KC DATA – Automatization collection and analysis

User Manual

Updated 2021-01-19

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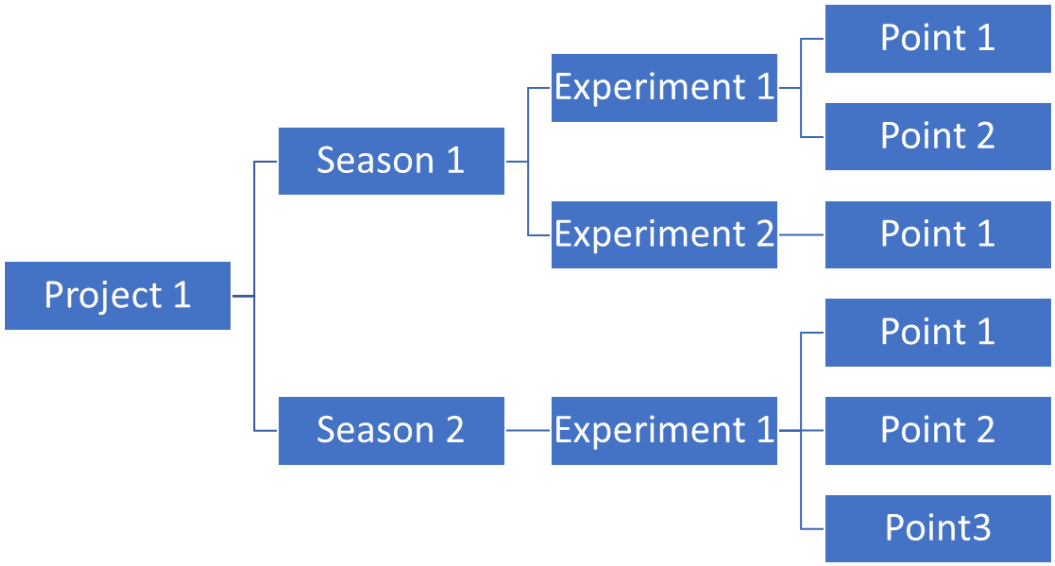
1. Introduction

This program is used as a server to collect all the data gathered in the *Kraftcentralen (KC or Power Central)* during research. Its purpose is to store data and facilitate its analysis.

The interface is made of 4 main windows: Start, Project, Experiment and Point. The structure is as shown in the figure below. A project, for example investigating the thermochemical process for Polyethylene, consist of various seasons (ex. winter of 2020-2021), which can have one or more experiments (commonly 1 day). One experiments could be for example investigating the effect of temperature and can contain one or more points of approx. 1-hour duration, for instance two different temperatures.

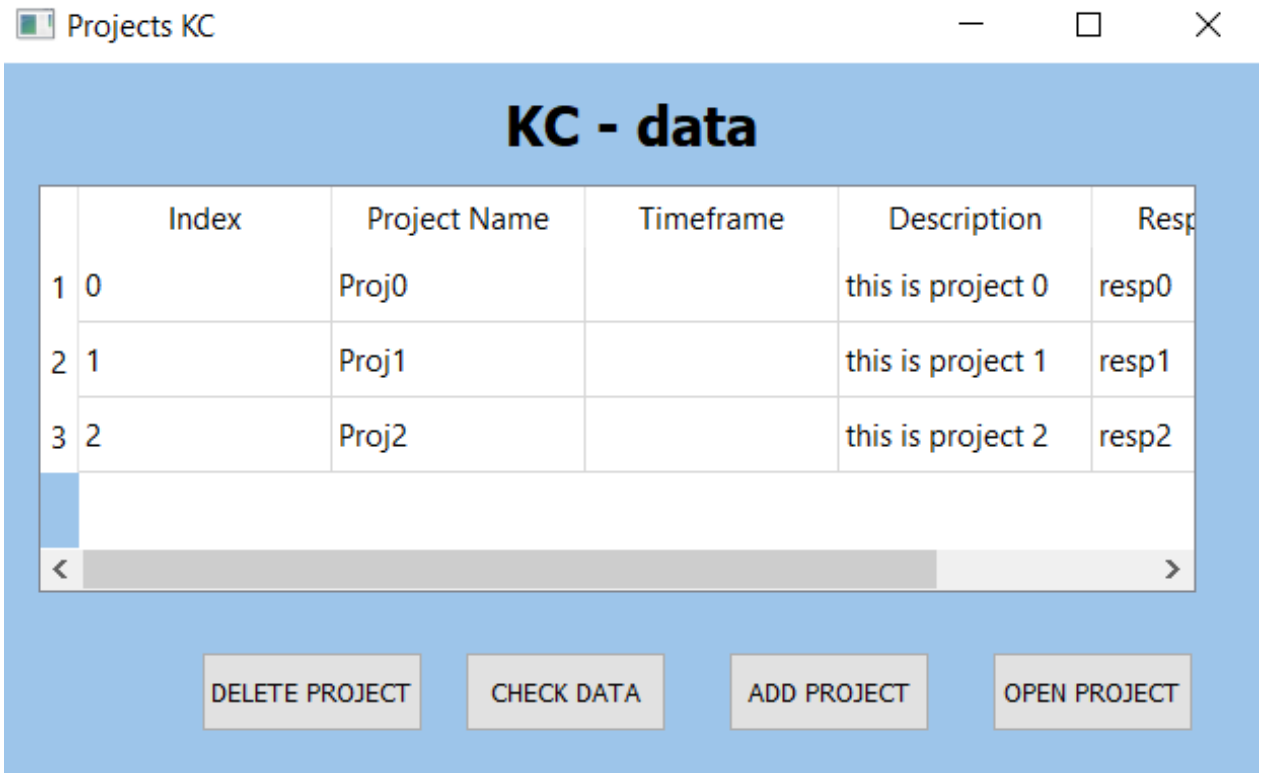


As January 19th, 2021, all data collection is finished and automatized for SCADA type (i.e trend obtained from the operation conditions in the power plant), GC type (for the gas analyzed in Gas chromatography, both for the G101 and for inferno in the gasifier, for dry gas and for the mass balance, respectively) and for SPA type (i.e. data coming from the GC-430 including mainly aromatics compounds), while the analysis will be implemented later.

2. Interface guide

Start Window

The start window includes a summary table of all the data available divided by its project.



