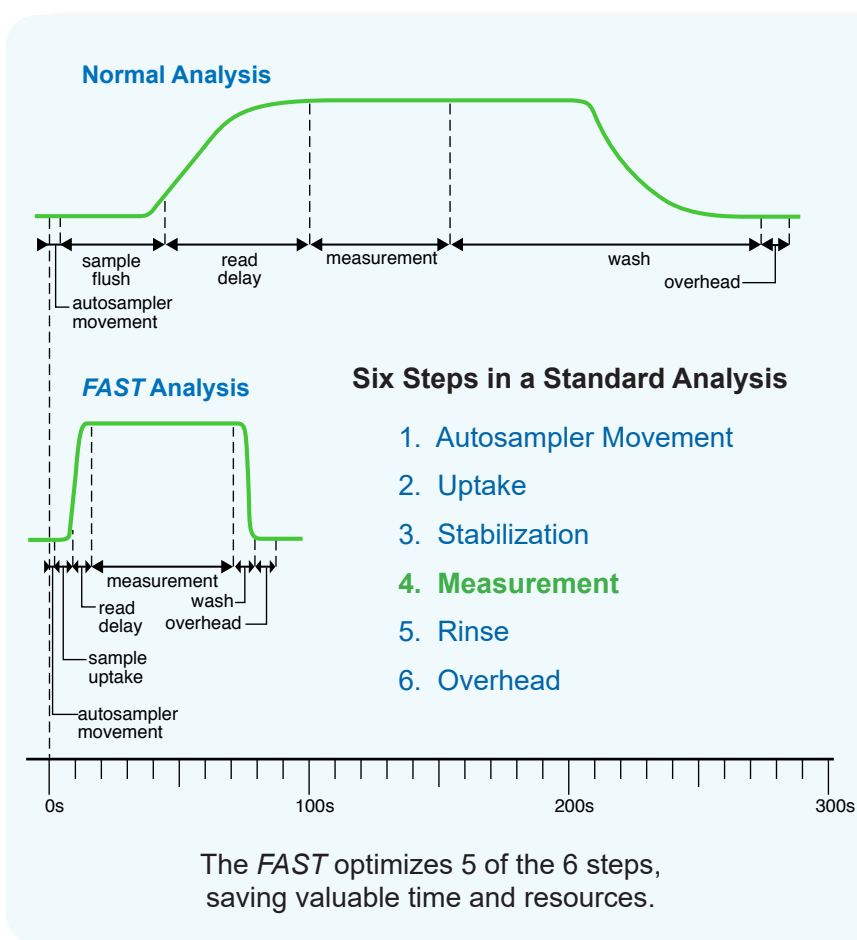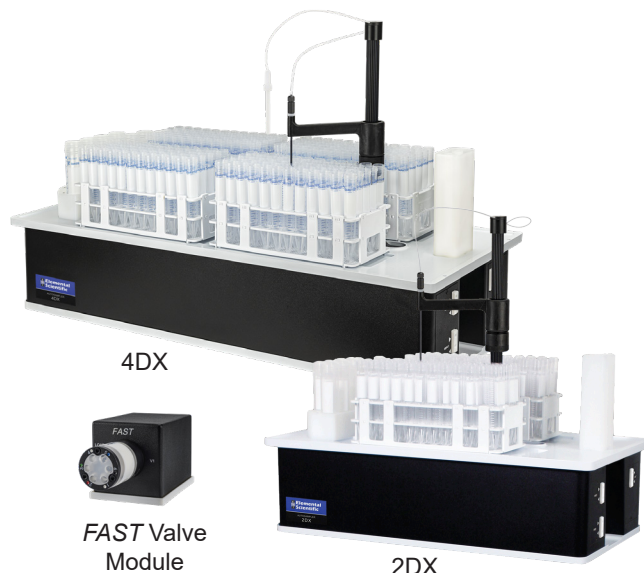# *FAST* Automated Sample Introduction System

When you think productivity, think *FAST!*

FAST maximizes the productivity of the ICPOES and ICPMS by optimizing and utilizing ALL of the non-productive steps in a sample acquisition.

System Savings

- Lower reagent costs
  - Reduce concentration and volume of internal standard
  - Reduce sample volumes and reagents used to prepare samples

- Lower cost of consumables and routine maintenance
  - Shorter run times, lower consumption of power and Ar
  - Increase lifetime of Torch, Nebulizer, Cones, Pump (Oil), etc.

