

The background features a dark blue gradient with faint, light-colored technical diagrams. On the left side, there is a vertical scale with numerical markings from 140 to 260 in increments of 10. Several circular diagrams with arrows and dashed lines are scattered across the background, suggesting a scientific or engineering context.

ESSENTIAL INSTRUMENTATION FOR THE WINE LABORATORY – rAPID-XT

BROUGHT TO YOU BY ASTORIA-PACIFIC

SCOPE OF PRESENTATION

- Why Wine?
- TYPES OF ANALYZERS FOR WINE ANALYSIS
- rAPID-XT - AN EXAMPLE OF AN AFFORDABLE DISCRETE ANALYZER
- MOST COMMON AUTOMATED METHODS
- METHOD PROGRAMMING, EXAMPLE ACETIC ACID (enzymatic)
- DATA PARITY WITH REFERENCE LABORATORIES
- “EXPORTABLE” DATA, WHAT DO I DO WHEN THE RUN IS DONE?
- QUESTIONS?

WHY WINE?

The Wine Industry in the USA alone: Size / Annual Case Production / Number of Wineries

- Large-sized Wineries, 500K+ cases/year: 100
- Medium-sized Wineries, 50K – 500K cases/year: 300
- Small-sized Wineries, 5K – 50K cases/year: 1600
- Very Small Wineries, 1K – 5K cases/year: 3700
- Limited Production: <1K cases/year: ~4300

A total of 9997 Wineries in the USA.

Anticipated 100 – 200 instrumentation annual sales per year by year 2 or 3

ANALYZERS TYPES

SEGMENTED FLOW ANALYZERS

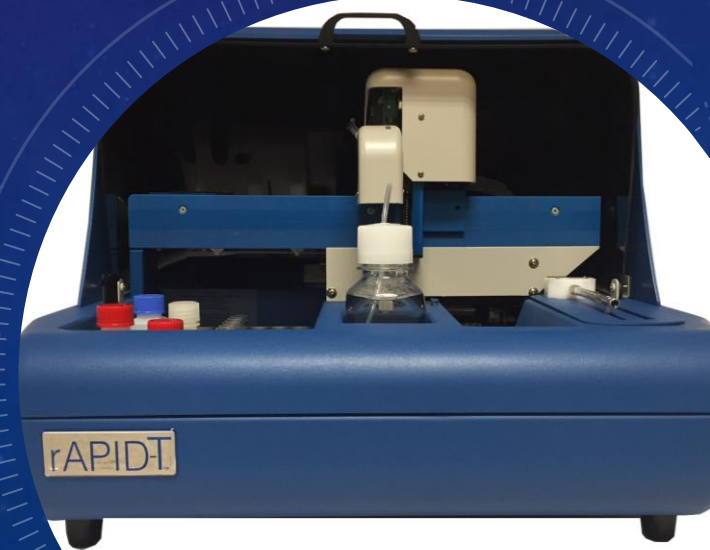
- “MACRO” SFA
- “MICRO” SFA

FLOW INJECTION ANALYZERS / FTIR

DISCRETE ANALYZERS

rAPID-XT

AN AFFORDABLE DISCRETE ANALYZER



rAPID-XT – AN AFFORDABLE DISCRETE ANALYZER

How does the rAPID-XT work?

A discrete analyzer is an automated chemical analyzer in which the instrument performs tests on samples that are kept in discrete cuvettes in contrast to a continuous flow analyzer (SFA and/or FIA) that uses a peristaltic pump for a continuous stream of reagents.