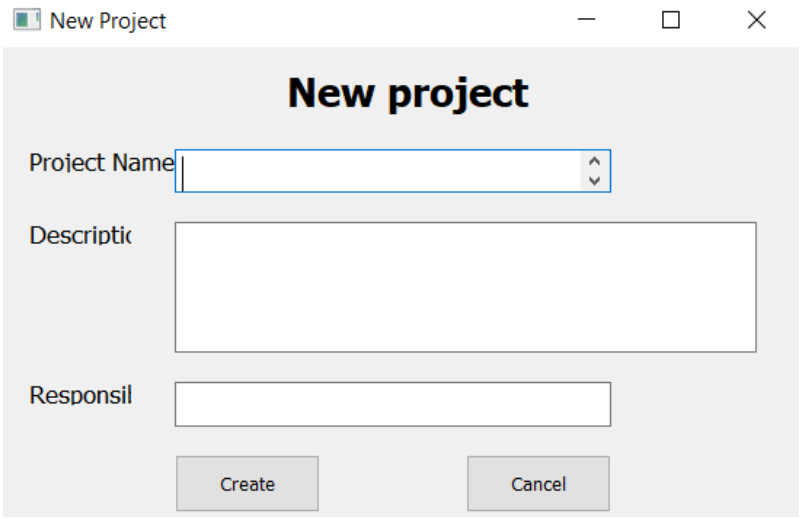
Action 1: Check data

If you want to check, open or download raw data click *Check data*

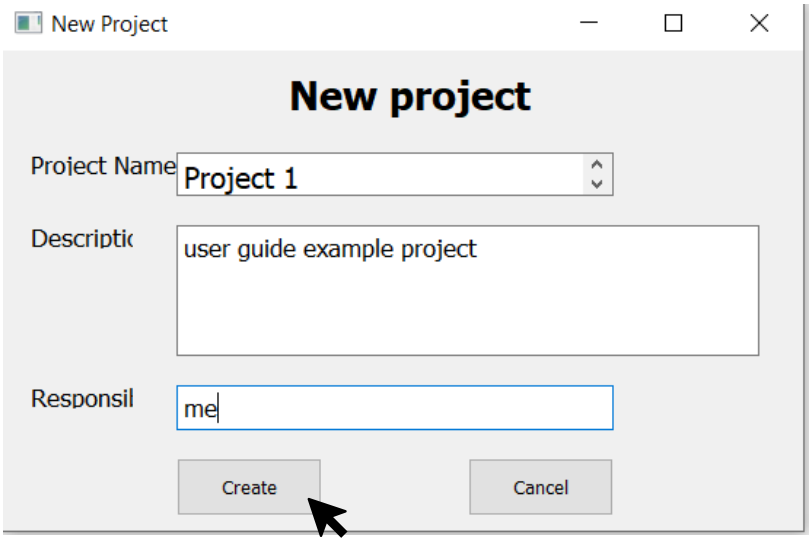
This function is under construction 

Action 2: Add a new Project

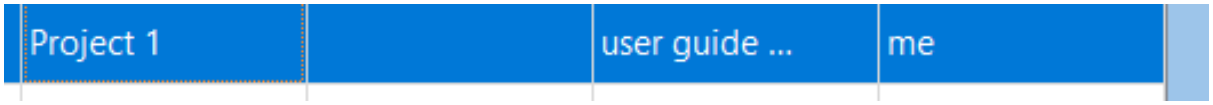
If you need to add a project click *Add Project*:



Type the project name, description and responsible and click *Create*:



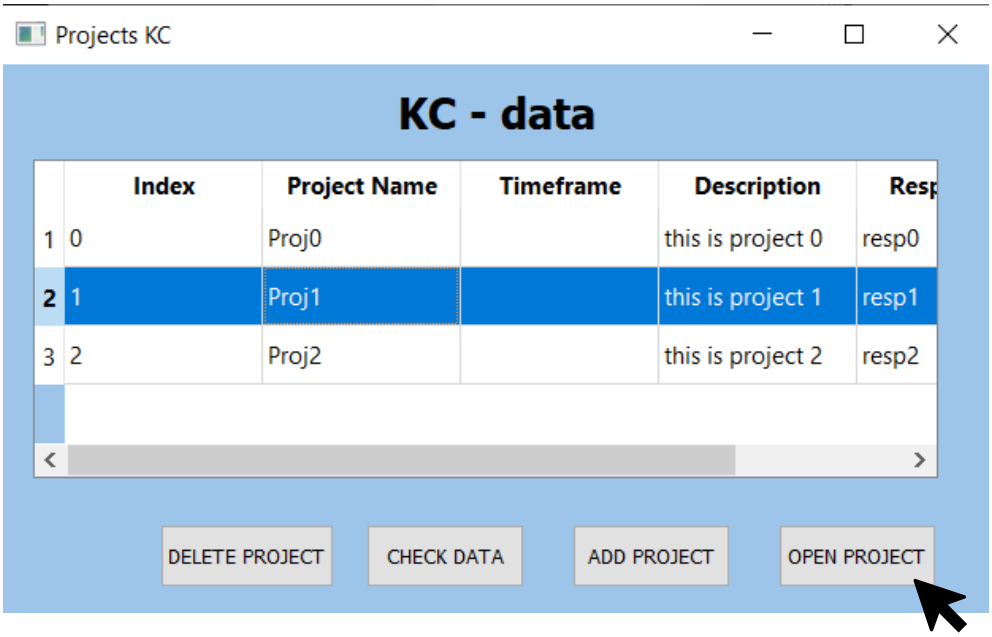
The new project line will now appear in the Start Window:



If you done want to create a new project click *Cancel.*

Action 3: Open Project

If you want to see or modify the information of a project, select the project and click *Open Project:*



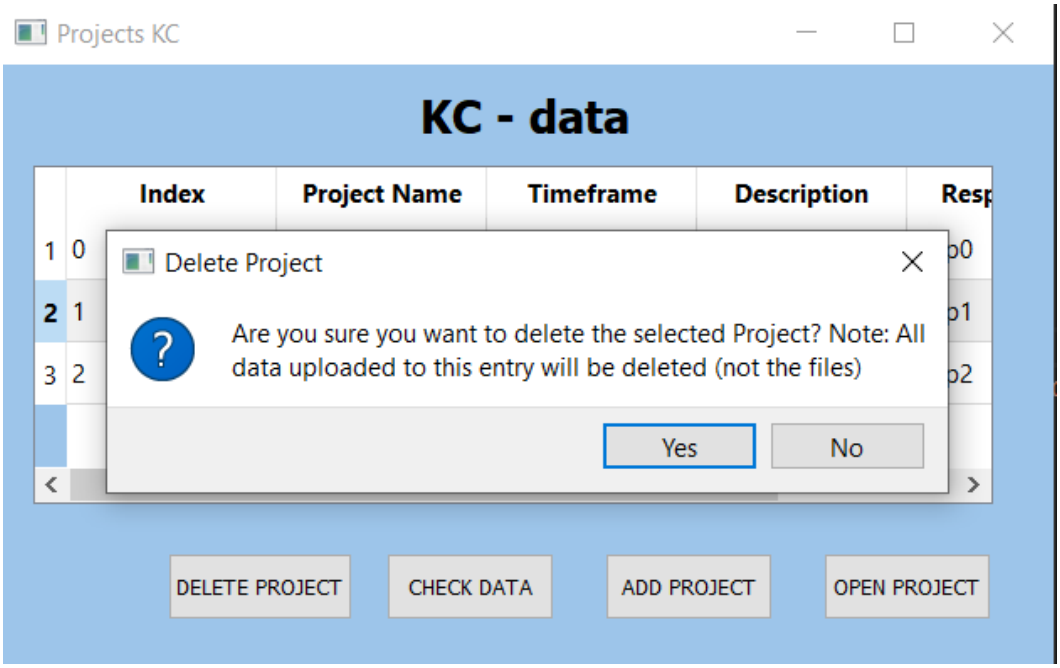
The Project Window will open (see Project Window).

