aQura2™

Technical Data*

Basic installation
- Nep module
- Length module

Additional Options
- True Neps (TN)
- True short Fibres (TSF)
- Gravimetric Trash (G)

Application range
- Raw cotton (Grey)
- Opened material at intermediate stages
- Sliver at any stage
- Comber noil

Measuring principle
- Nep : Through a coherent LASER device
- Length : Optical LED array measurement on an end-aligned sample

Key technology
- Aero Mechanical Individualiser (AMI)
- Laser based Nep detection
- End aligned Length measurement

Testing Conditions

	Nep	Length
Sample Size (grams) :	5 (Cotton)	Measured on a
	10 (Sliver)	Fibre beard
Testing Time (min) :	3	2
Sample Feed :	Manual	Manual
Sliver Preparation :	Manual	Automatic

Calibration
- Nep calibration with Standard Cotton from **PREMIER**
- Length calibration by Metal flags

Output Parameters

Numerical Results:
- Neps / gram
- Mean Nep size in microns (μm)
- Categorization of Neps into Fibre and Seed coat
- True Neps at 140% and 200%
- Effective length
- aQura L and User defined Length
- Short Fibre content <12.7mm
- User defined Short Fibre content
- True Short Fibre content
- Gravimetric Trash: % Content by weight

Graphical Results:
- Nep size distribution for Fibre and Seed coat Neps
- Staple diagram (by number and weight)
- Length distribution (by number and weight)

Analysis Reports
- Nep Difference %
- Length Difference %
- Combing Optimisation Index
- Process Chart
- Trend and Comparison reports

Ambient Condition
- Relative Humidity : 65 ± 2%
- Temperature : 21 ± 1°C (70 ± 2°F) (27 ± 1°C (80 ± 2°F) for Tropical Conditions)

Power consumption
- Single Phase 1 kVA, 1 kVA UPS
- Three Phase 5 kVA

Compressed air consumption
- 16.5 m³/hr at 6 bar

* Subject to change without notice

aQura2™

Raw Material and Process Management System

PREMIER

premier evolvics pvt. ltd.
SF No. 79/6, Kulathur Road
Venkitapuram Post
Coimbatore - 641 062, India

Phone : +91 422 6611000
Fax : +91 422 6611005
E mail : sales@premier-1.com
www.premier-1.com

05000518

intelligent **QUALITY**

aQura2™

The worlds most "accurate" Raw Material and Process Management System

Superior yarn quality and an optimised process cost are of paramount importance to any spinning mill. These are greatly influenced by the process parameters and conditions in the Mixing, Blow Room and preparatory machines. The importance of an accurate and comprehensive process control tool to ensure a balance between the ultimate yarn quality and lower process cost is growing across the spinning mills worldwide

aQura2 Configuration:
- Classification of Neps into Fibre and Seed Coat
- Neps / gram
- Nep size in microns (µm)
- aQura Length and User defined length
- Effective Length
- Short Fibre Content (SFC by number and weight)

Additional Options:
- True Neps (TN)
- True Short Fibres (TSF by number and weight)
- Gravimetric Trash: % Content by Weight

|	
True Neps (TN)	Prediction of yarn Neps at Finisher Draw Frame stage based on the yarn count. Serves as an excellent process control tool for Cards and Combers
True Short Fibre (TSF)	Represents True Short Fibres from the fibre length distribution against a fixed length of 12.7 mm. Helps to initiate an informed action on thick places and associated quality parameters
aQura Length	This Length from the end aligned sample helps to optimise Draw Frame settings to achieve an optimal yarn quality
Gravimetric Trash	An optional module provides reliable and accurate Trash % based on weight, to optimise Raw material purchase and Process settings

Key Technology	Function	Benefit
Aero Mechanical Individualiser (AMI)	Opens and individualises the fibres gently	More representative testing
Laser based Nep detection	Simultaneous measurement of multiple fibres	High throughput with statistically significant sample size of 5 - 10 g
End aligned Length measurement	Automated Baer - sorter principle	Globally accepted. Free from human errors

Precise Measurement

The *aQura2* is packed with technological innovations. Use of multiple patented key technologies brings about a high level of intelligence, comprehensive coverage of all key process parameters and the desired precision of measurement

