Grain
Flour
Food
Feed

Quality Control & Analysis Solutions for Millers, Breeders and Growers

19th Annual IAOM Mideast & Africa District Conference & Expo
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INSTRUMENTS

Complete Flour & Grain Analysis

- **NIR – Powder & Whole Grain**

- **6 Second Analysis - Diode Array NIR**

- **Falling Number – Sprout Damage**

- **RVA – Enzyme analysis, Starch Analysis**

- **doughLAB – Farinograph Replacement & More**

- **Glutomatic Gluten Tester**

- **Grain Moisture Testers**

Inframatic Flour Analyzer

Designed and Built for Powder and Flour Analysis:

- **Easy-to-Use routine analyzer – No PC**

- **Dust free enclosure with no cooling fan**

- **30 second accurate analysis**
  - Moisture, Protein, Ash

- **Patented Ash analysis**

- **Over 9,000 Inframatics in use today!**

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IM9140 NIR Flour Analyzer

Grain Flour Food Feed

New generation NIR for mills

- **Fast, Accurate Results**
  - Moisture, Protein, Ash, Water Absorption…
- **Automated Sample Packer**
- **Remote Connectivity & Administration**
  - LAN / USB / Modem
- **On-instrument Data Storage and Logger**
- **Updated & Transferable calibrations**

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Automated Sample Presentation
IM9140 Flour Analyzer

Benefits:

- **Extremely easy to use**

- **Consistent results – no operator influence**

- **Sample temperature measuremen**

- **Reduces error & tampering**

- **No cups to pack**

  - Faster sample throughput

  - Improved accuracy & repeatability

  - No expensive replacement cups/cells

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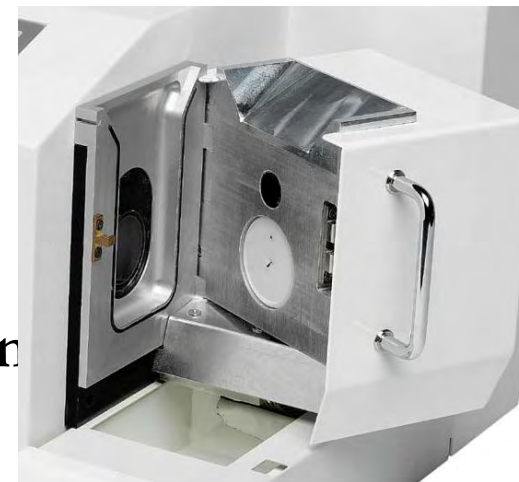
DA 7200 Diode Array NIR

- **Breeders & Seed Companies**
  - High analysis throughput requirements
- **Use at Mills & Mix Plants**
  - Incoming ingredients
  - Optimize blends
  - Optimize additives
  - Monitor mixes
    - Moisture, Protein, Fat, Sugars
- **6 Second Analysis**
- **No sample preparation**
- **Non-contact measurement**
- **No cleaning**
- **Accurate, Flexible, Easy-to-use**

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Perten INSTRUMENTS

DA 7200 Application Examples

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- **Whole Grain –** Moisture, Protein, Oil, Starch
- **Flour –** Moisture, Protein, Ash
- **Gluten –** Moisture, Protein
- **Midds –** Moisture, Protein
- **Bakery Mixes –** Moisture, Protein, Fat Sugars
  (Pancake, Buns, Gravies, Brownies/Cakes)
- **Oils –** FFAs, Moisture, P, Linoleic Content
- **Butter -** Moisture, Fat, Salt
- **Icings / Fillings –** Moisture, Sugar, Fat
- **Cookies/Crackers –** Moisture, Fat, Fiber