Action 4: Delete Project

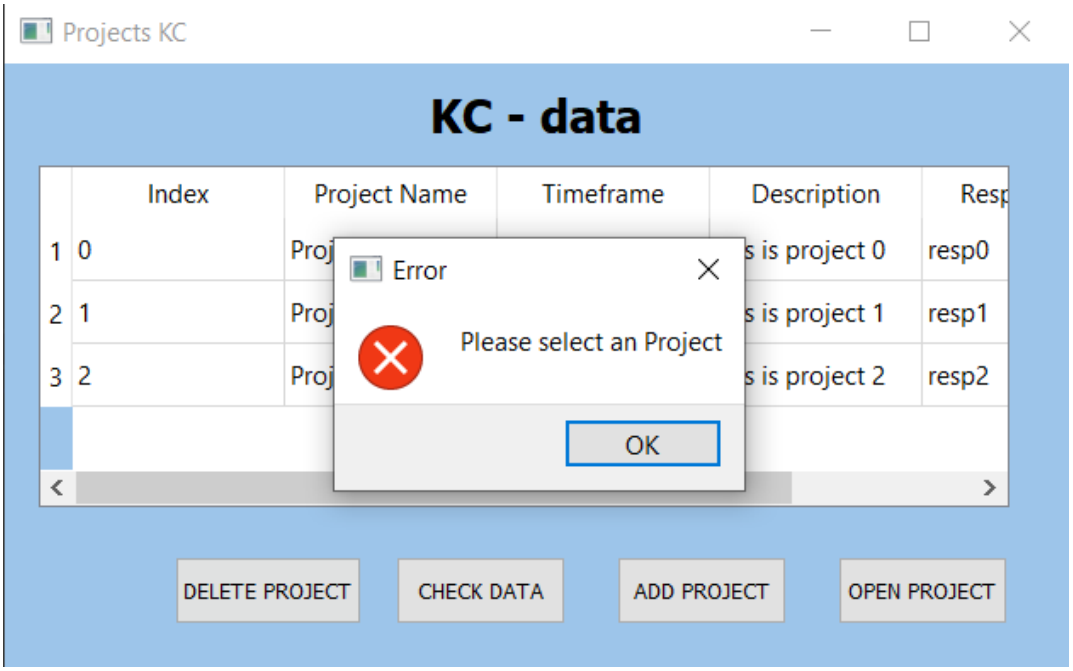
If you want to delete a Project, click the experiment and click *Delete Exp.*

Warning! It is not recommended to delete an experiment; the analysis may also be deleted.

An are you sure message will appear; the project will be deleted if you press yes.

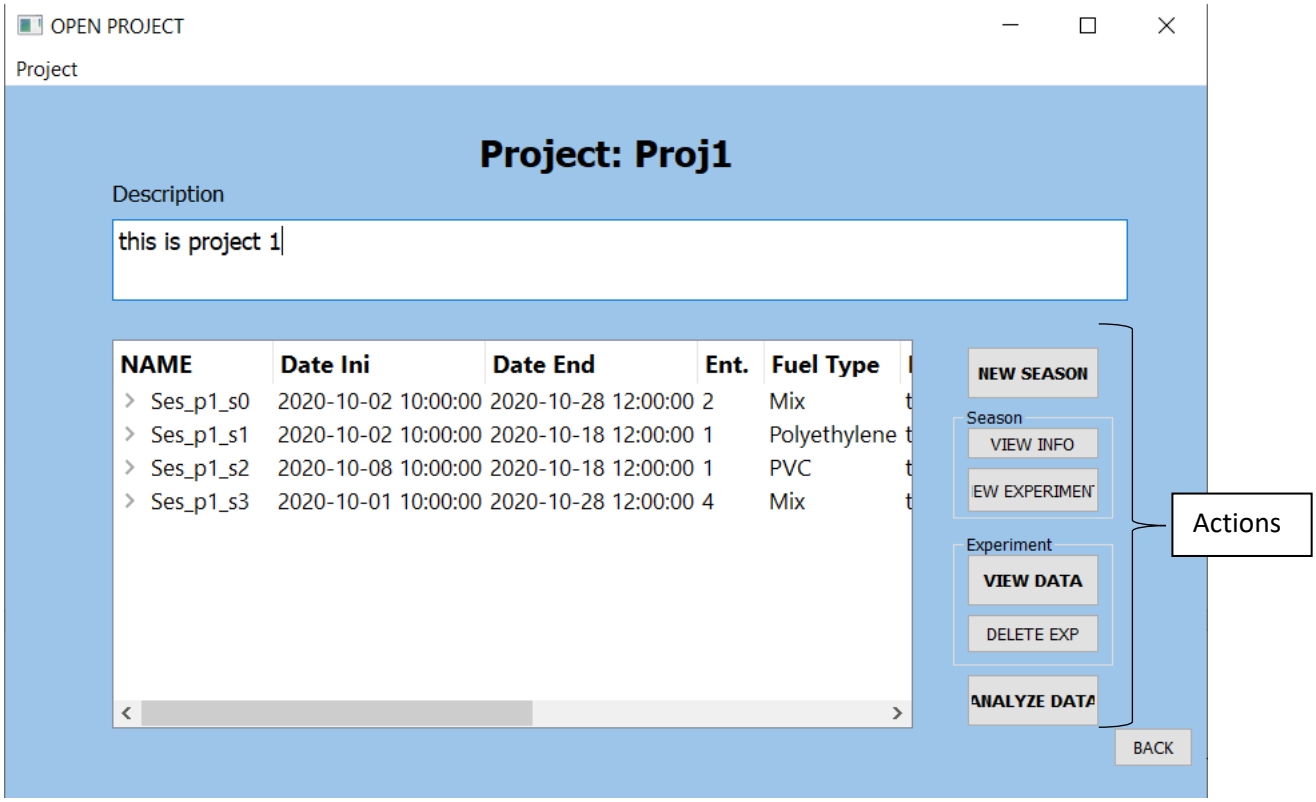


If no project is selected an error message will appear.