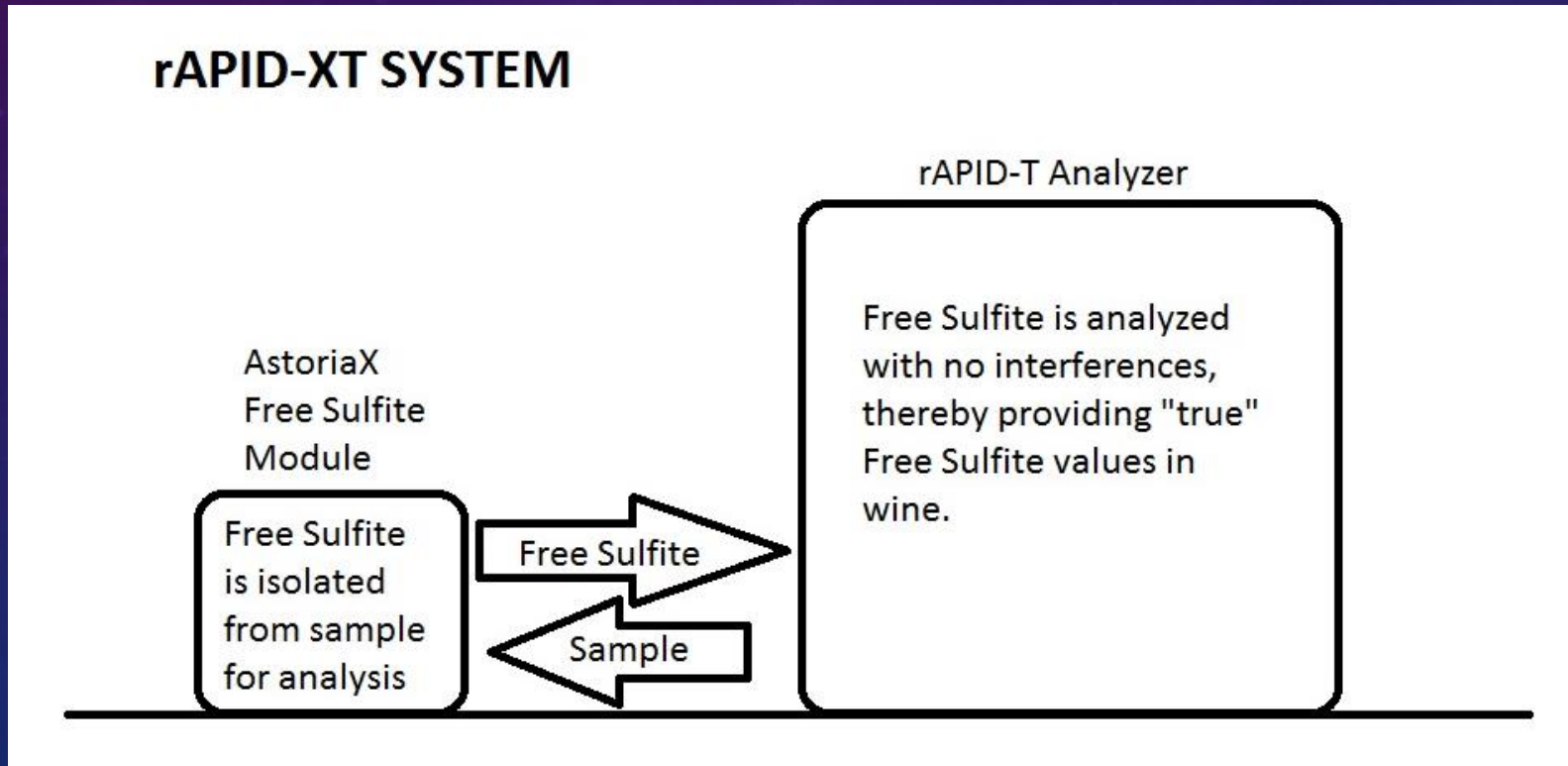
Typical automated discrete analysis workflow