- Improved data quality
  - Fewer QC failures
  - Improved precision
  - Improved sensitivity
  - Lower oxides
  - Lower memory
  - Cleaner, faster washout reduces sample carry over
  - Dual rinse station improves rinse out and reduces blank contamination

- Optional precision micro peripump (MP^2)

- High speed vacuum sample loading minimizes sample uptake time

- Available online internal standard addition

- Optional high speed and high precision syringe sample loading available

- Supports online dilution

- The sample never touches peripump tubing
  - Eliminates memory effects from pump tubing

- Compatible with virtually all ICPOES/ICPMS systems

- Add volatile analytes such as Hg to ICPMS methods

- Pre-loaded *FAST* and ICP methods for rapid implementation

- Configurable for many applications

4DX

FAST Valve Module

2DX

Normal Analysis

sample flush
autosampler movement
read delay
measurement
wash
overhead

FAST Analysis

measurement
read delay
wash overhead
sample uptake
autosampler movement

0s   100s   200s   300s

Six Steps in a Standard Analysis

1. Autosampler Movement
2. Uptake
3. Stabilization
4. **Measurement**
5. Rinse
6. Overhead

The *FAST* optimizes 5 of the 6 steps, saving valuable time and resources.

Unique Design

Utilizing a high flow vacuum pump, 6-port valve and ESI's SC-Software, the *FAST* is able to rapidly deliver the sample for analysis, saving valuable time. The unique design eliminates sample contact with peristaltic pump tubing, minimizing cross contamination. The peristaltic pump operates at a single, constant speed, further enhancing system stability. The *FAST* rinses the probe sample lines while the sample is being analyzed, making the *FAST* a true multi-tasking sample automated system.

Rinse Probe while Sample is Analyzed
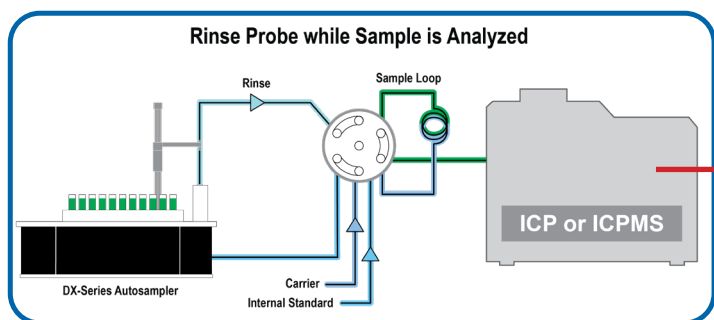
The *FAST* loads the sample loop as the nebulizer and tubing are being flushed.

Sample Sample / Rinse Nebulizer
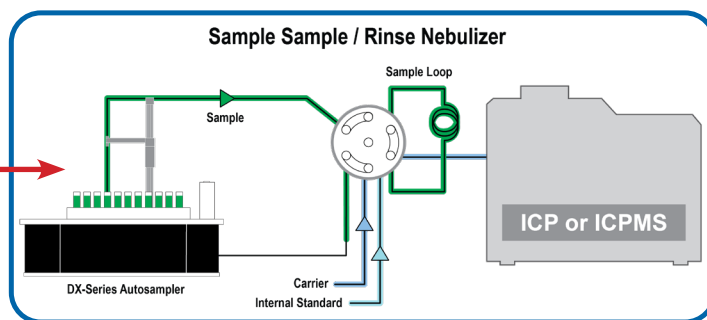
And rinses the autosampler probe and tubing while the sample is being analyzed.

High Capacity
8DX

Table 1. Time Saving Comparisons		
	Conventional	***FAST***
Sample Flush	30 (Sec)	8-10 (Sec)
Pump Speed	48 (RPM)	4 (RPM)
Read Delay	30 (Sec)	0 (Sec)
Pump Speed	10 (RPM)	4 (RPM)
Measurement	30 (Sec)	30 (Sec)
Pump Speed	12 (RPM)	4 (RPM)
Wash	45 (Sec)	5 (Sec)
Pump Speed	48 (RPM)	4 (RPM)
TOTAL TIME	**135 (Sec)**	**43-45 (Sec)**

This timing is typical when modifying an existing method for a *FAST*. The total time per sample has been reduced from 135 seconds to 45 seconds, with absolutely no compromise in data quality. The *FAST* analyzes 3 samples in the time it takes a conventional system to analyze one.

Sample Capacity				
System	**50mL**	**15mL**	**8mL**	**Microtiter-96 (2mL)**
2DX (Super rack)	**52** (64)	**120** (160)	180	384
4DX	94	240	360	576
8DX	208	480	720	N/A
14DX	304	840	1260	2880