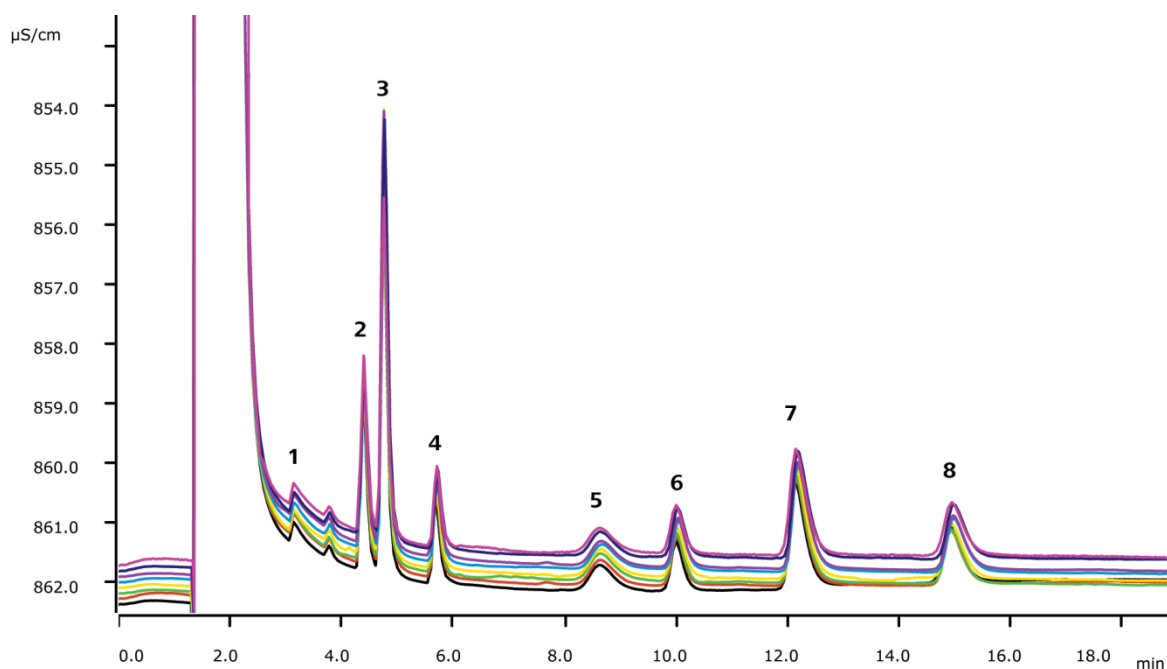


# Online analysis of trace cations in power plant water matrices



A setup that allows online sampling is crucial for immediate and contamination-free analysis of power plant water samples. This application shows a possible setup that copes with simultaneous anion/cation determinations. Automated inline sample preparation combines variable preconcentration (MiPCT) and calibration with a single multi-ion standard. AN-Q-005 shows the respective anion results.

## Results

Check standard	Mean [µg/L] (78 h)	RSD [%] (78 h)	Check standard	Mean [µg/L] (78 h)	RSD [%] (78 h)
1 Copper	1.88	2.97	5 Nickel	1.93	5.40
2 Sodium	1.96	3.47	6 Zinc	1.94	2.32
3 Ammonium	n.q.	-	7 Magnesium	1.95	1.49
4 Potassium	1.94	2.85	8 Calcium	1.98	2.44

### Sample

Artificial boiler water

### Sample preparation

Inline Preconcentration (MiPCT)

### Columns

Metrosep C 4 - 250/2.0	6.1050.230
Metrosep C 4 Guard/2.0	6.1050.600
Metrosep C PCC 1 HC/4.0	6.1010.310

### Solutions

Eluent (Inline Preparation)	Eluent	2.5 mmol/L nitric acid 0.5 mmol/L oxalic acid
Liquid handling solution		Ultrapure water

### Analysis

Direct conductivity detection

### Parameters

Flow rate	0.4 mL/min
Injection volume	9800 µL
P <sub>max</sub>	25 MPa
Recording time	19 min
Column temperature	32 °C