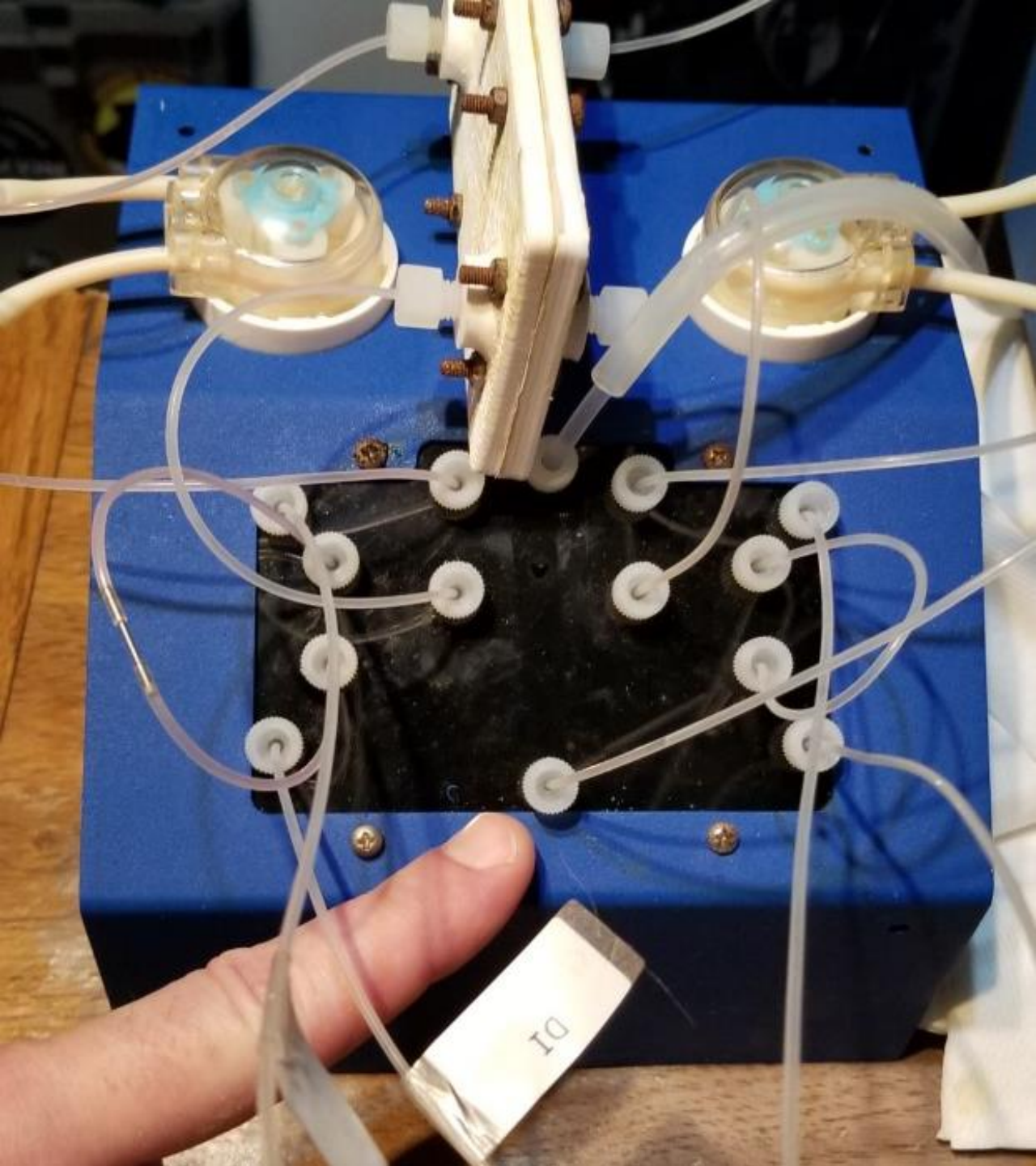


rAPID-XT – AN AFFORDABLE DISCRETE ANALYZER

How does the Sulfite Module work?

The AstoriaX Free Sulfite module works in tandem with the primary rAPID-T analyzer. The integrated system processes the sample by isolating the Free Sulfite entirely from the wine matrix.





