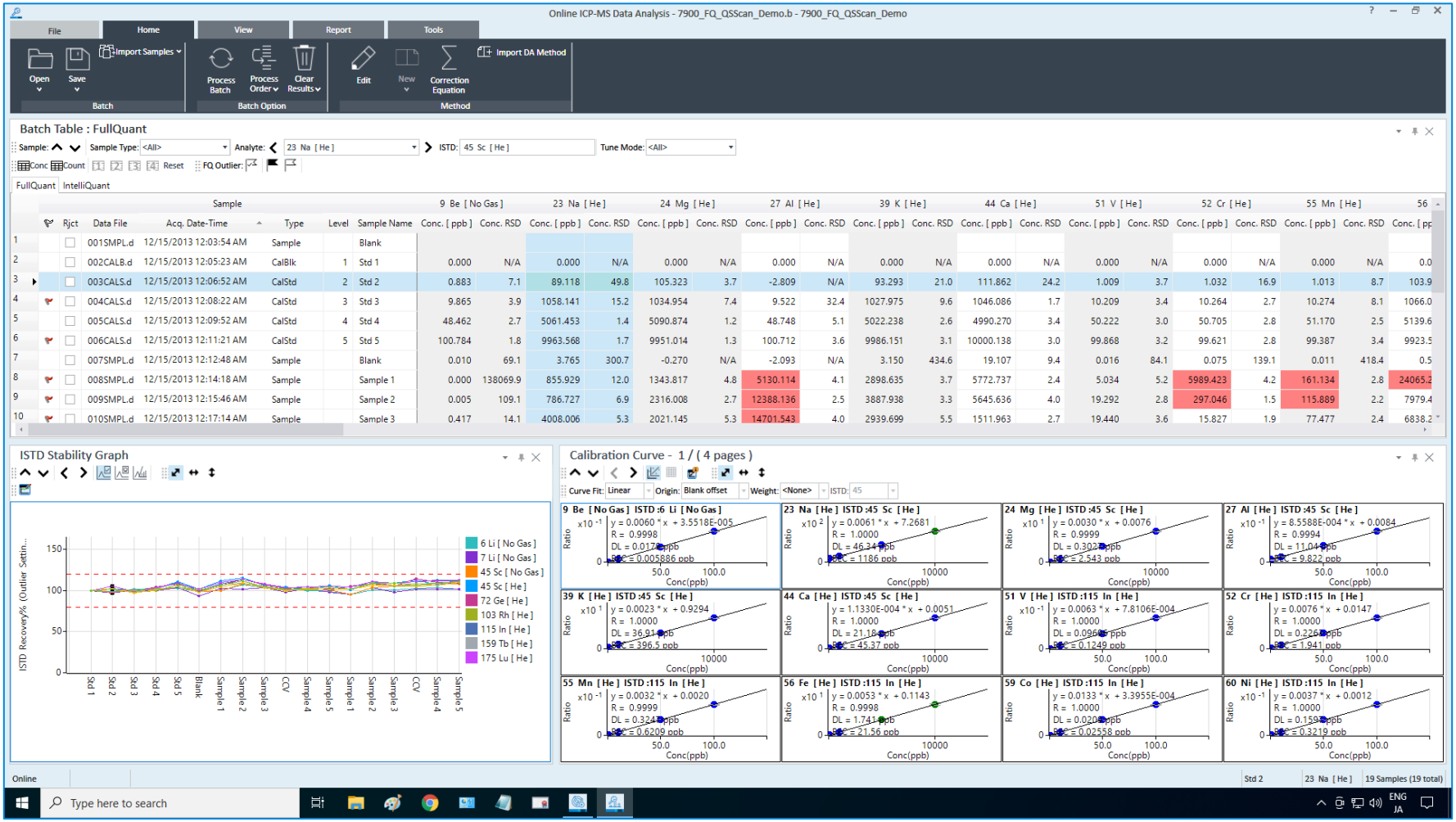
1.13 Quantitative

Std. Familiarization Time: 0:15:00

Approximate Video Time: 0:11:00

Play the Video

Batch-at-a-Glance



Calibration Curve Pane (1/2)