### Instrumentation (for AnCat analysis)

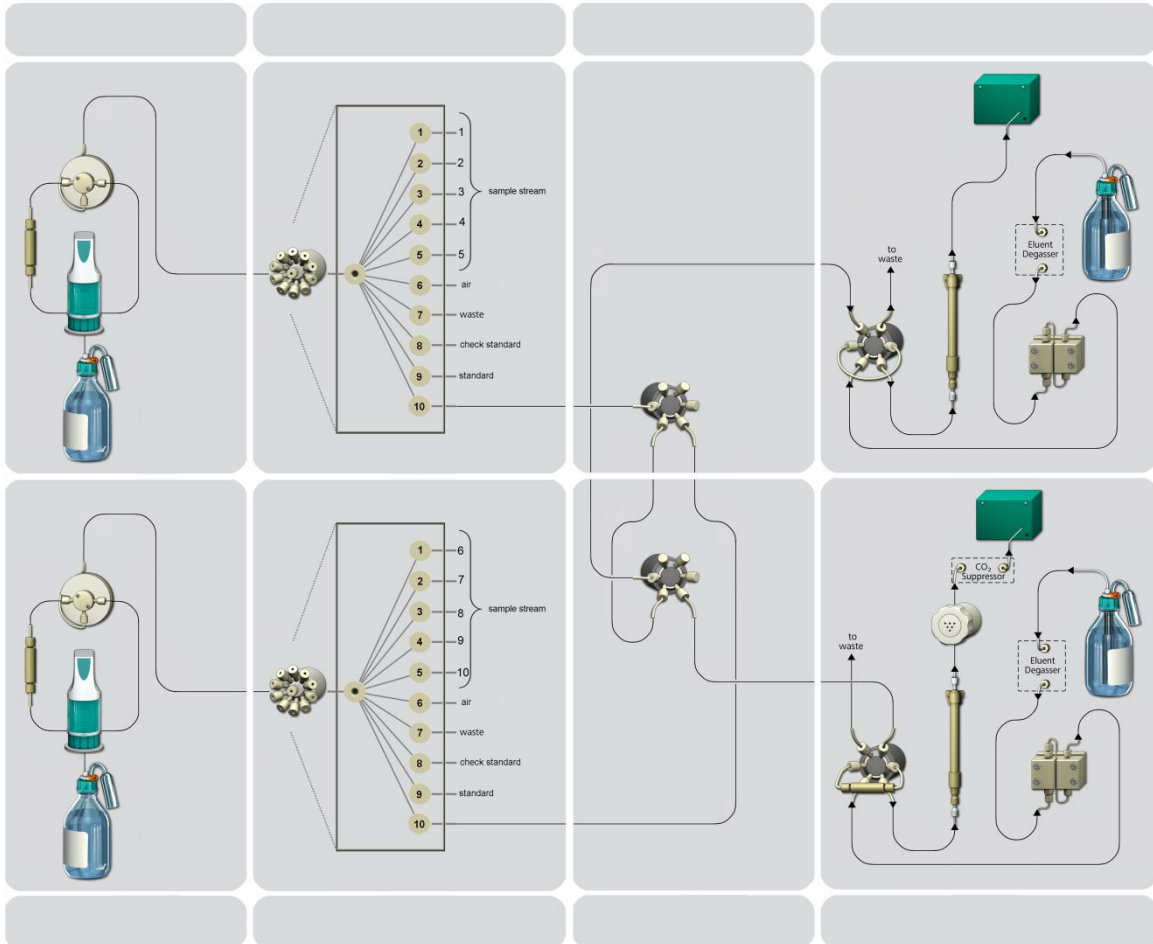
850 Professional IC AnCat – MCS	2.850.3030
2 x IC Conductivity Detector	2.850.9010
2 x 872 Extension Module Liquid Handling	2.872.0060
2 x 800 Dosino (liquid handling)	2.800.0010
2 x 849 Level Control for Inline Eluent Preparation	2.849.1030

### Calibration MiPCT

Calibration range	Factor of 20
Standard solution	10 µg/L
1. Level	0.5 µg/L = 490 µL
2. Level	1.0 µg/L = 980 µL
3. Level	2.0 µg/L = 1960 µL
5. Level	5.0 µg/L = 4900 µL
6. Level	7.5 µg/L = 7350 µL
7. Level	10.0 µg/L = 9800 µL