WORKING MODULE (PROTOTYPE)

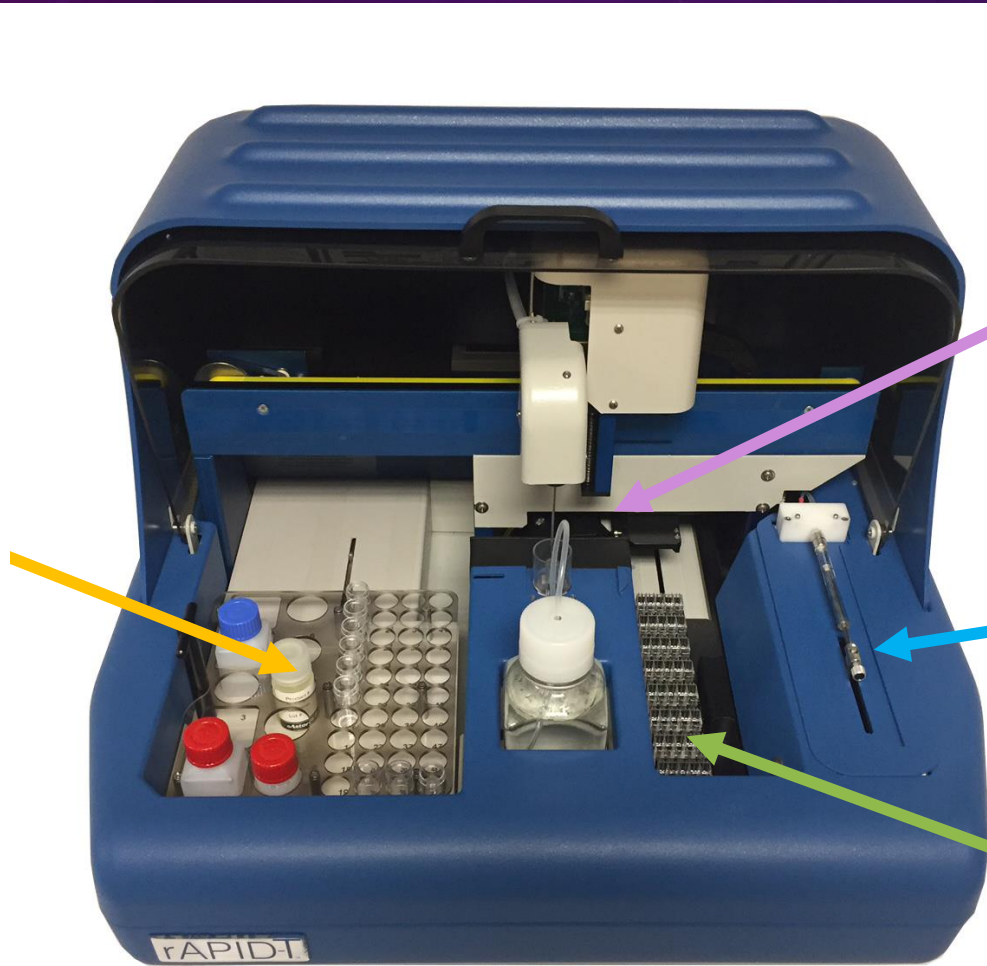
The AstoriaX-FS* interfaces directly with the rAPID-T System. Software controls both the AstoriaX and rAPID-T with seamless integration.

*NOTE: There are some “prototype” pieces in this picture. The final product will be cleaner.

rAPID-XT – AN AFFORDABLE DISCRETE ANALYZER

Sample/Reagent Rack

- 40 Sample Positions
- 10 Reagent Positions



Photometer with 8 different analytical wavelengths

500uL Syringe

40 Cuvette Positions

rAPID-XT – AN EXAMPLE OF AN AFFORDABLE DISCRETE ANALYZER

rAPID-T - brady - 181203 ENZM NO3/NO2 ICAL

File Edit Run System Setup Window Help

Enzymatic Nitrate

Layout

Reagent/Sample Rack

Reaction Plate

Load / Fill... Replace...