- Single Calibration Curve and Twelve Calibration Curve
- Color of the calibration curve level point
- How to ignore a calibration curve level
- How to change the calibration curve type
- Changing the origin of the calibration curve
- Changing the weighting of the calibration curve

Calibration Curve Pane (2/2)

- Changing the ISTD of the calibration curve
- Changing the calibration curve level
- Printing calibration curve data
- Exporting the table in the batch table pane
- Exporting graphics

1.14
Report

Std. Familiarization Time: 0:05:00

Approximate Video Time: 0:02:30

Play the Video

Report

- [Generate Report]
- [Sample Report]
- Types of report template files
- Types of exportable data

1.15
Maintenance and EMF

Std. Familiarization Time: 0:10:00

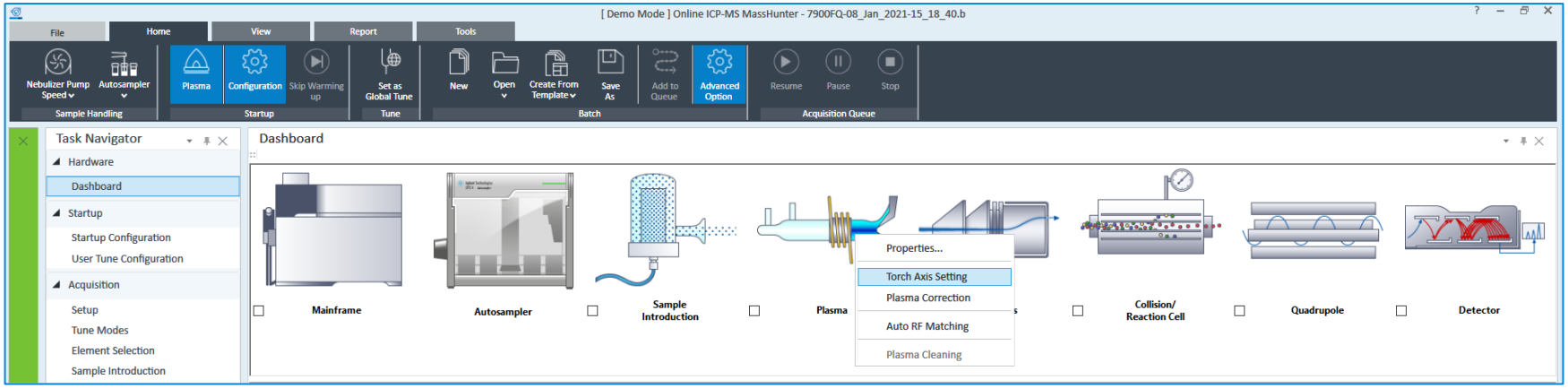
Approximate Video Time: 0:06:00

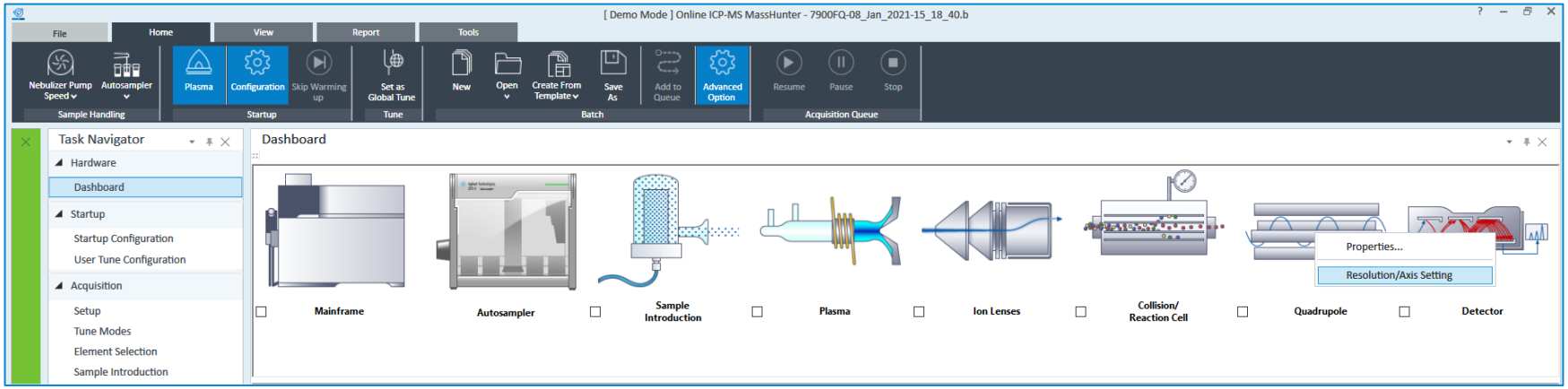
Play the Video

Maintenance

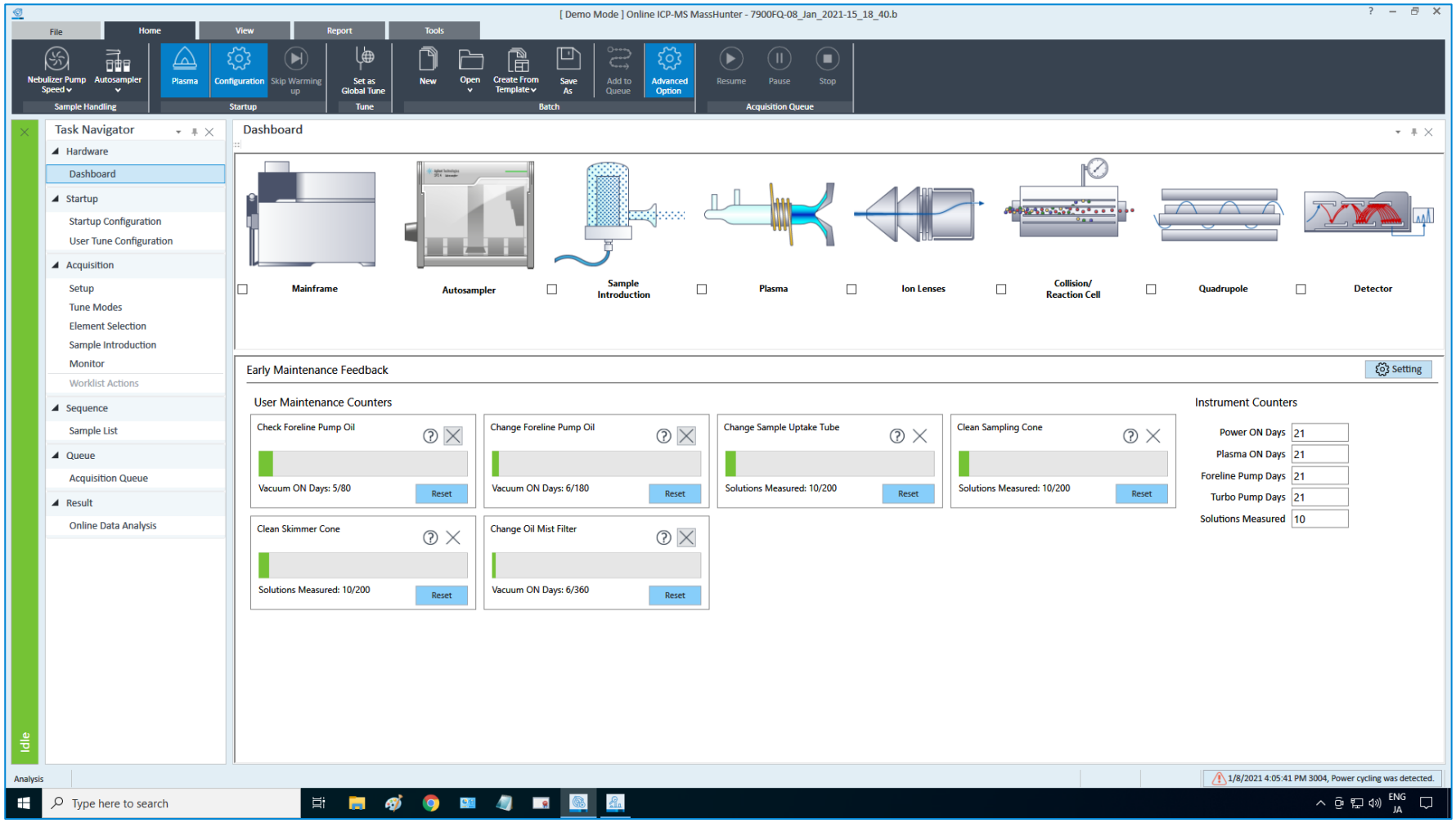
- Click icons in the Dashboard pane
- You can perform maintenance items from the maintenance menu

