

LyoStar – SP Scientific

INTRODUCTION

The Lumetics LINK™ software platform scans network locations for new measurement data files, copies data directly to a centralized database, and provides a powerful user interface for rapid multi-measurement multi-technique data aggregation, visualization, analysis, and reporting. LINK employs a client/server-based architecture where the LINK server hardware is provided by the end user and resides on the end user's network. The LINK client is a portable web-based application that may be placed on any computer with network connectivity to the LINK server. For successful import, the LINK webserver requires read access to the folders where user data resides.

The LyoStar is an R&D and process development freeze-dryer that provides Type T thermocouple-controlled shelf temperature accuracy of +/- 0.5°C or better and vacuum control within 0.1% of set-point. Its robust 5.5 hp cascade refrigeration system enables shelf pull down from ambient to -40°C in less than 25 minutes, and the ultra-reliable scroll compressors feature just 3 moving parts.

DETAILS

LINK requires CSV exports for importing LyoStar data. If a Log File is generated upon LyoStar export, LINK will optionally import this data as well.

The following raw curve data may be imported, in addition to all available instrument/analysis settings and parameters calculated by the instrument software:

- Temperature vs. Time Elapsed (hours)
- Pressure vs. Time Elapsed (hours)

Notes:

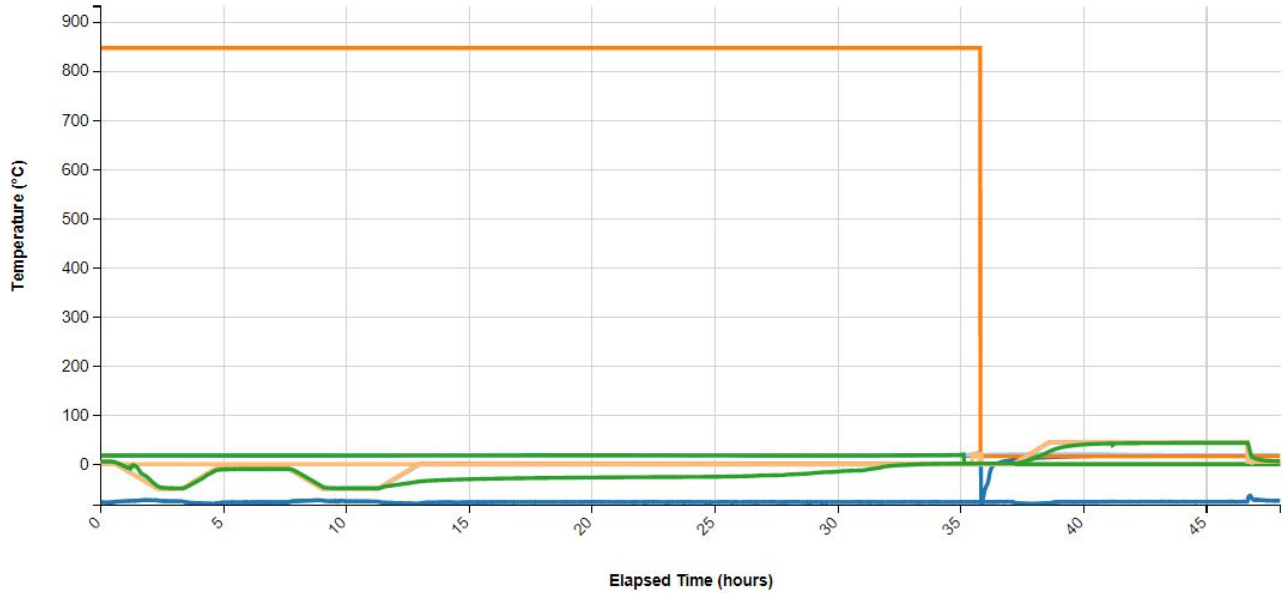
- Pressure and temperature are imported with no associated units as these differ depending on LyoStar export method
- In order to overlay the number of curves simultaneously, each curve will be imported into LINK as its own measurement (all sharing the same metadata). This will create a new LINKdb field called "Measurement Type", which will need to be added to the filter panel and a split applied. This will ensure that pressure and temperature will not be averaged together.
- If the data is tied to a sample or cycle, the cycle will need to be identified therefore they are not averaged by more than one lyo cycle. Lumetics suggests also splitting by the LINK Record ID in the filter panel to obtain this.

EXAMPLES

Included below are sample dashboards from LyoStar measurement files:

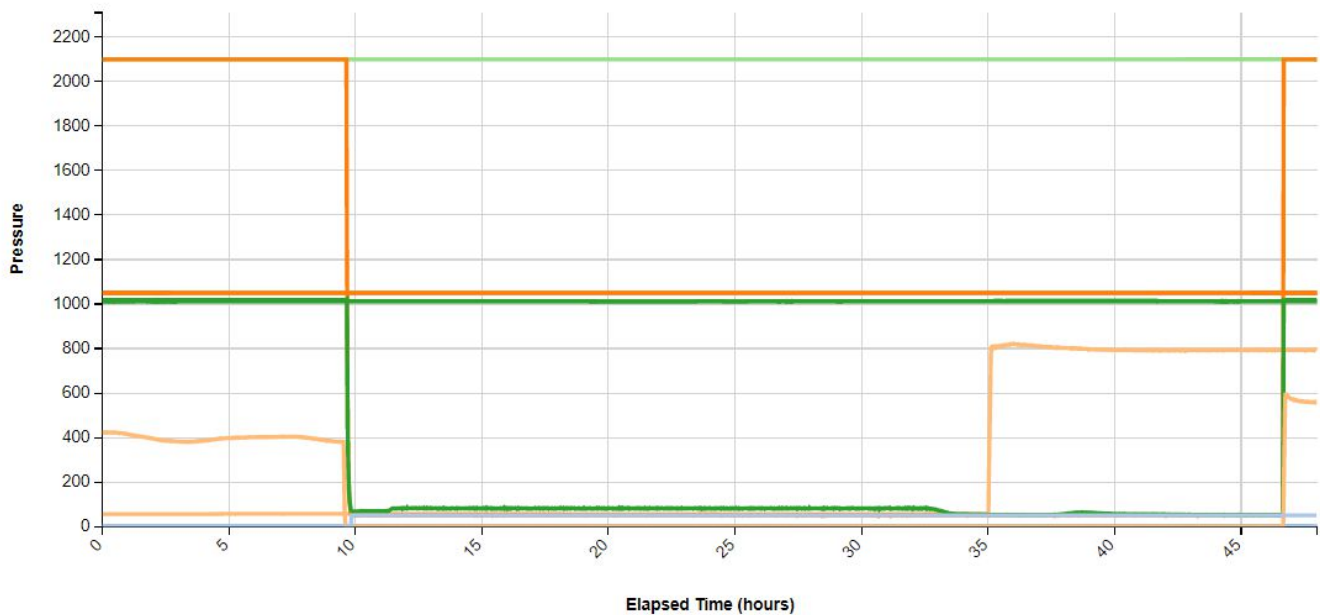
1. Line Chart plotting raw data curves for Temperature vs. Elapsed Time

Temperature vs. Elapsed Time



2. Line Chart plotting raw data curves for Pressure vs. Elapsed Time

Pressure vs. Elapsed Time



3. Tabular Summary examples:

Measurement Summary Table – Measurement Results

Sample Name	Temperature (°C) (Elapsed Time (hours) >= .01) - AVG	Pressure (Elapsed Time (hours) >= .01) - AVG	Velocity Offset (m/s) - AVG	Integration time (s): - AVG	Duct Area (cm ²) - AVG	Chamber Pressure (mTorr) - AVG	RefCell [H2O] (Molec/cc) (Elapsed Time (hours) >= .01) - AVG	Process [H2O] (Molec/cc) (Elapsed Time (hours) >= .01) - AVG	Process Purge (L/min) (Elapsed Time (hours) >= .01) - AVG	Mass Flow Scaling (Elapsed Time (hours) >= .01) - AVG	Mass Flow (g/s) (Elapsed Time (hours) >= .01) - AVG
Sample A	0.00	0.00	0.24	60	74.33	50	0	26433263320000...	0.00	0.00	0.00
Sample B	0.00	0.00	0.24	60	74.33	50	642633670000000...	0.00	0.00	0.00	0.00
Sample C	0.00	0.00	0.24	60	74.33	50	0	0.00	0.00	0.00	0.00
Sample D	0.00	0.00	0.24	60	74.33	50	0	0.00	0.00	0.00	14.55
Sample E	0.00	0.00	0.24	60	74.33	50	0	0.00	0.00	5232.02	0.00
Sample F	0.00	0.00	0.24	60	74.33	50	0	0.57	0.57	0.00	0.00
Sample G	0.00	0.00	0.24	60	74.33	50	0	0.00	0.00	0.00	0.00
Sample H	0.00	2917369.00					0	0.00	0.00	0.00	0.00
Sample I	82302.93	879570.19					0	0.00	0.00	0.00	0.00

Measurement Summary Table – Instrument Settings

File Name	Analysis Date	Sample Name	Measurement Type	Start Time	End Time	Process2 Path (cm) - AVG	Process1 Path (cm) - AVG	Integration time (s): - AVG	Duct Radius (m) - AVG	Duct Distance (m) - AVG	Duct Angle2 (deg) - AVG	Duct Angle1 (deg) - AVG
2016_03_25_0...	2016-03-25 09:...	Sample A	Process [H2O] [...]	02/18/2020 12:...	02/20/2020 12:...	13.15	13.15	60	0.05	0.12	135	45
2016_03_25_0...	2016-03-25 09:...	Sample B	RefCell [H2O] (M...	02/18/2020 12:...	02/20/2020 12:...	13.15	13.15	60	0.05	0.12	135	45
2016_03_25_0...	2016-03-25 09:...	Sample C	Velocity (m/s)	02/18/2020 12:...	02/20/2020 12:...	13.15	13.15	60	0.05	0.12	135	45
2016_03_25_0...	2016-03-25 09:...	Sample D	Mass Flow (g/s)	02/18/2020 12:...	02/20/2020 12:...	13.15	13.15	60	0.05	0.12	135	45
2016_03_25_0...	2016-03-25 09:...	Sample E	Mass Flow Scaling	02/18/2020 12:...	02/20/2020 12:...	13.15	13.15	60	0.05	0.12	135	45
2016_03_25_0...	2016-03-25 09:...	Sample F	Process Purge (L...	02/18/2020 12:...	02/20/2020 12:...	13.15	13.15	60	0.05	0.12	135	45
2016_03_25_0...	2016-03-25 09:...	Sample G	RefCell Purge (L/...	02/18/2020 12:...	02/20/2020 12:...	13.15	13.15	60	0.05	0.12	135	45
Lyostar2_75_BE...	2020-02-18 00:...	Sample H	Chamber Pirani	02/18/2020 12:...	02/20/2020 12:...							
Multiple (3 Value...	Multiple (2 Values)	Sample I	Multiple (11 Valu...	Multiple (2 Values)	02/20/2020 12:...							

DASHBOARD DOWNLOAD

Included below is a link to downloadable dashboards for LyoStar measurement files:

<http://lumetics.com/dashboards/LyoStar/LyoStar.zip>

CONTACT LUMETICS

For direct assistance, please contact Lumetics LINK™ Support:

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