Reagents Progress

Status: Done Temperature:

Sample Table

Number of Samples: 1


| Row | Cup | ID | Reps | Comment | Enzymatic N | Pre-Dil | Manual |
|----------------------|-----|----|------|---------|-------------|---------|--------|
| <No data to display> | | | | | | | |

Run Table

Instrument ID: AES 2368 DA-1 Date:

Analyst:

| Row | Sample Info | | Dilutions | | | Enzymatic Nitrate | | | | | | | |
|-----|-------------|-----|-----------|---------|--------|-------------------|-------|---------|--------|--------|------|-----------|-------------|
| | Sample # | Cup | ID | Pre-Dil | Manual | Total | Abs | Cor Abs | ppm | Status | Well | Date | Time |
| 1 | N/A | C1 | 0.000ppm | 1 | 1 | 1 | 0.032 | -0.019 | 0.006 | Crv | E02 | 12/3/2018 | 11:20:54 AM |
| 2 | N/A | C2 | 0.020ppm | 1 | 1 | 1 | 0.033 | -0.016 | 0.017 | | E03 | 12/3/2018 | 11:22:26 AM |
| 3 | N/A | C3 | 0.050ppm | 1 | 1 | 1 | 0.040 | -0.009 | 0.045 | | E04 | 12/3/2018 | 11:23:57 AM |
| 4 | N/A | C4 | 0.100ppm | 1 | 1 | 1 | 0.047 | 0.002 | 0.090 | | E05 | 12/3/2018 | 11:25:26 AM |
| 5 | N/A | C5 | 0.200ppm | 1 | 1 | 1 | 0.081 | 0.030 | 0.205 | | F02 | 12/3/2018 | 11:26:55 AM |
| 6 | N/A | C6 | 0.500ppm | 1 | 1 | 1 | 0.154 | 0.106 | 0.511 | | F03 | 12/3/2018 | 11:28:25 AM |
| 7 | N/A | C7 | 1.000ppm | 1 | 1 | 1 | 0.276 | 0.226 | 0.995 | | F04 | 12/3/2018 | 11:29:58 AM |
| 8 | N/A | CC1 | CCV | 1 | 1 | 1 | 0.152 | 0.105 | 0.508 | | F05 | 12/3/2018 | 11:31:25 AM |
| 9 | N/A | CC5 | CCB | 1 | 1 | 1 | 0.035 | -0.023 | -0.009 | BR | G02 | 12/3/2018 | 11:32:55 AM |



MOST COMMON AUTOMATED METHODS

| Test | Range | Tests/hour* |
|------------------|----------------|-------------|
| Acetic Acid | 0.1 – 1.0 g/L | 80 |
| Ammonia | 10 – 100 mg/L | 80 |
| Glucose+Fructose | 0.1 – 6.0 g/L | 100 |
| Free Sulfite | 2.0 – 100 mg/L | 15 |
| L-Malic Acid | 0.05 – 3.0 g/L | 100 |
| NOPA | 5.0 – 140 mg/L | 80 |
| Total Sulfite | 5.0 – 200 mg/L | 100 |

*NOTE: These are the most common tests requested by Astoria-Pacific's customers. There are various reagent kits offered by reagent kit manufacturers; however, Astoria-Pacific stocks only the most common reagent kits.

METHOD PROGRAMMING, EXAMPLE ACETIC ACID (ENZYMATIC)

Config: Acetic Acid (T470)

Methods System

Methods available

- Acetaldehyde Megazyme
- Acetic Acid (T470)
- Alk Low (T011)
- Alkalinity (T011)
- Ammonia D023
- Ammonia ENZ (T029)
- ammonia ENZ clean
- Ammonia, High Level (T023)
- Ammonia, Phenate (T023)
- Bound SO2
- Chloride (T090)
- CN - FA
- Cyanide (T111)