Maintenance

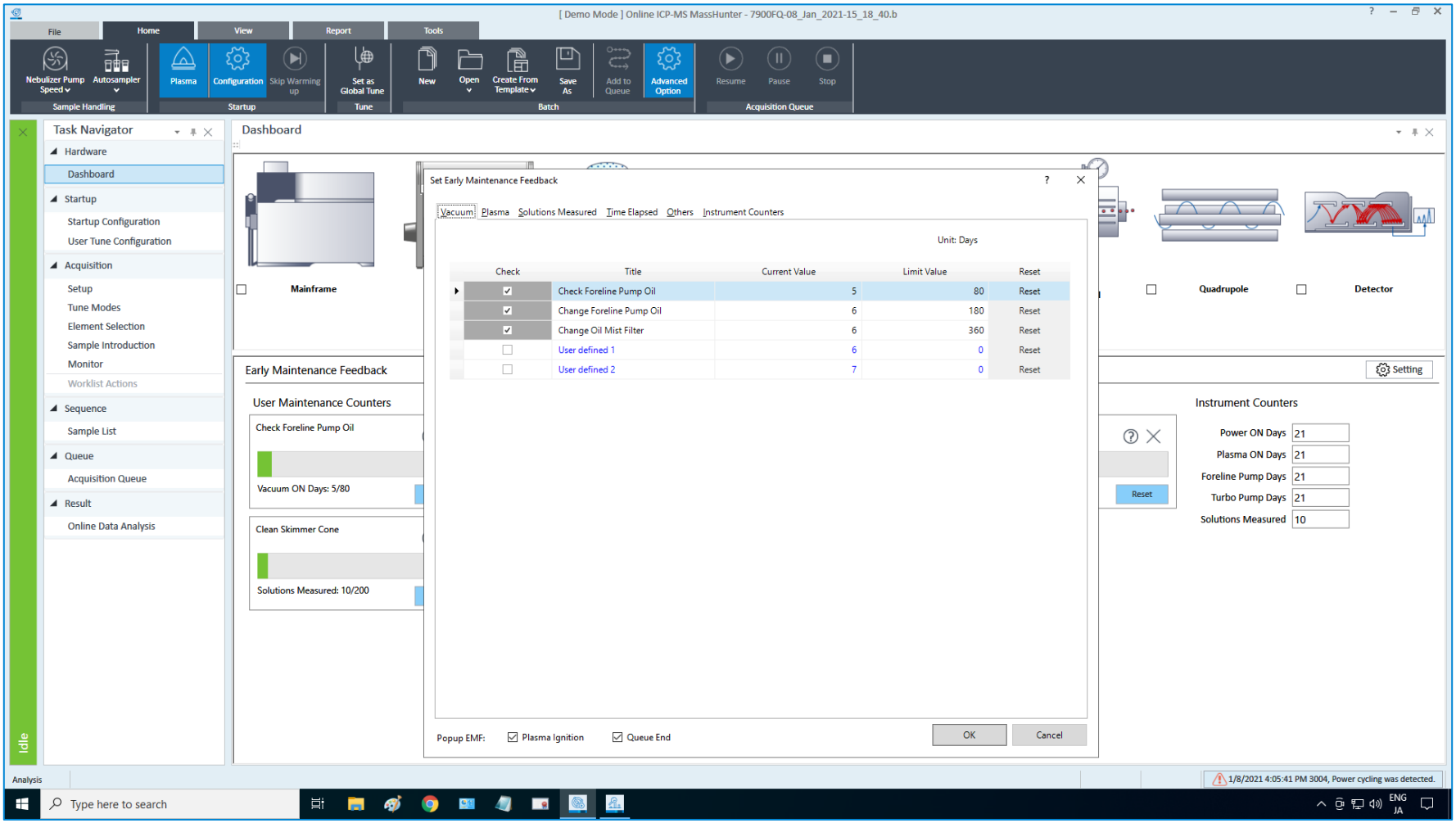




Early Maintenance Feedback



Set Early