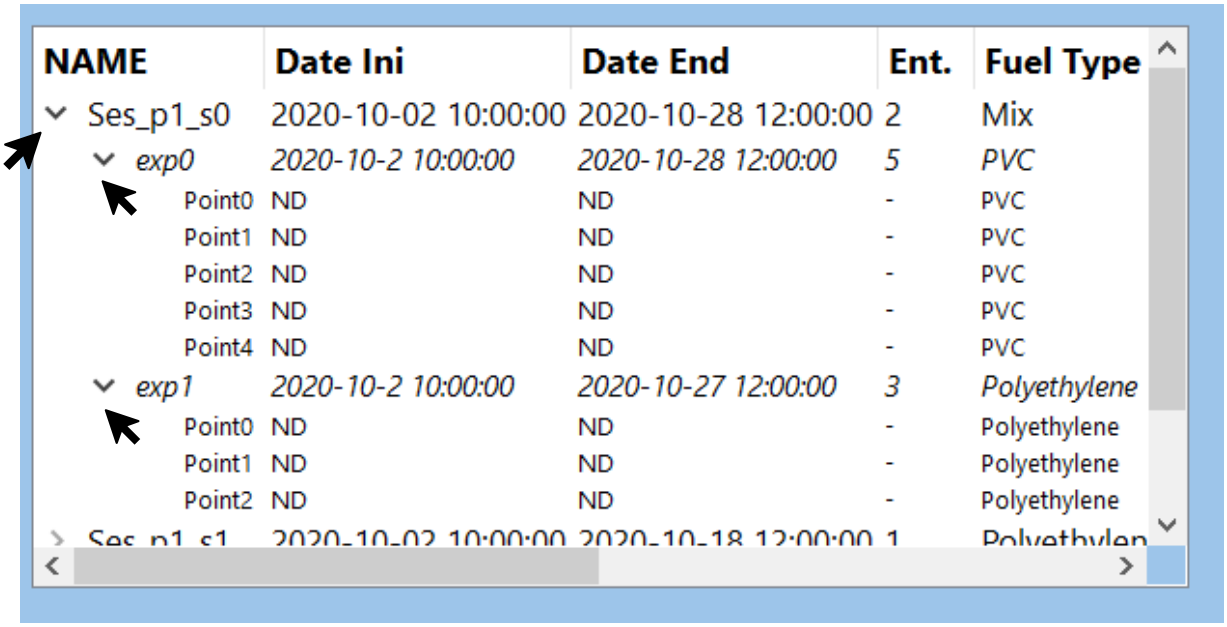


Project Window

The window includes the main information of the project: name and description; and a list with all the seasons and experiments available; and allows to do multiple actions.

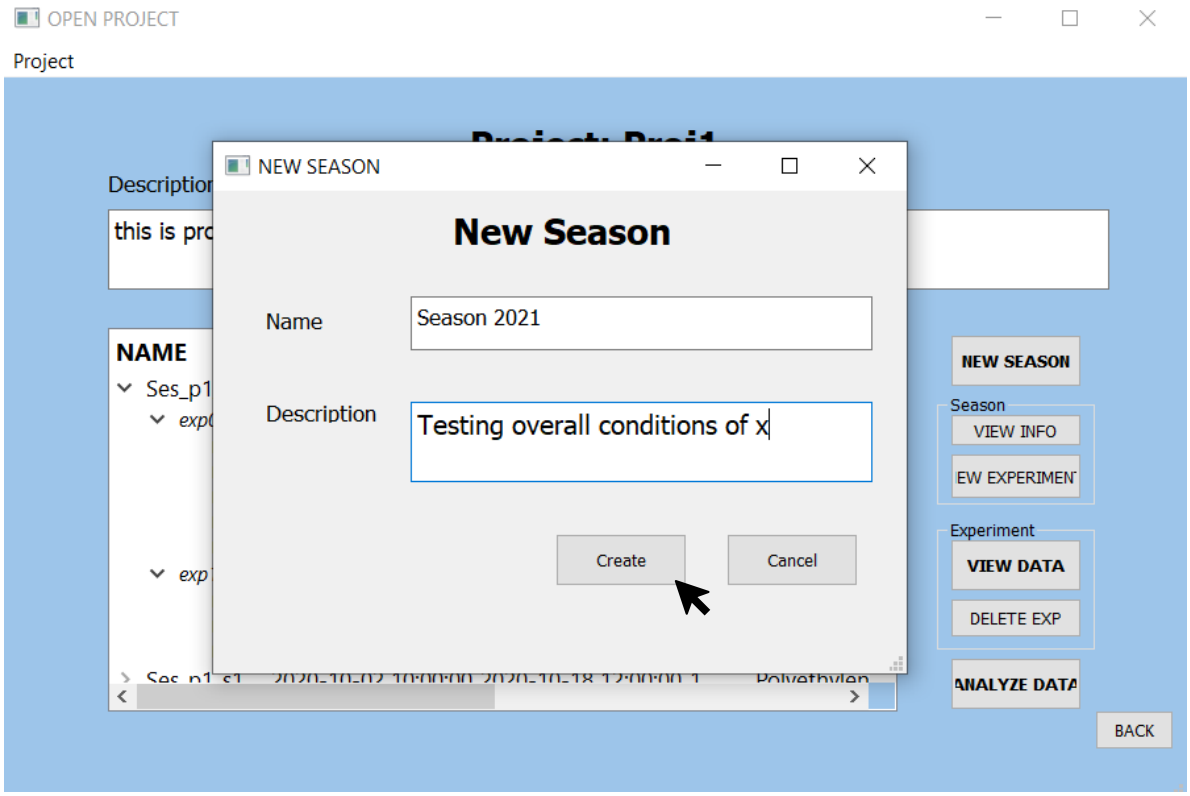


To deploy more information about the experiments and points click the arrows as shown in the figure below:



Action 1: New Season

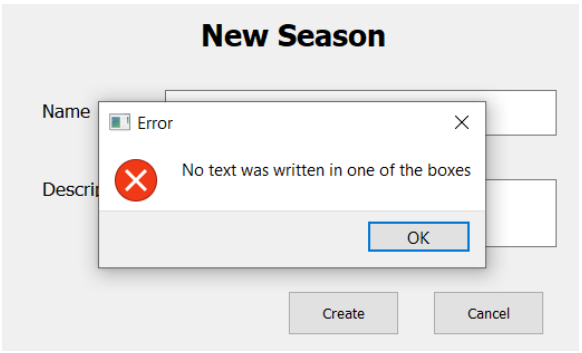
If you need to add a new Season click *New Season* and add name and decryption and click *Create*:

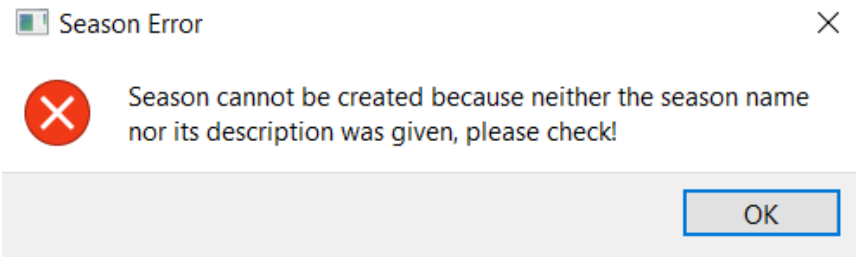


The new Season line will now appear in the Project Window.