New samples default to selected

rAPID-T - brady - 3_7_2019_VA

Sample Table

| Row | Number of Samples: 25 | | | Reps | Comment | Tests | | Dilutions | |
|-----|-----------------------|----------------------|--|------|---------|-------------------------------------|--|-----------|--------|
| | Cup | ID | | | | Steroglass Acetic Acid | | Pre-Dil | Manual |
| 1 | 11 | BLANK | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 2 | 12 | 0.8 STD NEW | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 3 | 13 | 0.8 STD OLD | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 4 | 14 | 0.9 STD | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 5 | 15 | 1.0 STD | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 6 | 16 | 18CS-BARCLAY | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 7 | 17 | 18CS-CDV-TK | | 1 | | <input checked="" type="checkbox"/> | | 2 | 1 |
| 8 | 18 | 18CS-TRAIL_DIL | | 1 | | <input checked="" type="checkbox"/> | | 2 | 1 |
| 9 | 19 | 18CS-LINK-WD | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 10 | 20 | 18CS-CDV-WD | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 11 | 21 | 18CS-GIII-AIA | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 12 | 22 | 18CS-SCHIF-F1-F4 | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 13 | 23 | 18CF-STAGE | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 14 | 24 | 18PV-ESTEE | | 1 | | <input checked="" type="checkbox"/> | | 1 | 1 |
| 15 | 25 | 18CS-SIN-7_DIL | | 1 | | <input checked="" type="checkbox"/> | | 2 | 1 |
| 16 | 22 | 18CS-SCHIF-F1-F4 DII | | 1 | | <input checked="" type="checkbox"/> | | 2 | 1 |

Run Table

| Row | Sample Info | | | Steroglass Acetic Acid | | | | | |
|-----|-------------|----------------|--|------------------------|---------|-------|--------|------|-------------|
| | Cup | ID | | Abs | Cor Abs | g/L | Status | Well | Time |
| 1 | C1 | C1 | | 1.168 | 1.168 | 38.19 | DL | D05 | 12:57:48 PM |
| 2 | C2 | C2 | | 0.776 | 0.776 | 13.42 | | E02 | 1:00:38 PM |
| 3 | C3 | C3 | | 0.042 | 0.042 | 0.02 | | E03 | 1:03:28 PM |
| 4 | C4 | C4 | | --- | --- | --- | --- | --- | --- |
| 5 | C5 | C5 | | --- | --- | --- | --- | --- | --- |
| 6 | C6 | C6 | | --- | --- | --- | --- | --- | --- |
| 7 | C7 | C7 | | --- | --- | --- | --- | --- | --- |
| 8 | 11 | BLANK | | --- | --- | --- | --- | --- | --- |
| 9 | 12 | 0.8 STD NEW | | --- | --- | --- | --- | --- | --- |
| 10 | 13 | 0.8 STD OLD | | --- | --- | --- | --- | --- | --- |
| 11 | 14 | 0.9 STD | | --- | --- | --- | --- | --- | --- |
| 12 | 15 | 1.0 STD | | --- | --- | --- | --- | --- | --- |
| 13 | 16 | 18CS-BARCLAY | | --- | --- | --- | --- | --- | --- |
| 14 | 17 | 18CS-CDV-TK | | --- | --- | --- | --- | --- | --- |
| 15 | 18 | 18CS-TRAIL_DIL | | --- | --- | --- | --- | --- | --- |
| 16 | 19 | 18CS-LINK-WD | | --- | --- | --- | --- | --- | --- |

Reagents Progress

Status: Aborted Temperature:

PROGRAMMING METHODS

Method Properties: Acetic Acid (T470)

General | Monitoring / QC | Check Calibrants | Dilutions | Calibration | Definition

Miscellaneous

Conc decimal places: 2

Absorbance decimal places: 3

Report Units: g/L

Test Color: Medium

Inverse chemistry

Blanks

Subtract

Concentration Range

Upper: 1.10 g/L

Lower: 0.00 g/L

Multiple Reads

Is a multi read test

Type: Highest

OK & Save Help OK Cancel

Method Properties: Acetic Acid (T470)

General | Monitoring / QC | Check Calibrants | Dilutions | Calibration | Definition