Maintenance Feedback



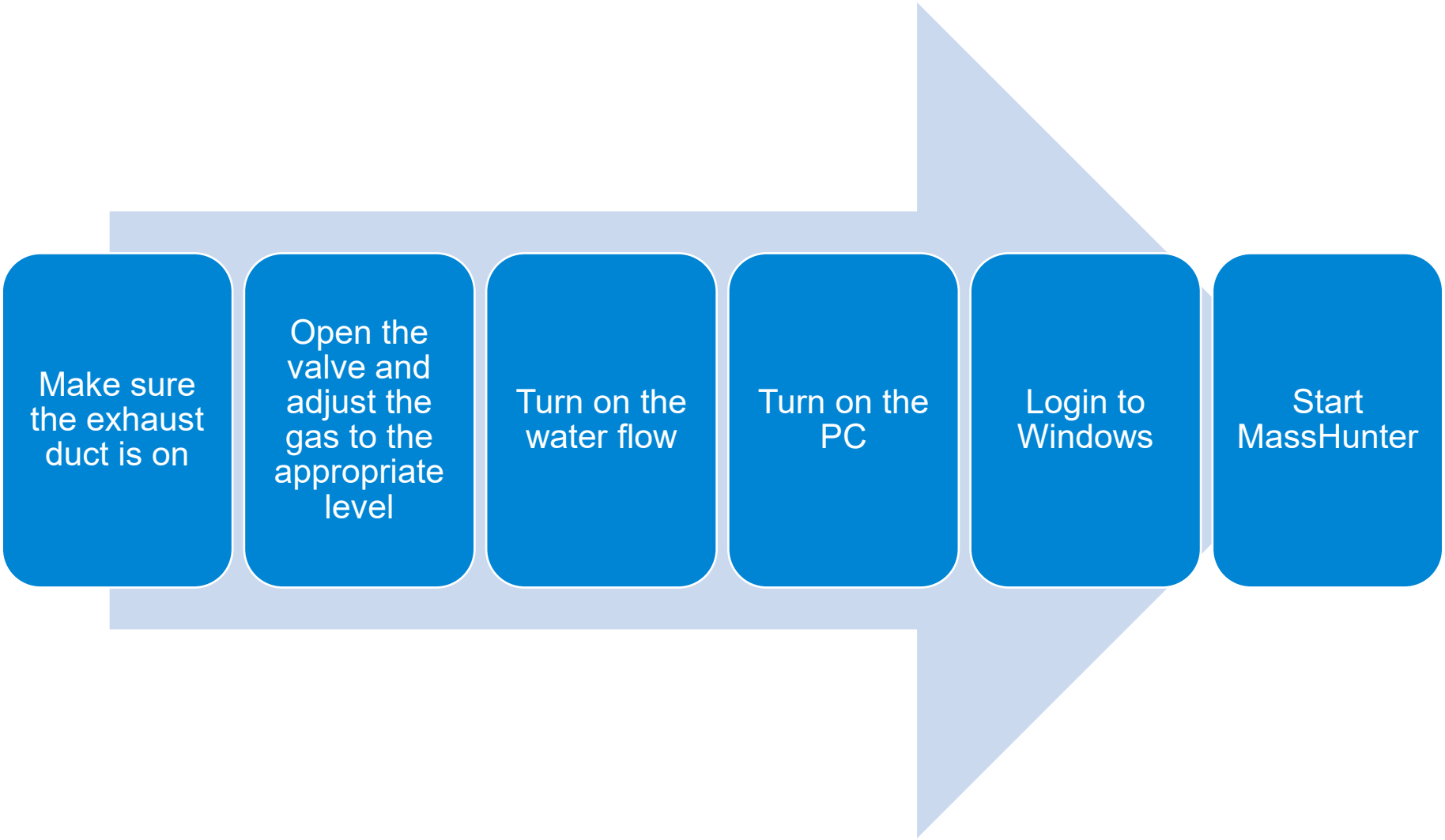
1.16
A Typical Workflow of Routine Analysis