If you done want to create a new project click *Cancel.*

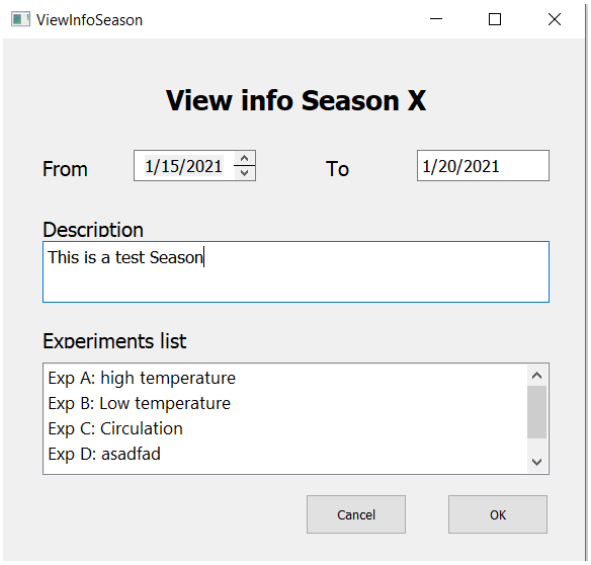
Errors will appear if the information needed is not available.





Action 2: View info of a Season

If you want to see the existing information of a Season Click *View Info:*

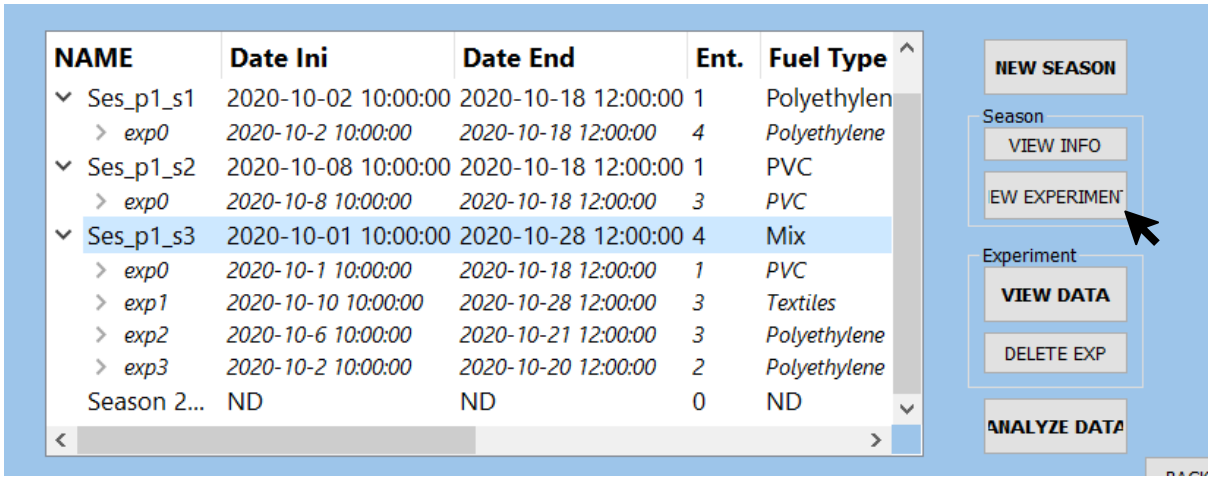


You can change the description only and click *ok*, or just see the information available and close the window or click *Cancel*.

The date is automatically filled with the minimum and maximin dates of the experiments.

Action 3: New experiment

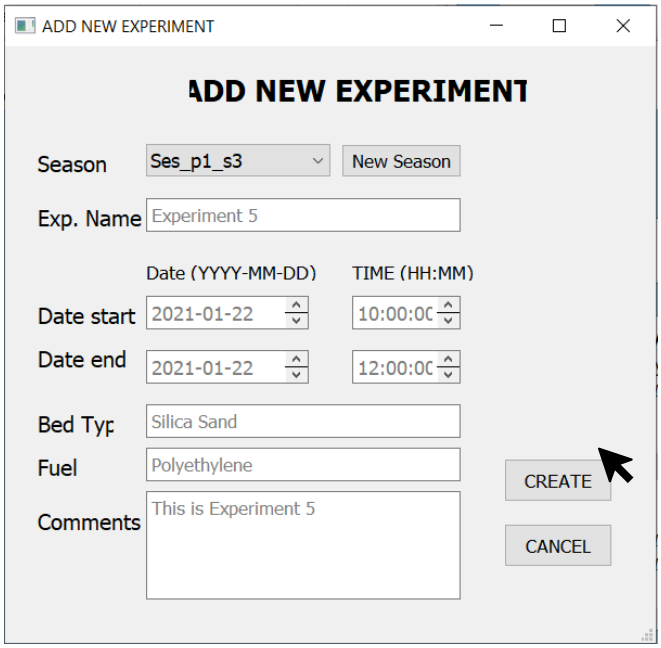
If you want to add a new experiment, click the season where the experiment takes place and click *New Experiment*:



A new window will open with the information needed for the experiment, as shown below.

The season selected will appear, but another season within the project can be selected too. If you need a new season you can click *New Season* to create a new one (See action 1 New season).