AMI enabled Fibre Individualisation

Patented

- Aero Mechanical Individualiser (AMI) is designed to avoid complicated preparation of feed material. The AMI uses pin rollers with an advanced pin finish resulting in a gentle fibre passage

- The proven and internationally accepted AMI design eliminates Nep increase even if the same test material is tested repeatedly
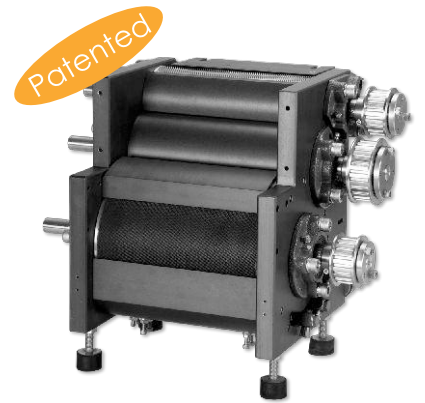
Laser based Nep detection

- A collimated and coherent Laser light beam is passed across the fibre path for measuring the characteristics of Neps

- Using a patented Background Fibre Information Suppression (BFIS) algorithm and the time of flight control, Neps are precisely classified as Seed Coat Neps and Fibre Neps

End aligned Length measurement

Specially designed comb arrangement holds the sample gently as the fibre beard gets end aligned. *aQura2* measures True Short Fibre (TSF) and other Fibre length information most suited for

- Raw material procurement

- Detection of Fibre Rupture in Blow Room, Carding, Drawframe etc.

- Optimising Combing Efficiency / Noil Extraction

- Optimisation of Roller Settings

Patented
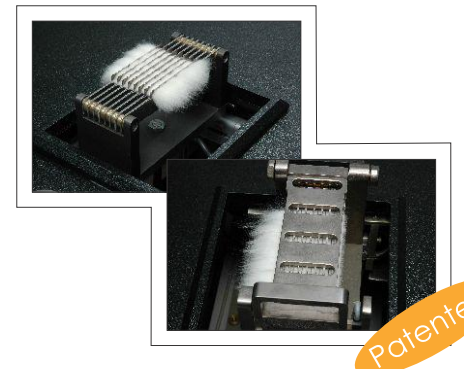
"Unique" features

True Neps vs Neps/g (Neps +200% in 34s CHY)
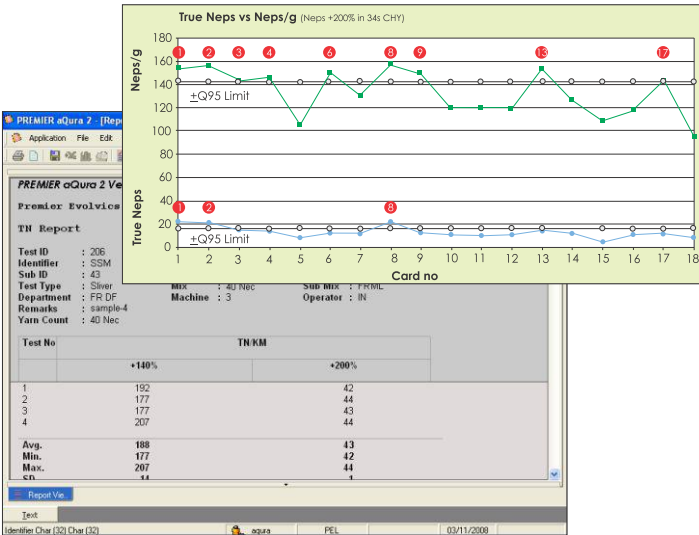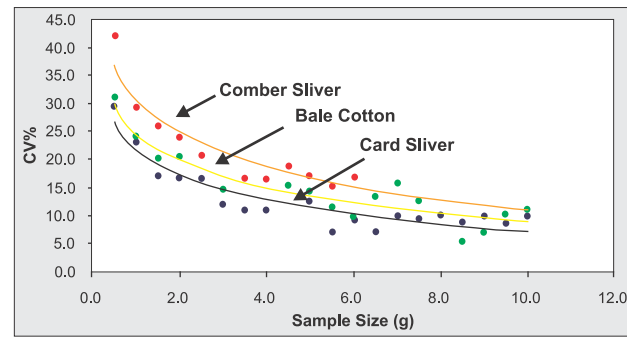
True Neps