GIPSA USA Test, 9 Mills in 5 Countries

Quality Parameters	R^2	SECV	Range	Number of samples
Moisture, %	0.98	0.14	10.2-15.9	350
Flour protein, % db	0.96	0.26	8.3-15.6	350
Ash, % db	0.96	0.058	0.43-1.99	350
Ash, db < 0.8%	0.85	0.029	0.43-0.79	350
Color, Kent Jones Color grade	0.995	0.22	-3.5-4.8	140
Grain protein content, 14% mb	0.98	0.26	9.36-19.7	480
Flour protein content, 14% mb	0.99	0.18	8.24-17.84	350
SDS sedimentation vol., mL	0.68	2.55	24-45	270
Wet Gluten content %	0.92	0.32	16-34	270
Flour particle size GMD, 50% vol, µm	0.82	1.57	78.69-94.55	200
Insoluble glutenins, mg (IPP)	0.86	0.74	6.55-19.11	200
Total polymeric protein, mg (TPP)	0.94	0.63	45.88-63.81	200
Farinograph Absorption, %	0.80	1.5	55.5-73.1	250
Loaf volume, cm3	0.90	34.2	685-1238	200
Loaf specific vol., cm3*g-1	0.87	0.24	4.62-8.24	200
Soluble glutenins, mg (mgSPP)	0.80	0.37	2.64-6.17	120
Soluble gliadins, mg (mgGLI)	0.91	0.54	6.81-15.7	120
Alveo. Length (L), mm	0.70	17.02	37-174	200
Alveo. Swelling index, mL	0.75	1.77	13.5-29.4	200
Starch Damage, UCD	0,94	3,94	-0.37-27.6	210
Starch Damage, AACC	0,93	0,35	1.06-6.66	135
Starch Damage, Ai	0,97	0,99	72.3-96.5	135

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DA 7200 for Breakfast Cereals

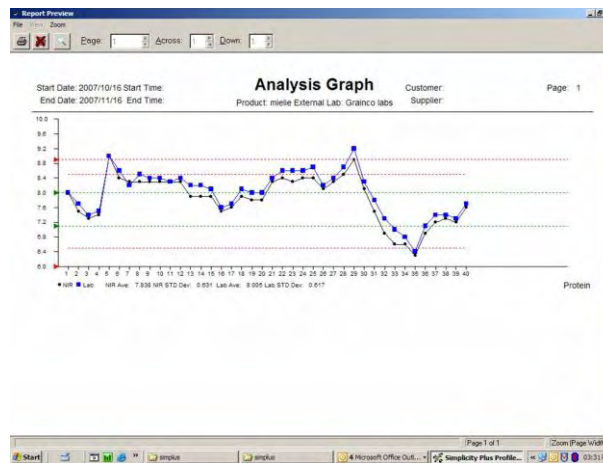Moisture content is critical for storage and crispiness.
Acceptable range is 2.7 – 3.7 %.

Rapid moisture meters are not accurate enough and oven measurement is too slow.

SimPLUS Software

- **Networking & Administration Software for the DA 7200**
- **Automatically update multiple instruments remotely**
- **Produce customized reports**
- **Integrate with LIMS systems and Formulation Software**
- **Results for other tests in the same report**
- **Action notification**

The Rapid Visco Analyzer (RVA)

An instrument designed for analysis of viscometric properties of materials under varying stirring (shear), heating, and cooling conditions

- **Rotational viscometer**
  - Stirs sample and measures resistance in centipoise (cP) units
- **Variable stirring speed**
  - Measure the sample as it will be processed
  - Add shear energy to see effect on the sample/matrix
- **Variable heating**
  - Measure the sample as it will be processed
  - Measure sample/matrix changes through temperature cycles
- **Stored profiles**
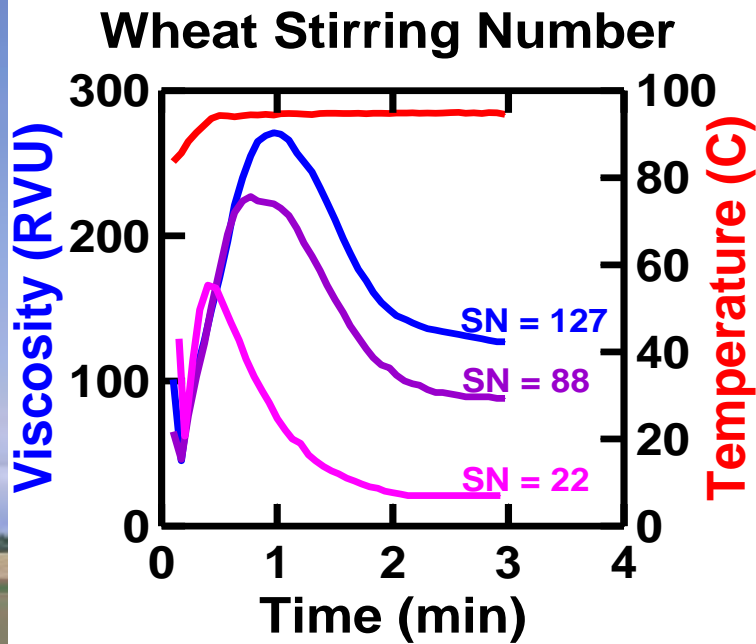 - Allows samples to be analyzed under identical conditions