Calibration Type

1st Order Polynomial

Formula

Calibration Settings

Force recalibration

Calibrate every 1 days

Make calibrants from stocks

Calibrants

| Identifier | Conc | Source |
|------------|------|--------------|
| C1 | 0.00 | Acetic Stock |
| C2 | 0.10 | Acetic Stock |
| C3 | 0.20 | Acetic Stock |
| C4 | 0.50 | Acetic Stock |
| C5 | 0.75 | Acetic Stock |
| C6 | 1.00 | Acetic Stock |

OK & Save Help OK Cancel

Method Properties: Acetic Acid (T470)

General | Monitoring / QC | Check Calibrants | Dilutions | Calibration | Definition

Steps

- Add Reagent, (Acetic R1), Volume, (220.0ul)
- Add Sample, Volume, (3.0ul)
- Incubate, Time (0:0:30)
- Read Well, Primary (340) Secondary (660)
- Add Reagent, (Acetic R2), Volume, (20.0ul)
- Incubate, Time (0:6:00)
- Read Well, Primary (340) Secondary (660)

Reagents

- Acetic R2
- Acetic R1

Stocks

- Acetic Stock (1.0 g/L)

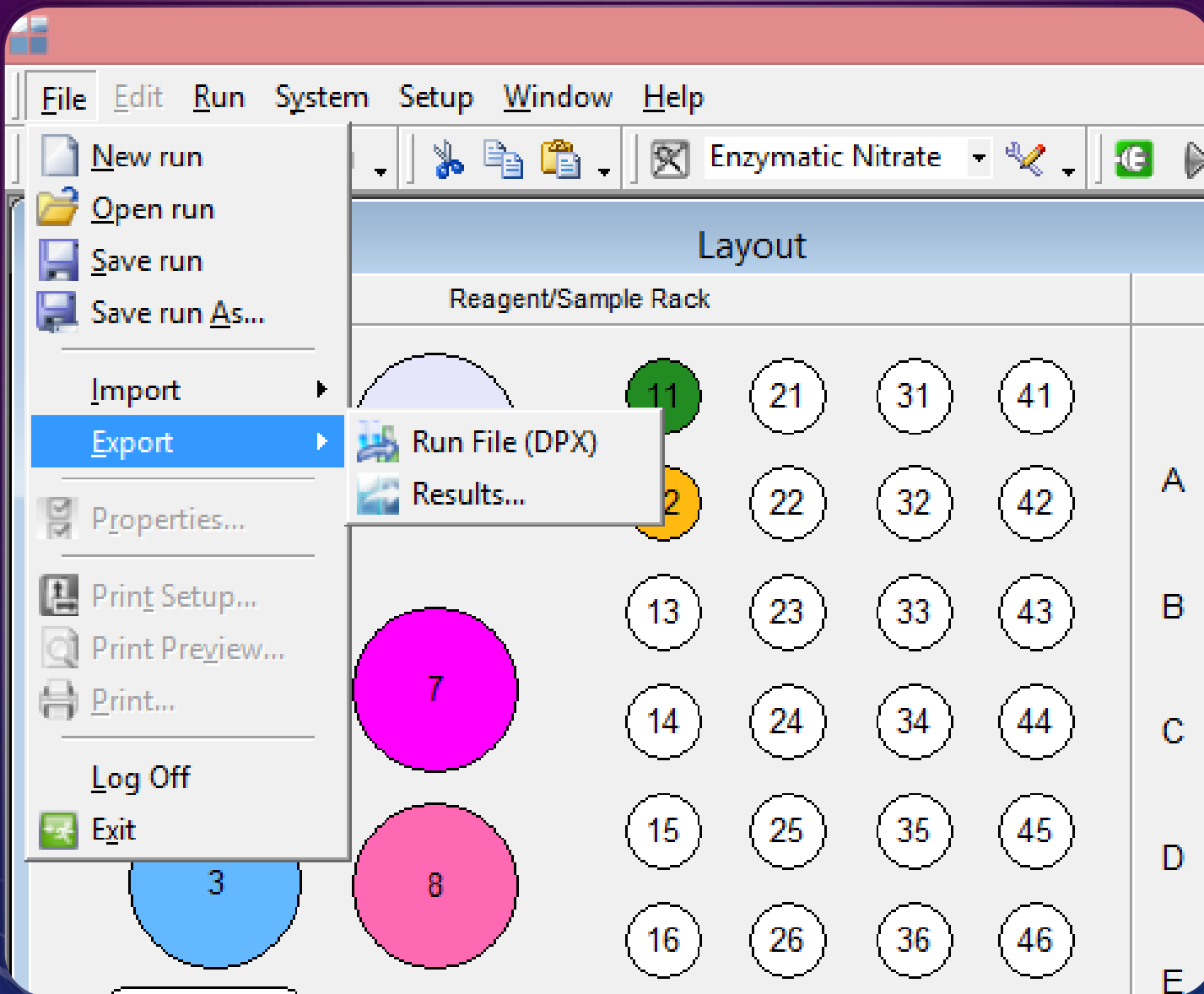
Advanced...