- All Neps present in the Raw material and at different process stages do not show up as undesirable defects in the yarn and fabric

- Depending on the Count of Yarn, there exists a Nep size range which affects the final yarn and fabric appearance. It is therefore important to identify and control the **True Neps**

The Most Reliable Nep Measurement

- A good quality combed sliver will have only 1 or 2 Neps/gram. Unless we measure with an adequate Sample size, the results would be highly variable. Higher the Sample Size, lower the error

- **aQura2** provides the most reliable and accurate Nep measurement with a very low variability in the results by testing a sample size of 5 and 10 grams within 3 minutes
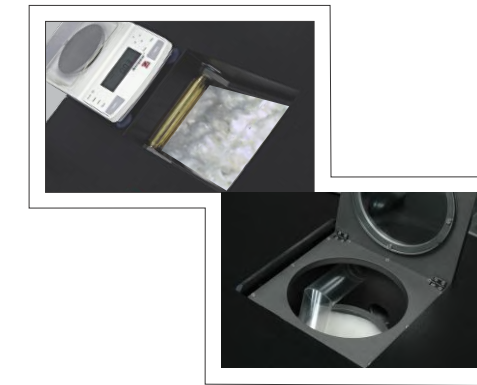

Automatic Sliver preparation for Length Measurement

- After Nep measurement, the tested material is automatically converted into sliver form which can then be easily transported to the feed device for length measurement
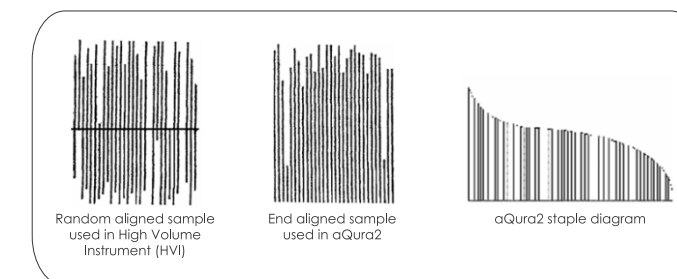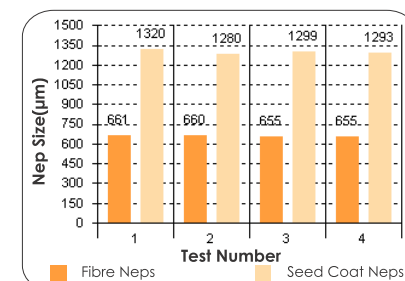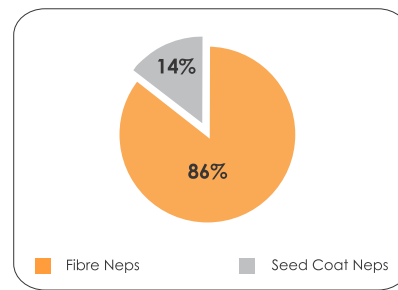
Categorisation of Neps by Size and Type

- Precise Nep measurement starting from 100 - 3000 microns at an interval of every 10 microns

- Categorisation of Neps into Seed coat and Fibre Neps is useful to focus on specific corrective action to reduce Neps

- For instance, a higher proportion of Seed Coat Neps might warrant an increased removal by extracting more flat strips. On the other hand, a higher proportion of Fibre Neps would require corrective action through a closer setting of card components
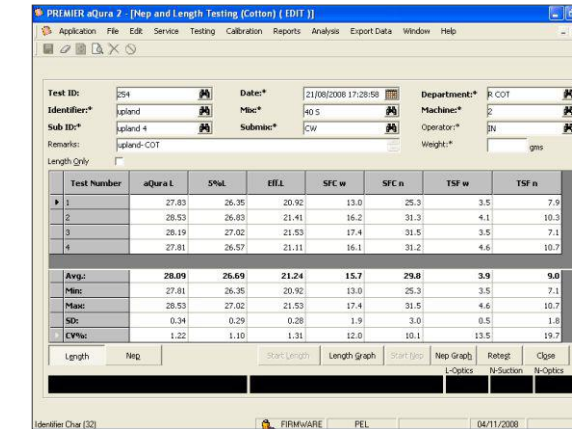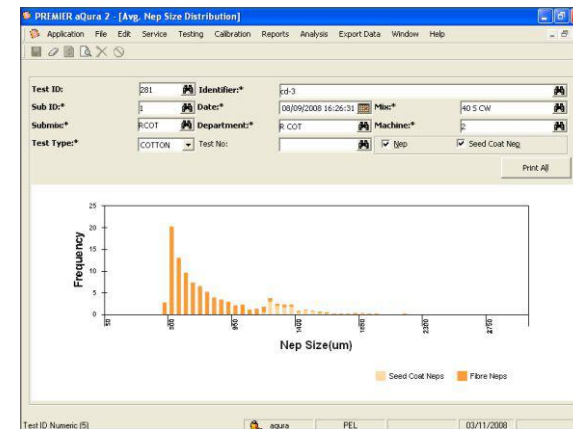
Measurement of Short Fibre Content (SFC) and True Short Fibre (TSF)