The experiment numbering is automatic, and it also take the information of the last experiments (bed material and fuel). Change those parameters if needed and add the date and times of the experiment. When finish Click *Create.*

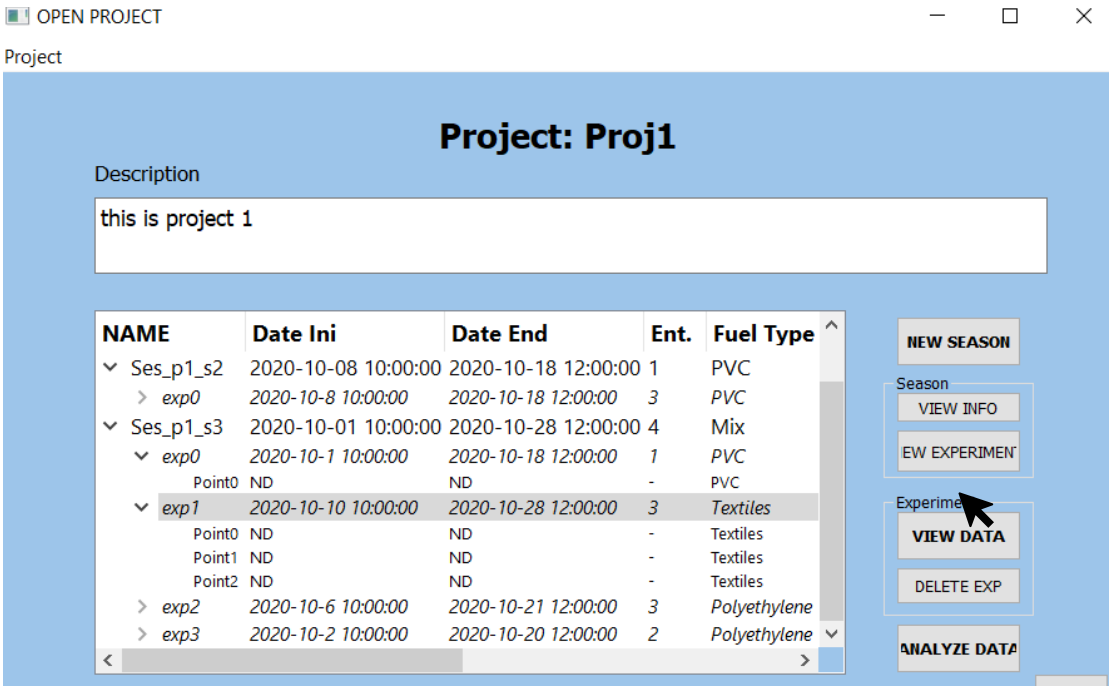


It is important to comment what the experiment is about to make easier to everyone the data analysis.

If you don't want to add a new experiment, click *Cancel*.

Action 4: View Data from an experiment

If you want to open an experiment, click the experiment and click *View data*:



For more information see Experiment window.

Action 5: Delete an Experiment

If you want to delete an experiment, click the experiment and click *Delete Exp.*

Warning! It is not recommended to delete an experiment; the data may also be deleted.

Action 6: Analyze data

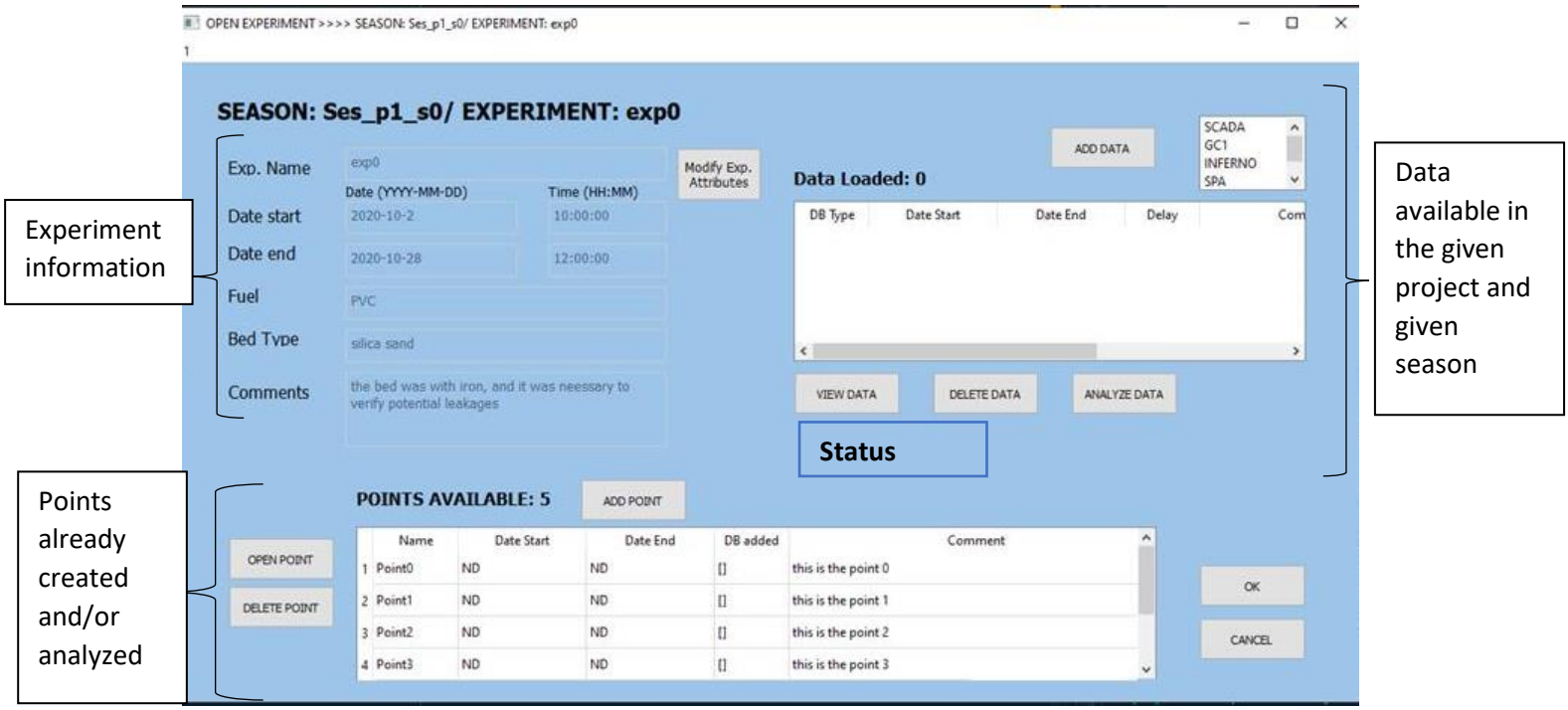
If you want to check, open or download raw data from more than one experiments click: *Analyze data.*