OK & Save Help OK Cancel

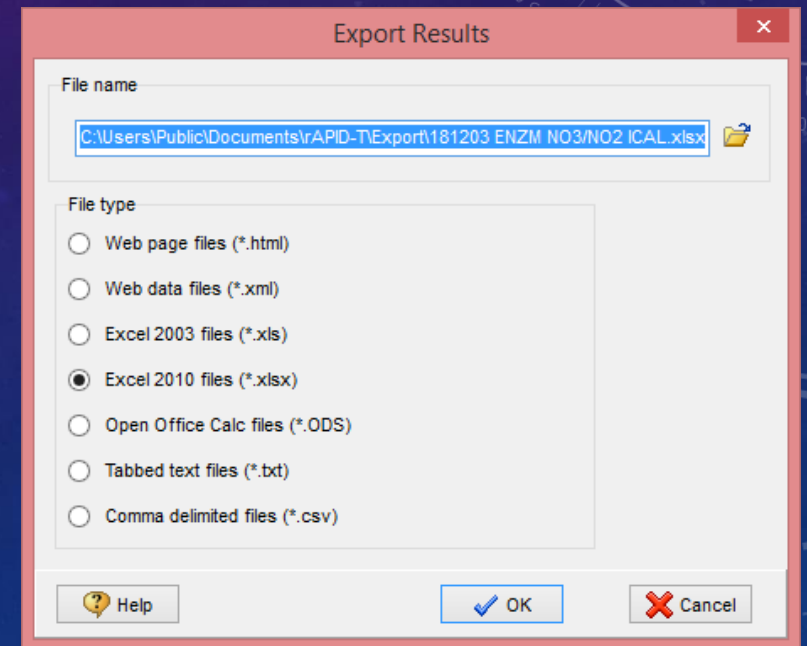
DATA QUALITY

- The rAPID™-XT system is an affordable automated solution for Free and Total Sulfite and other analyses, and it is ideal for small, medium and medium-large wineries.
- The rAPID-XT utilizes a propriety method for Free Sulfite. Prior to analysis, the Free Sulfite is isolated from the wine matrix, thereby ensuring quality data.
- By combining the already popular rAPID-T system with the new Astoria-X Free Sulfite module, Astoria-Pacific offers ease-of-mind by providing an instrument that provides data on par with your client's reference lab of choice.





“EXPORTABLE” DATA:
WHAT DO I DO WHEN
THE RUN IS DONE?



The background is a dark blue gradient with a starry space pattern. On the right side, there are several technical diagrams, including a large circular gauge with numerical markings from 80 to 210 and a smaller circular diagram below it. On the left side, there are faint circular diagrams, one of which has a dashed arrow pointing left.

CONTACT US FOR MORE INFO

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QUESTIONS???

- What questions might you have?
- Is Astoria-Pacific really based in Clackamas?
- How much wood could a woodchuck chuck if a woodchuck could chuck wood?
- How good are Brady's juggling skills?