- **aQura2** measures SFC and other fibre length characteristics from an end-aligned sample most suited for actual length measures reflecting the true distribution of the length of the fibres. This length information helps in several process control decisions including optimisation of combing efficiency, comber noil extraction, detection and elimination of fibre rupture etc,.

- True Short Fibre (TSF) is a new parameter which represents the most appropriate short fibre against the fixed length of 12.7 mm. TSF helps to optimise the thick places and its associated quality parameters more precisely when compared to the conventional Short Fibre Content (SFC)


Random aligned sample used in High Volume Instrument (HVI)

End aligned sample used in aQura2

aQura2 staple diagram

Comprehensive coverage. In-depth analysis.

aQura2 incorporates an exhaustive set of features. The Nep and the length measurement are provided in full. The availability of comprehensive numerical and graphical reports enable a faster and appropriate decision for the process control

Consolidated Report

- *aQura2* provides comprehensive information on Neps / gram, Classification of Neps into Seed Coat Neps , Fibre Neps and its Size
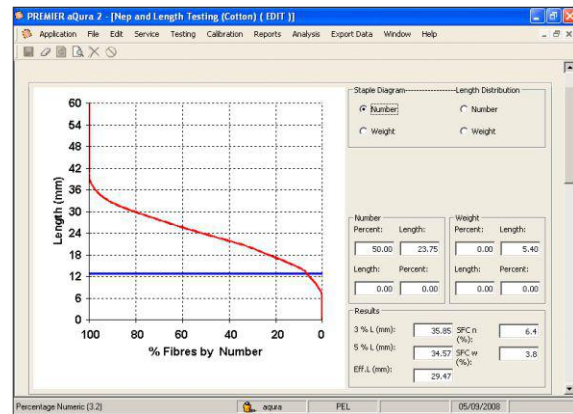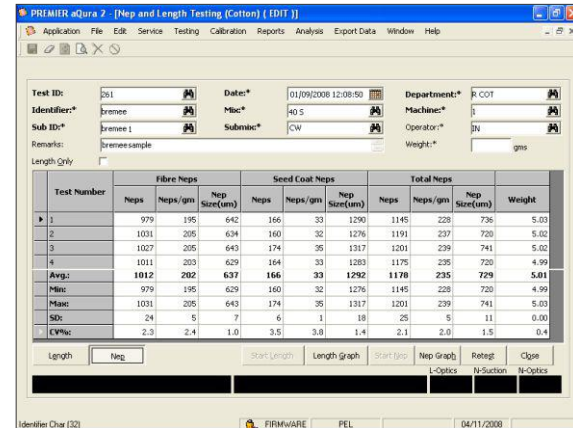
Staple Diagram

- Graphical representation of the end aligned fibre beard (Baersorter method) by weight and number provides the fibre distribution

Automatic Gravimetric Trash

- The Gravimetric Trash Module works with a single pass of the material unlike the conventional multiple pass systems

- A statistically significant sample size of 10 gram is processed. The entire sequence of trash separation, weighment and transportation is automatic

