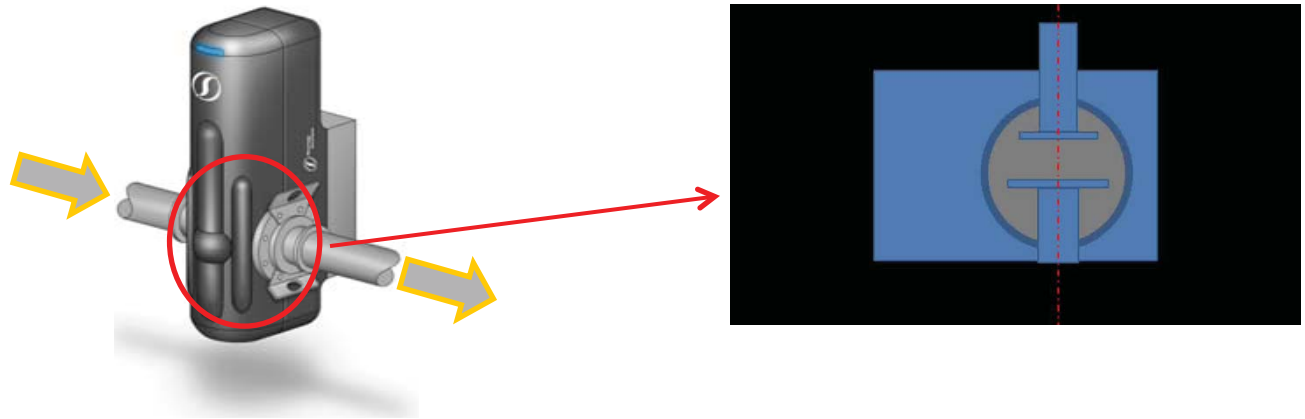


# Rheology Solutions OnLine Rheometer (OLR)

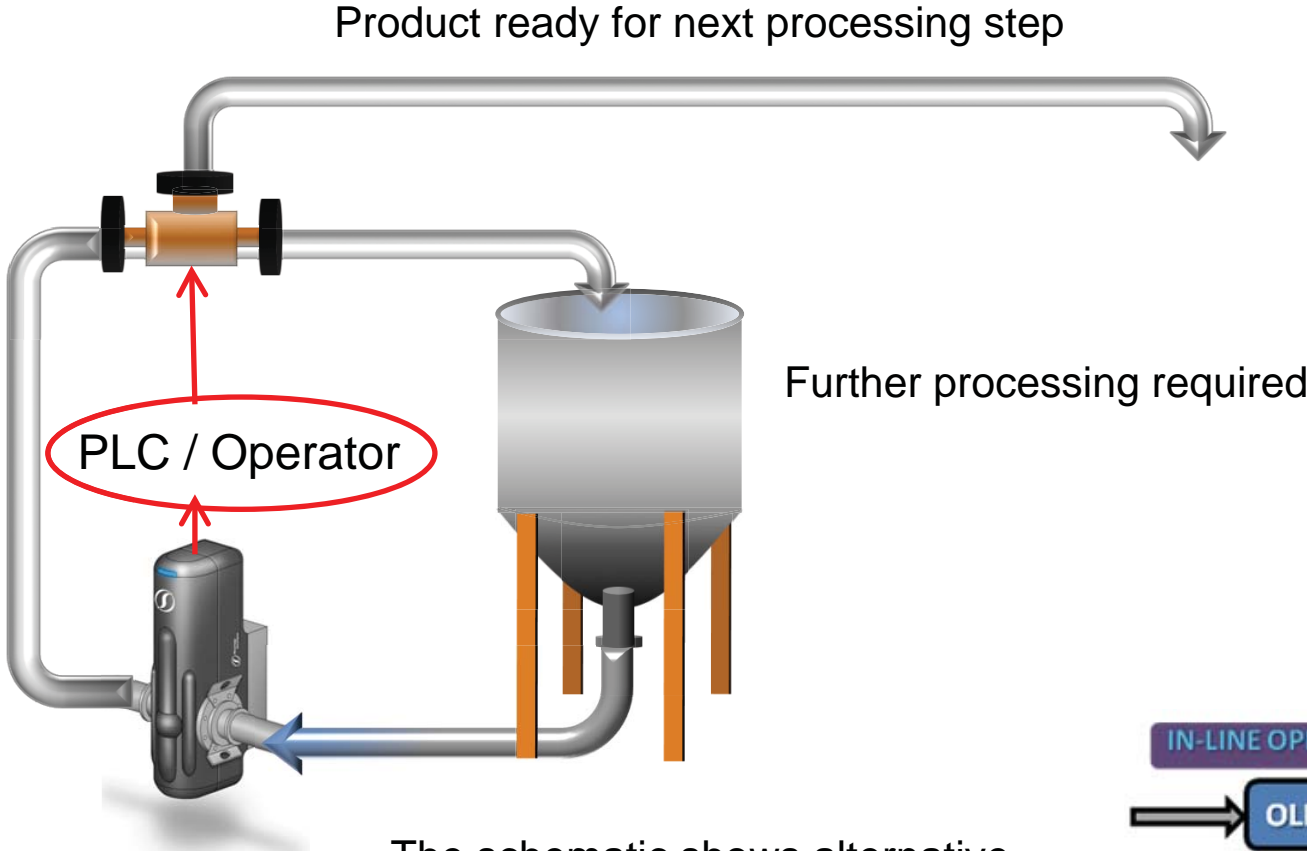
Principle of operation, development, capabilities, features and benefits