Std. Familiarization Time: 0:10:00

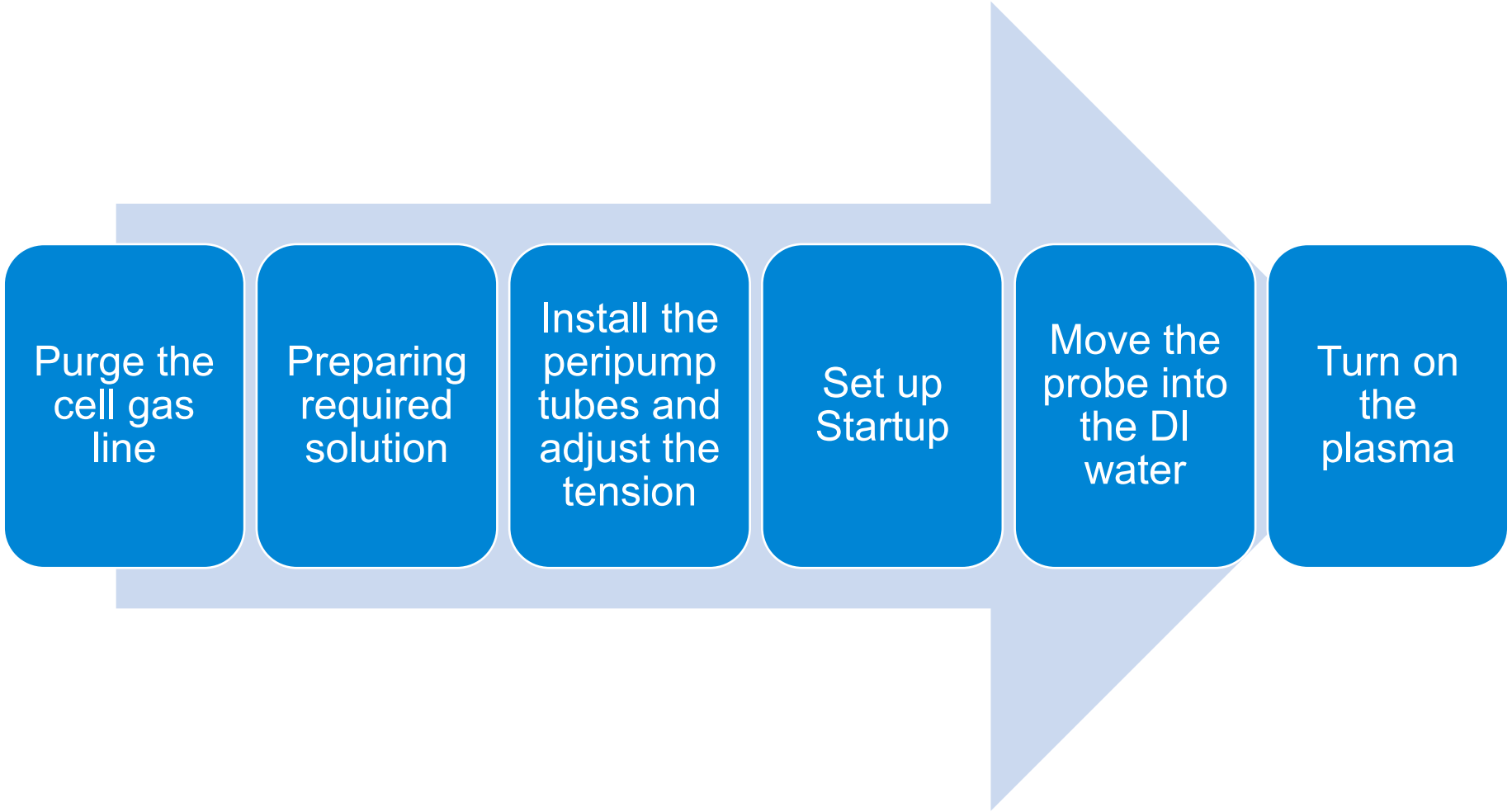
Approximate Video Time: 0:05:00

Play the Video

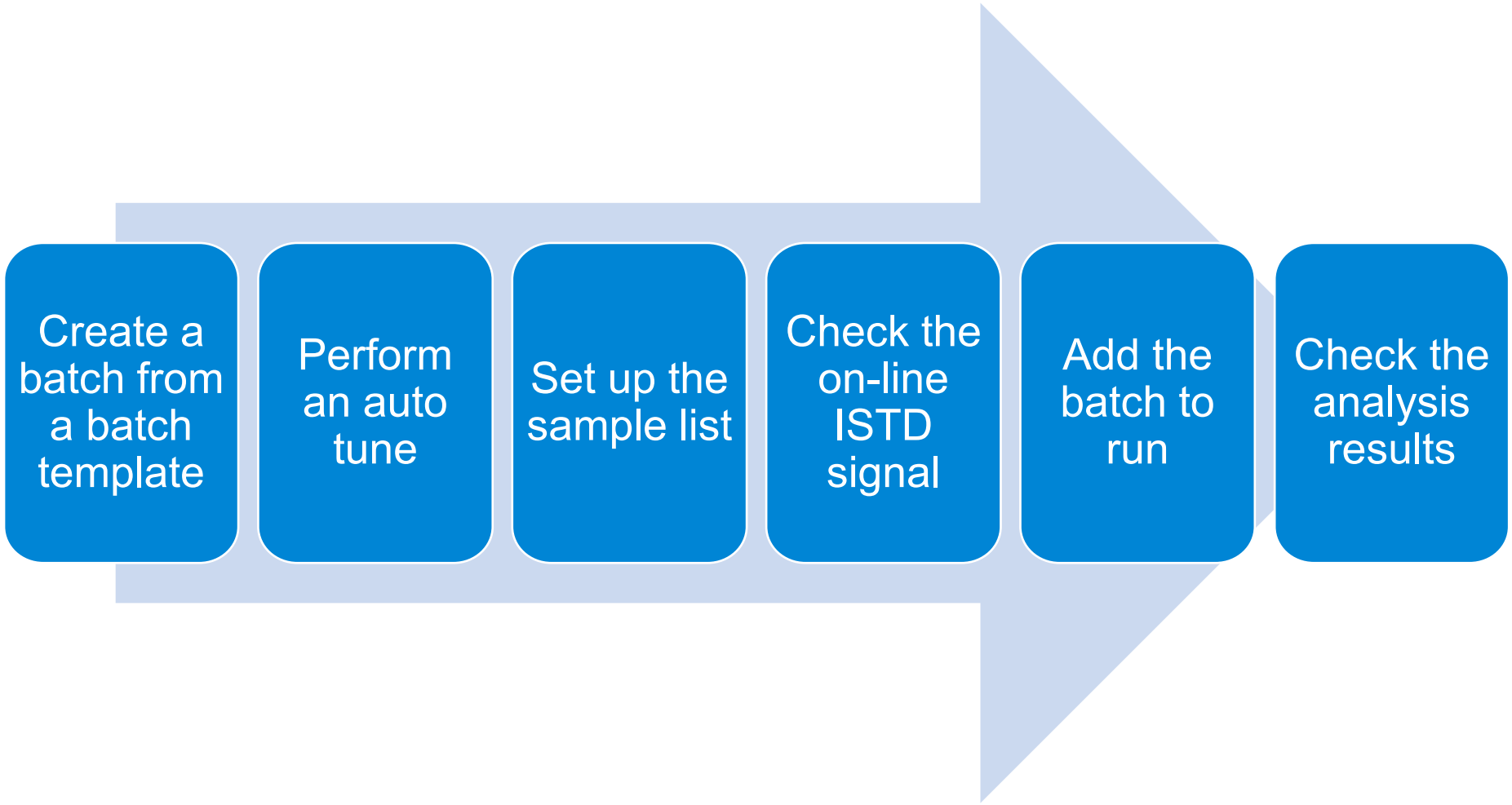
Turn On ICP-MS



Plasma On


Purge the cell gas line
Preparing required solution
Install the peripump tubes and adjust the tension
Set up Startup
Move the probe into the DI water
Turn on the plasma

Running a Batch



Plasma Off and Standby