PREMIER G-trash

Optional

Analysis Reports

aQura2 comes with a host of innovative and ready to use Numerical and Graphical reports enabling the user to initiate an informed corrective action immediately after testing
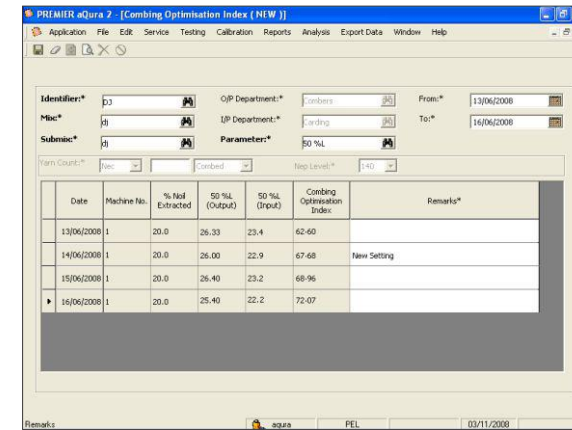

Process Analysis

- A unique process analysis Tool provides information on
  - Nep difference %
  - Length difference % and
  - Combing Optimisation Index

- This ready to use tool provides critical information on the performance of the machine based on the input / output material, which is other wise quite often assumed that the process is under control

Process Chart

- The behaviour of Nep, length and its associated parameters across departments are readily available for each Mix / Count

- A wide range of parameters to chose from, viz;

  - Neps/g and Size
  - Fibre Neps/g
  - Fibre Nep size
  - Seed Coat Neps/g
  - Seed Coat Nep size
  - True Neps/g (at +140% and +200% Nep level)
  - aQura length
  - Effective length
  - User defined length
  - Short Fibre Content (by number and weight)
  - True Short Fibre (by number and weight)
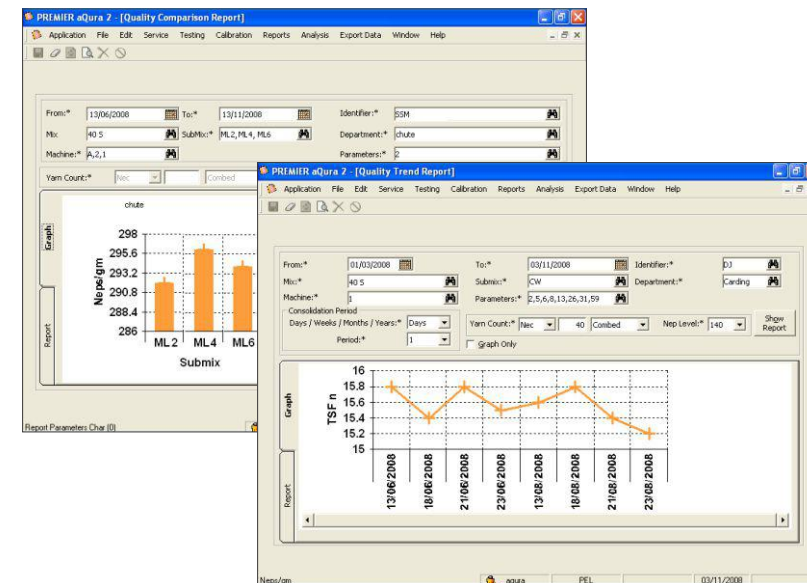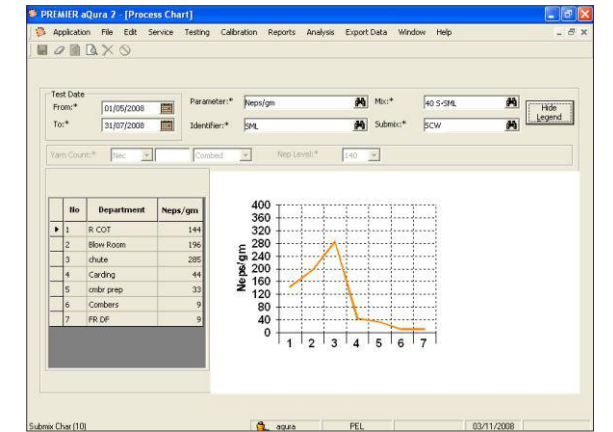
Trend and Comparison

- *aQura2* provides comprehensive analysis for Raw material and across all preparatory departments for Nep, length and its associated parameters

- A unique comparison chart enables one to compare all machines within a department and also machines allocated to a Count group