# Principle of Operation

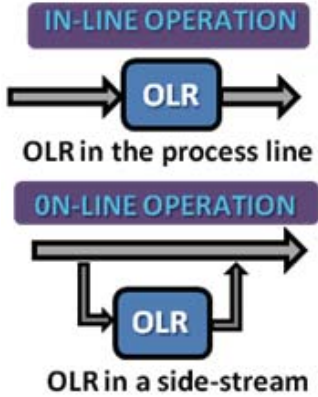
- Small amplitude oscillatory squeeze flow
- Provides viscoelastic frequency response of process fluid between 1 and 100 Hz, on-line and in real-time
- OLR-Software allows monitoring and control of process operations, using standalone software (SOLR), or factory PLC



# Principle of Operation



The schematic shows alternative arrangements for the OLR installation. It can be directly connected in the main process pipeline or in a side loop, as necessary.



# Historical Development



**CSIRO  $\alpha$ -prototype**

- ✓ Explored & refined base theory
- ✓ First working prototype
- X Sensor and electronics unsuitable for factory installations
- X Software unstable and unsuitable for factory use



**RS  $\beta$ -prototype**

- ✓ Refined and improved software
- ✓ Refined and improved operation for on-line applications
- ✓ First successful factory trials
- X No IP rating, no electrical certification
- X Not compatible with factory PLC



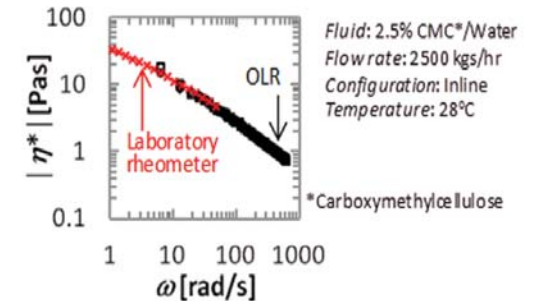
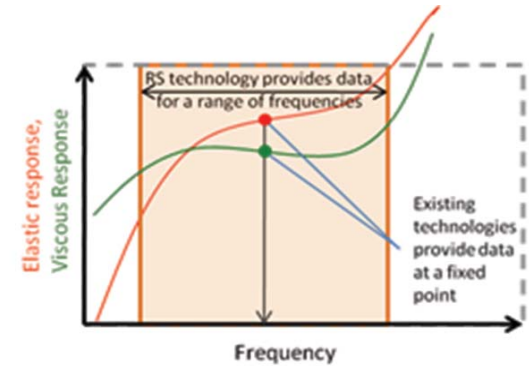
**OLR Series 1000**

- ✓ Final operational refinements for on-line applications
- ✓ PLC compatibility
- ✓ Designed to EDHEG guidelines
- ✓ IP 56, C-Tick, CE, FCC
- ✓ FDA approved materials throughout



# OLR Benefits

- ❏ Product/process monitoring and control
  - ❏ Standalone SOLR software or,
  - ❏ Factory PLC
- ❏ Provides viscoelastic response over range of frequencies, not single pre-selected frequency.
- ❏ Results identical to those obtained from laboratory rheometers.
- ❏ Continuous feedback to plant operators.
  - ❏ User selectable Pass/Fail criteria
  - ❏ Immediate Pass/Fail feedback
- ❏ Complete datasets archived for accessing later
- ❏ Low response time, rapid sample renewal rate.