Milling & Baking: Flour Quality

- **ICC 162, AACC 76-21**
- **13 minutes pasting**
- **Bread, cake & noodle flours**
- **Measure sprouting, pasting potential, heat treatment, amylase addition**
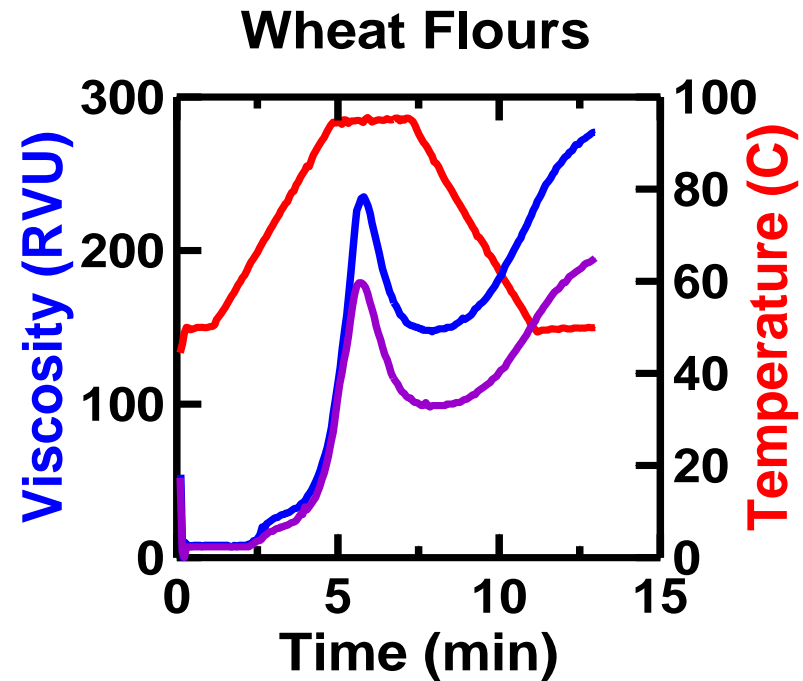- **Fingerprint flour premix**

WHEAT FLOUR & MIX

Newport Scientific Pty Ltd
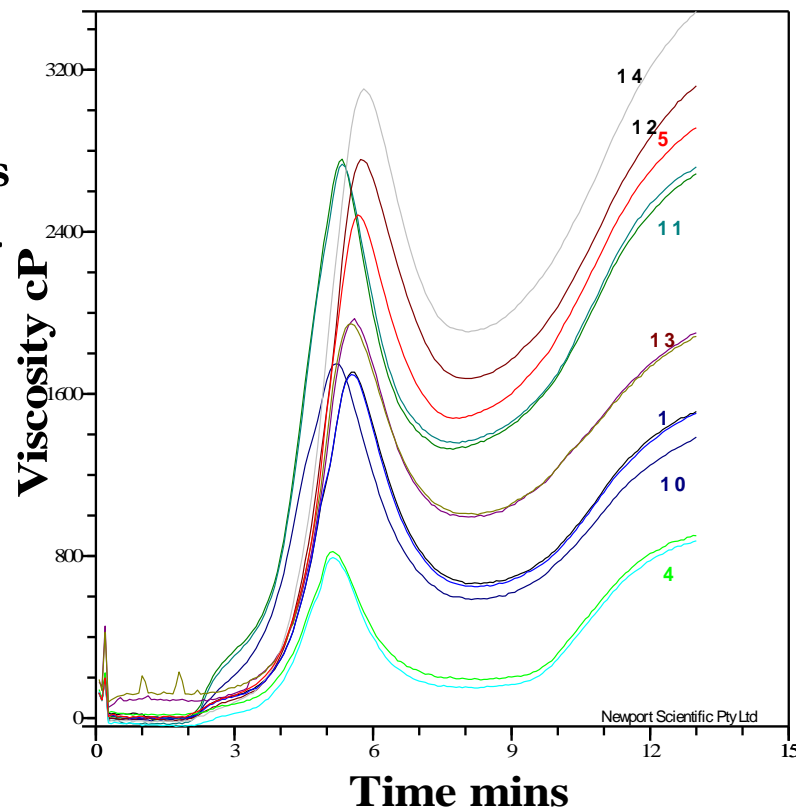
Wheat
Grain Soundness & Pasting