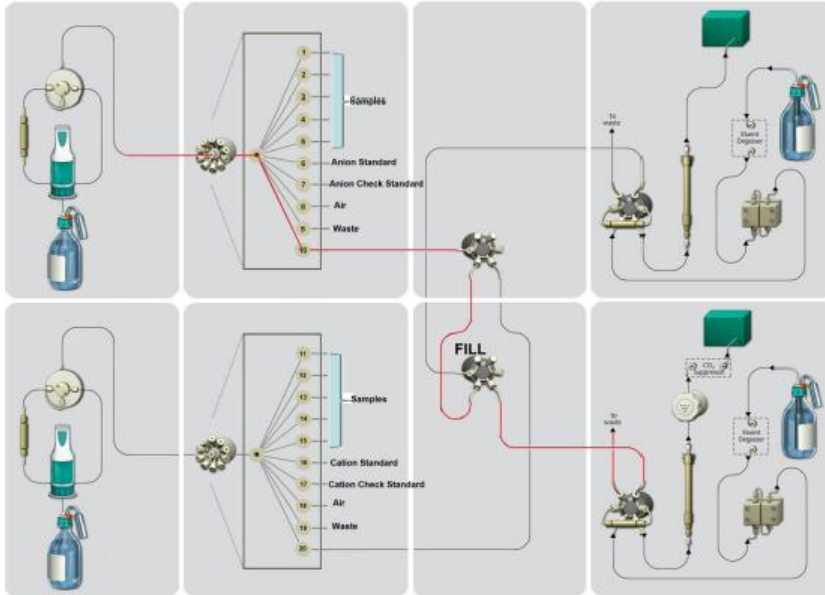


## Flow chart

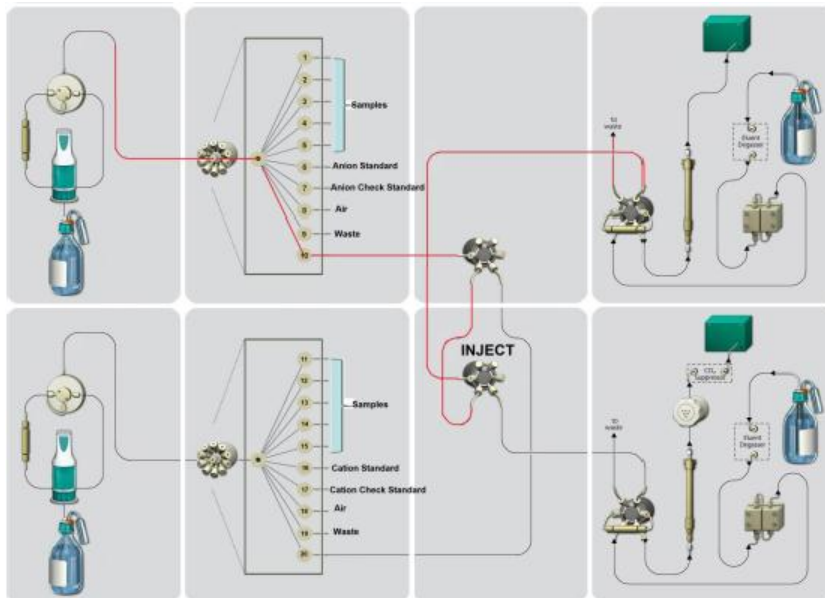


## Sample transfer Dosino 1

Sample lines 1...5 to anion analysis

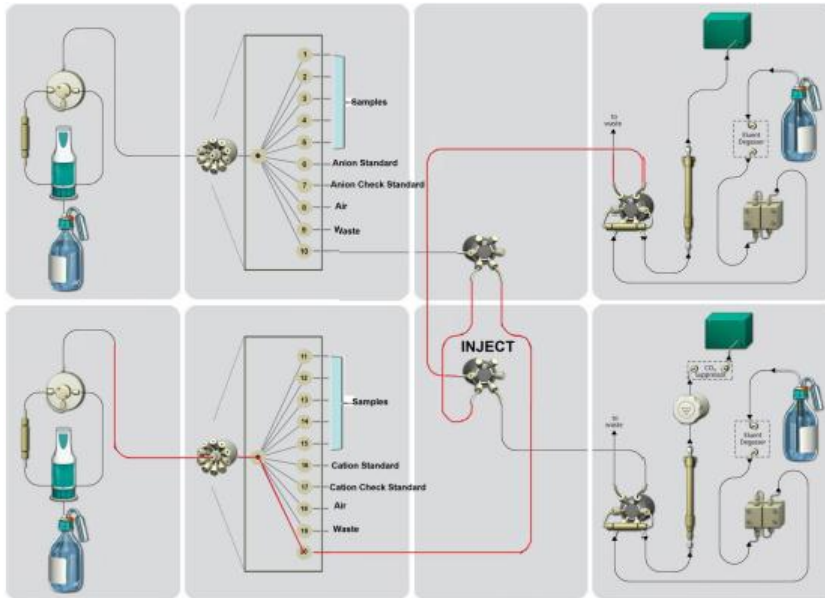


Sample lines 1...5 to cation analysis



## Sample transfer Dosino 2

Sample lines 11...15 to cation analysis



Sample lines 11...15 to anion analysis