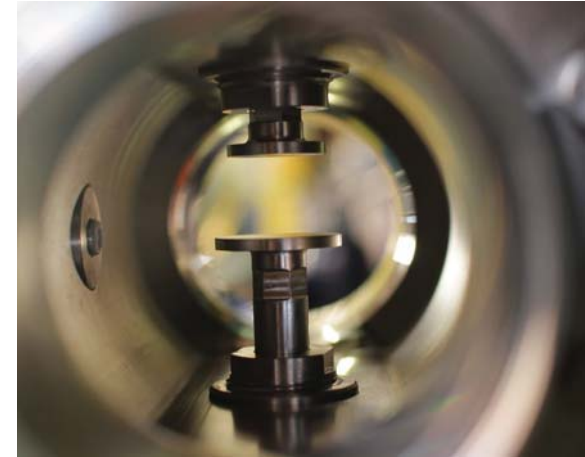
# Specifications and Details

Frequency range (standard):	1 to 100 Hz
Viscosity measuring range (geometry dependent):	0.25 to 200,000 Pa.s
Pressure range (standard):	50 mBar a – 10 Bar a
Temperature range (standard):	-10 to 110°C

- ☒ Product contact parts 316/304 SS.
- ☒ Excellent CIP performance.
- ☒ Designed to EHEDG guidelines using FDA compliant materials.
- ☒ Electricals compliant with CE, C-Tick , FCC standards.
- ☒ IP-56 rated.

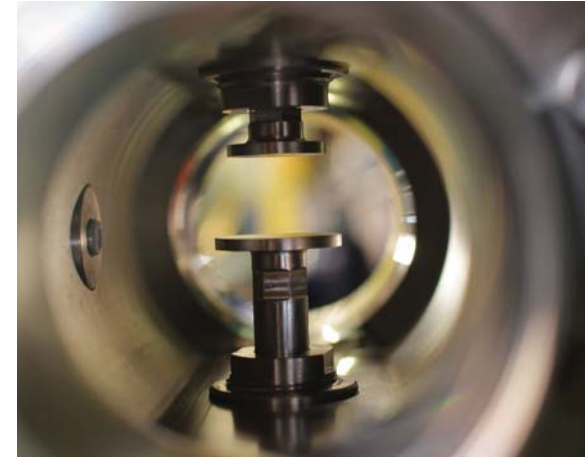
# OLR Applications

- Building Products
- Chemicals and Household
- Cleaning Products
- Cosmetic and Personal Care
- Food
- Mineral Processing
- Petrochemical
- Pharmaceutical
- Polymers
- Surface Coatings



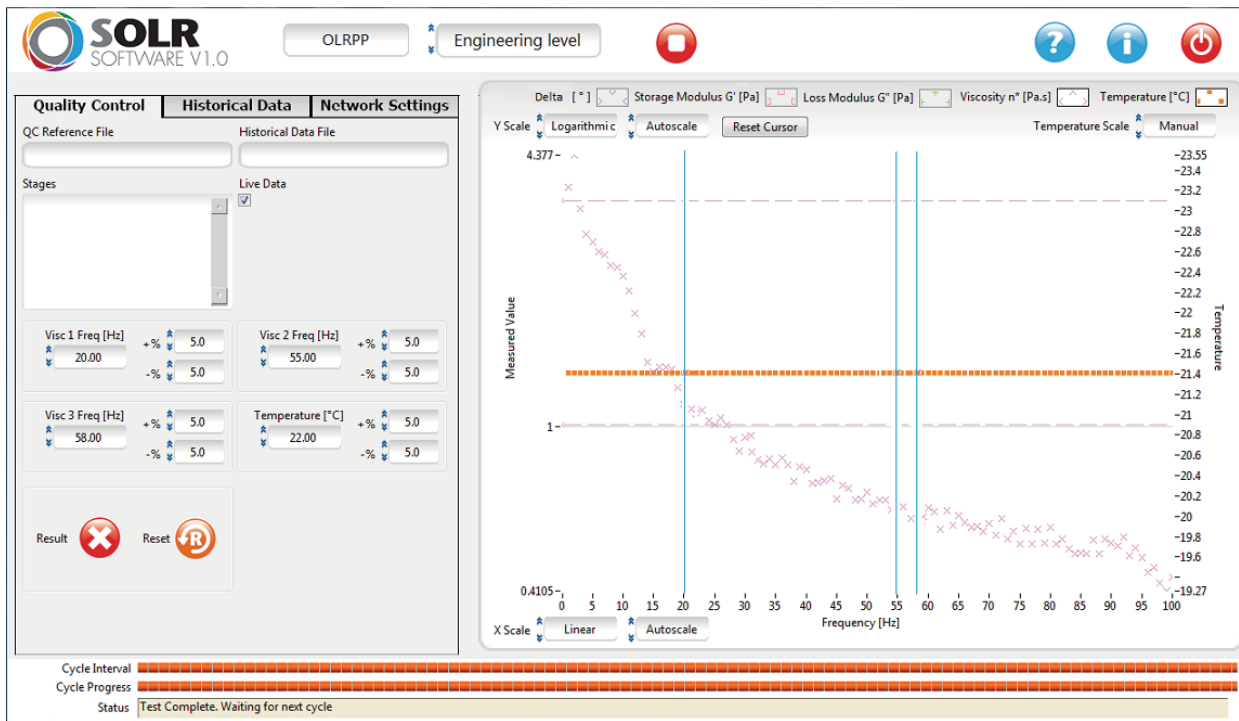
# OLR Advantages

- Fast and Reliable Real Time Results
- Low Maintenance
- Out of Specification Diagnosis
- Plug-and-Play Installation
- Precise and Robust Sensor System
- Process Control
- Process Monitoring
- Quality Control
- State of the Art Technology
- Time and Cost Savings