This function is under construction 

Experiment Window

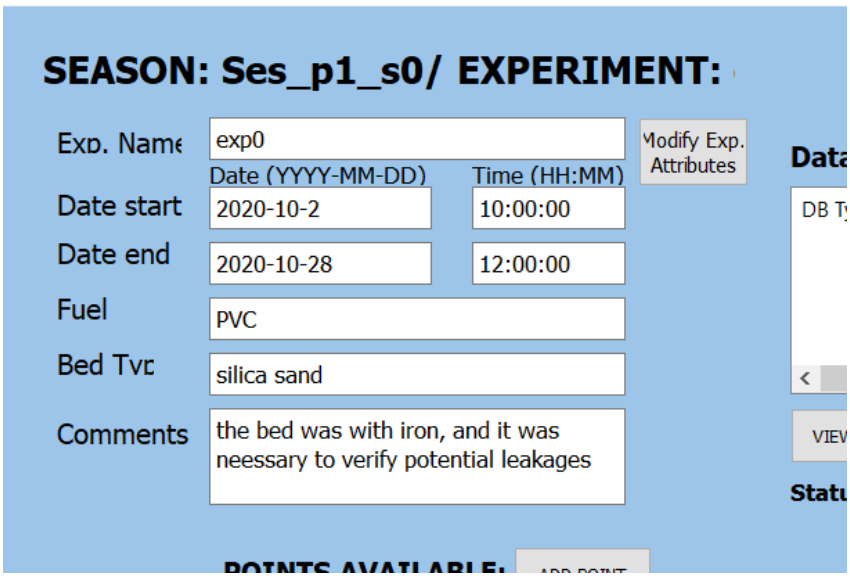
The *Experiment window* includes the main information of the Experiment: name, start and end date and time and fuel, bed material and comments. This information can be changed if needed in *Modify Experiments attributes.* Also includes a status information (highlighted).

It also includes two tables: Points available and Data available. Including multiple actions.



Action 1: Modify Experiment Attributes

In order to modify the information of an Experiment (names, dates, fuel, bed type and comments) click *Modify Exp Attributes.* The text will turn white (see image) and you can modify any attribute, when finish, click *Modify Exp Attributes* again.



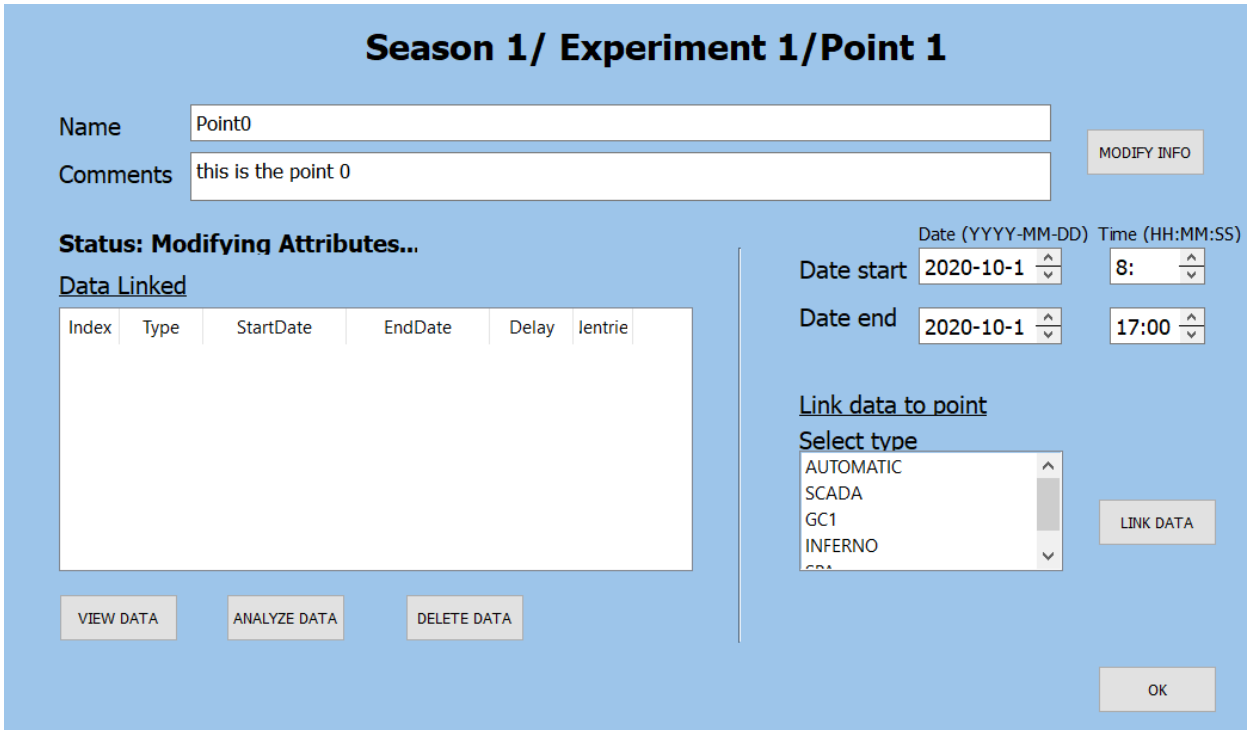
Action 2: Open a Point

If you want to open Point, click the Point inside the points available table and click *Open Point.*

See more information at Point Window.

Action 3: Add a Point

If you want to add a new Point, click *Add Point:*



This action will open an empty Point Window. Fill the information and click *Create Point* when finish. See more information at Point Window.

Action 4: View Data

The table Data available shows the existing data in the given project and given season. If you want to see the raw data click *View Data.*

Action 5: Delete Data

The table Data available shows the existing data in the given project and given season. If you want to delete the raw data click *Delete Data.*

Warning! It is not recommended to delete data the data may also be deleted. It is preferable to upload the data again, a different name will be given automatically.

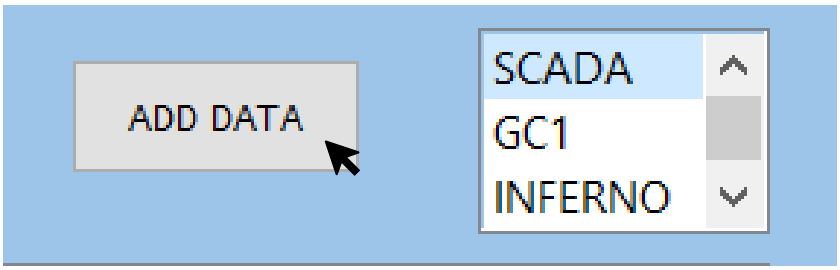
Action 6: Analyze data

The table Data available shows the existing data in the given project and given season. If you want to do calculation or analysis on this data click *Analyse Data.*