Wheat Stirring Number

- Alpha-amylase activity
- Wheat, malting barley, rye

Wheat Flours

- 13 minutes pasting
- Different amylase activity

Rapid Visco Analyzers (RVA)

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- **Wide variety of applications**
  - Starches, proteins, gums, hydrocolloids, in-process & finished products, process emulations

- **Flexible Set-up**
  - Shear, Temperature, Time
  - Automatically imitate complex plant processes

- **Miniature Pilot Plant**
  - Economical product development on a small scale

- **Ingredient Testing**
  - Monitor suppliers - See matrix effects before materials hit the plant floor In-Process Monitoring
  - Detect problems prior to finished products

- **Final Product Testing**
  - Satisfied customers
  - Product fingerprinting

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doughLAB – Flour & Dough Rheology

- **New instrument for traditional rheological measurements**
  - Water Absorption, Mixing Tolerance, Stability, etc.
- **Easy Set-up & Cleanup**
- **Automated procedures with no glass**
- **doughLAB results are easy to read**
  - Curve analysis software increases accuracy & repeatability and removes operator dependence
- **doughMAP software provides calculations of blends to a specification automatically**
- **Greater flexibility than other dough mixers/testers**
- **New! – mimic a Farinograph**
  - Get Farinograph equivalent results from the doughLAB
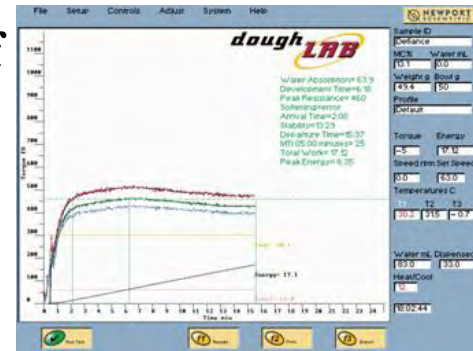
What tests can doughLAB perform?