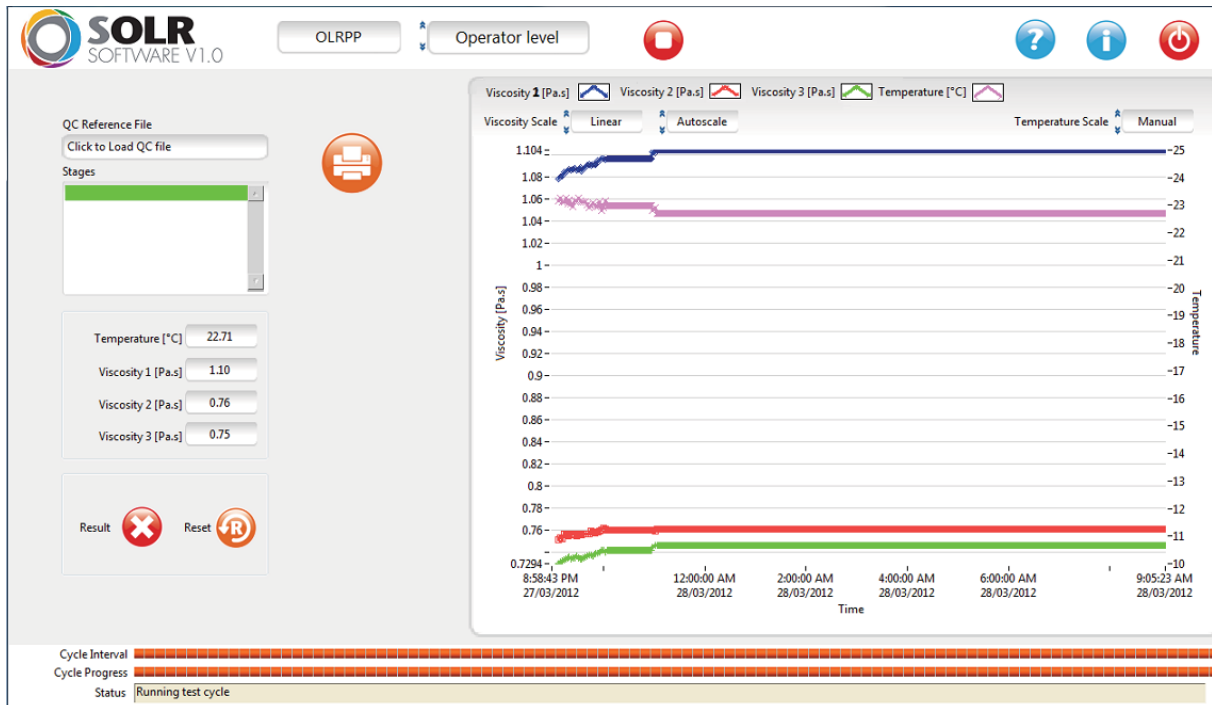
# SOLR Software for OLR



## ENGINEER VIEW

- Full data-sets available
- Print report
- Set communications
- Recall archived data-sets
- Set QC limits (viscosity & temperature)

# SOLR Software for OLR



## OPERATOR VIEW

- Intuitive display
- Manually advance through process
- Continually updated display
- Pass/Fail notification
- Print report

# SOLR Software for OLR

FUNCTIONS	OPERATOR LEVEL	ENGINEER LEVEL
User-friendly interface	✓	✓
Password protected		✓
Pass/Fail display	✓	
Manually advance QC parameters for multi-step process	✓	
Set QC parameters for product or process for Operator View <input checked="" type="checkbox"/> Process can be single or multi-step		✓
Reduced data-set displayed for rapid understanding of process trends; $\eta^*$ , T	✓	
Full data sets available $G''$ , $G'$ , d, $\eta^*$ , T		✓
Continuously updated 12hr trend display	✓	
Recall and compare archived or live data-sets for <input checked="" type="checkbox"/> QC parameter setting <input checked="" type="checkbox"/> Out-of-spec process diagnosis		✓
Assign comms <input checked="" type="checkbox"/> Active OLR <input checked="" type="checkbox"/> IP addresses		✓
Print reports	✓	✓

# Australia On Top of the World in Rheology



ASK US ABOUT OUR  
**90 DAY  
FACTORY TRIAL  
PROGRAM**



*the* **OLR** *keeps your process in line*



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