- **Mimic Standard Methods**
  - AACC 54-21 (300g flour, 14% moisture)
  - RACI 06-02
  - ICC 115/1
  - Constant speed (63rpm) & temperature (30°C)
- **Non-standard Methods**
  - Set up your own methods to fit your products and processes
- **Variable speed & temperature**
  - for R&D
  - imitate modern high energy mixing
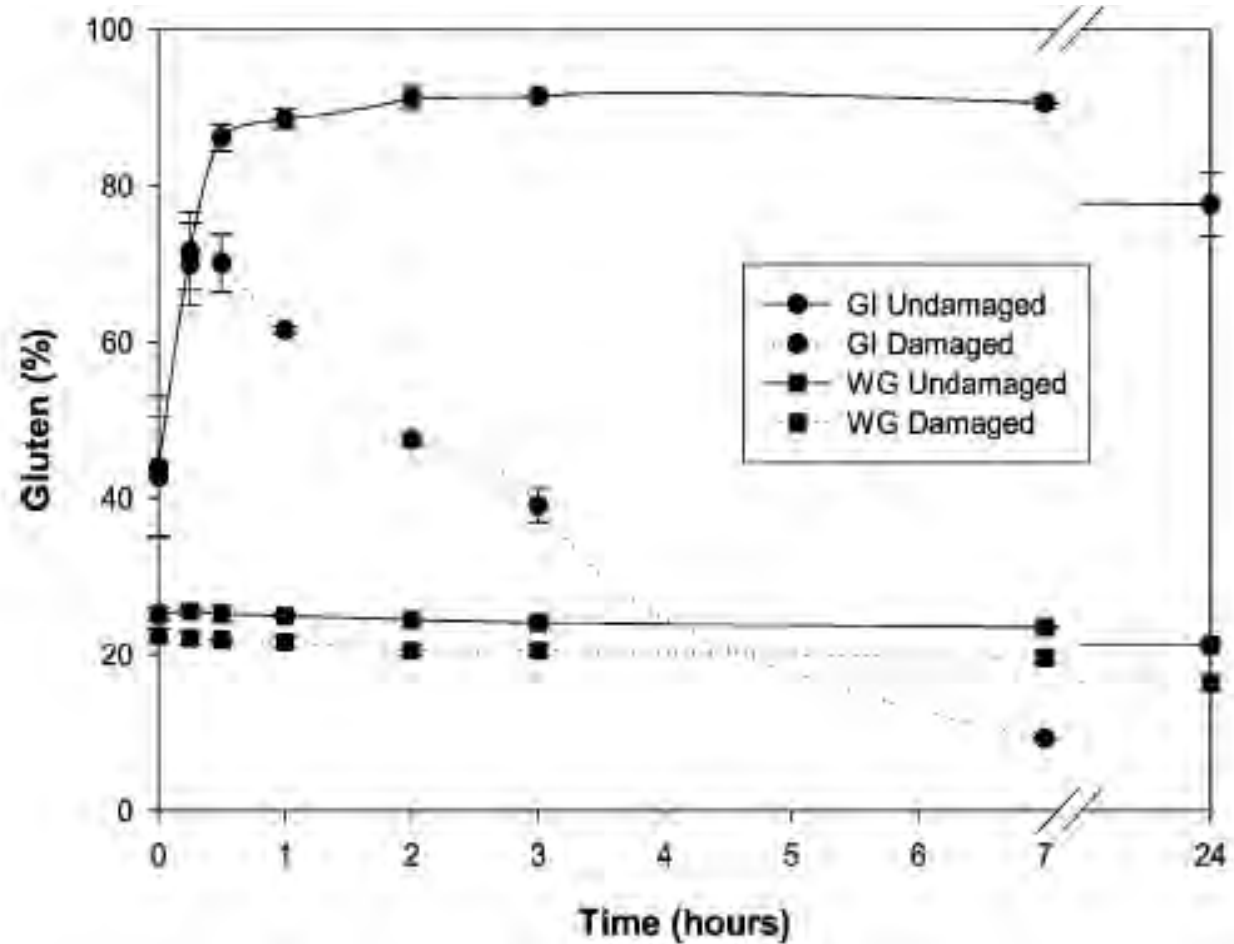 - imitate modern variable temperature mixing

Micro-doughLAB

- Dough rheology on just 4 GRAMS

Rosell et.al.: J. Cereals Sci. 39 (2004) 187 - 193

Gluten Index for Wheat and Flour
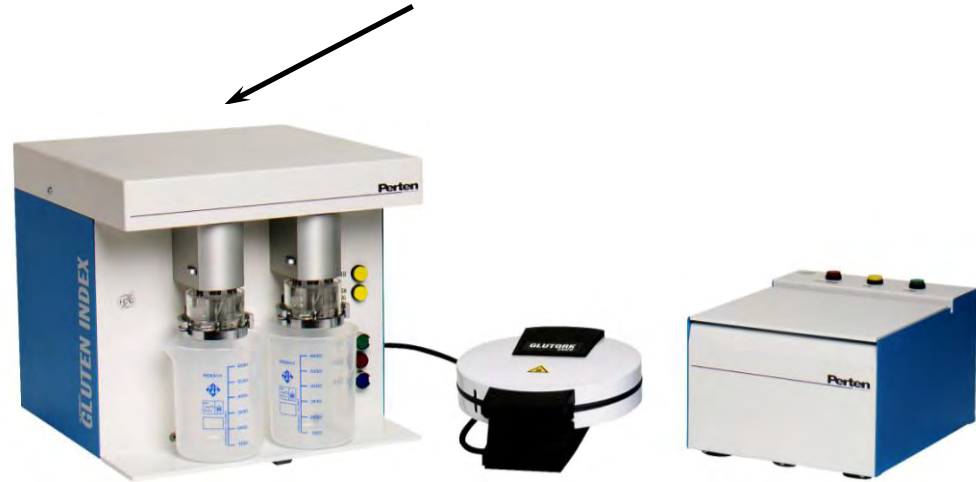
Laboratory mill
LM 3100 or
LM 120

Glutomatic system:
Glutomatic 2200, Glutork 2020
& Centrifuge 2015

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