This function is under construction 

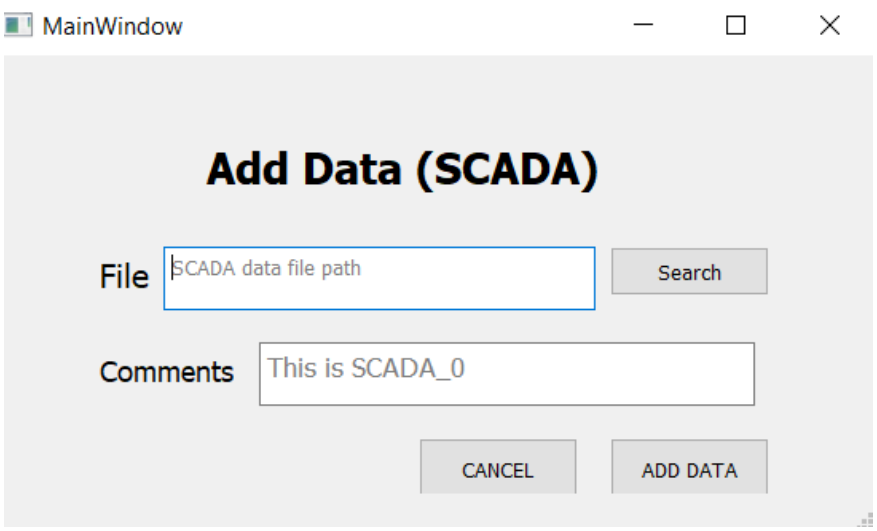
Action 7: Add data

If you want to add new data (which does not exist in the table Data available), select the type of data in upper right corner and click *Add data*.

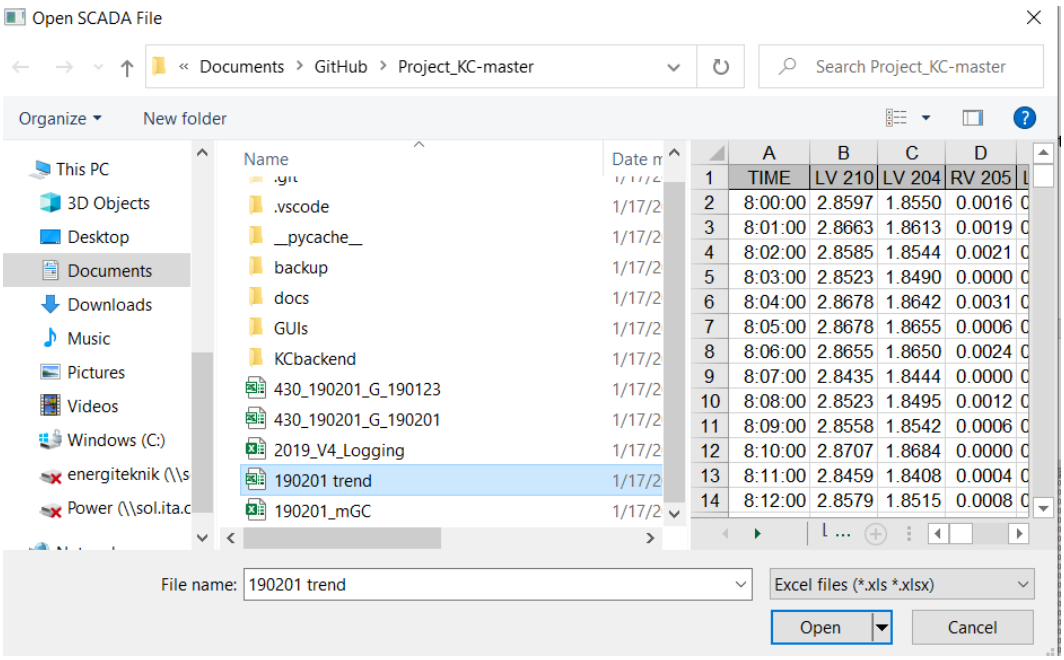


Adding SCADA & GC data

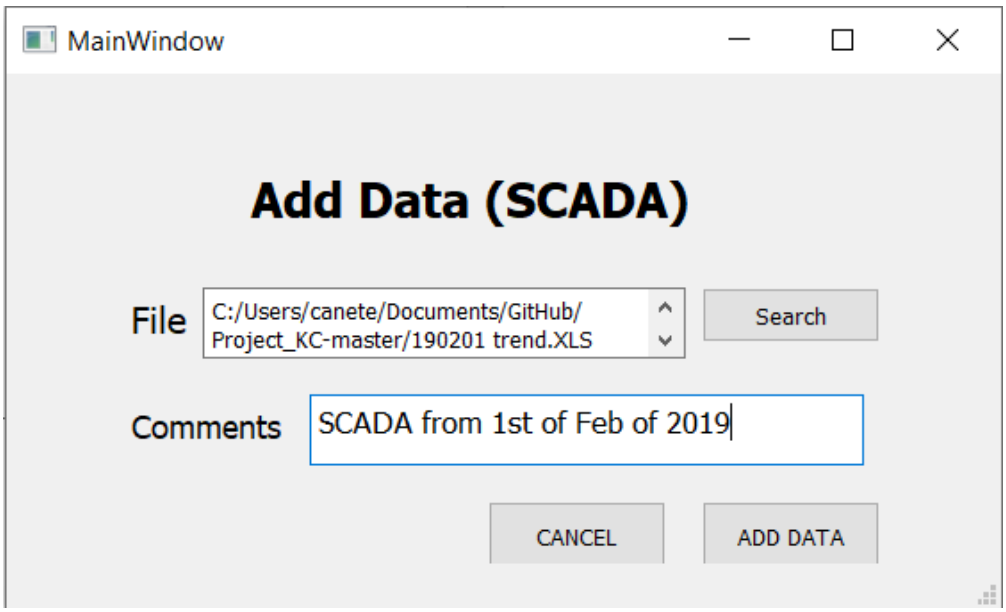
When adding SCADA search your file in your computer and click *Add Data*. Add any comment if needed (recommended to write down if any anomaly happened during the experiments). See steps below:



Add SCADA window

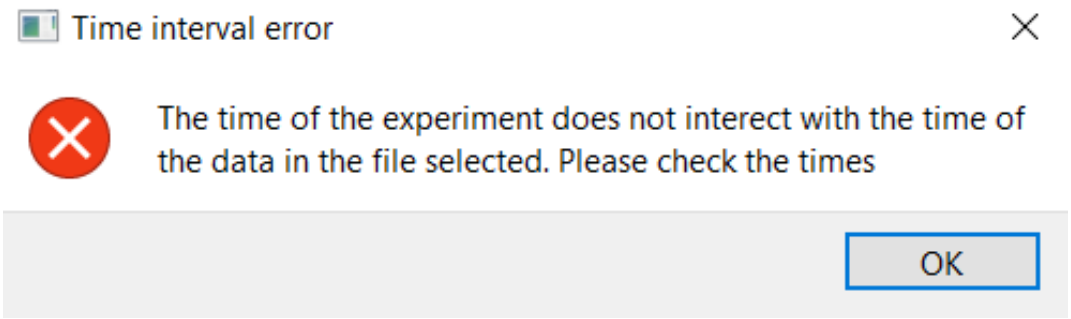


Search for a file

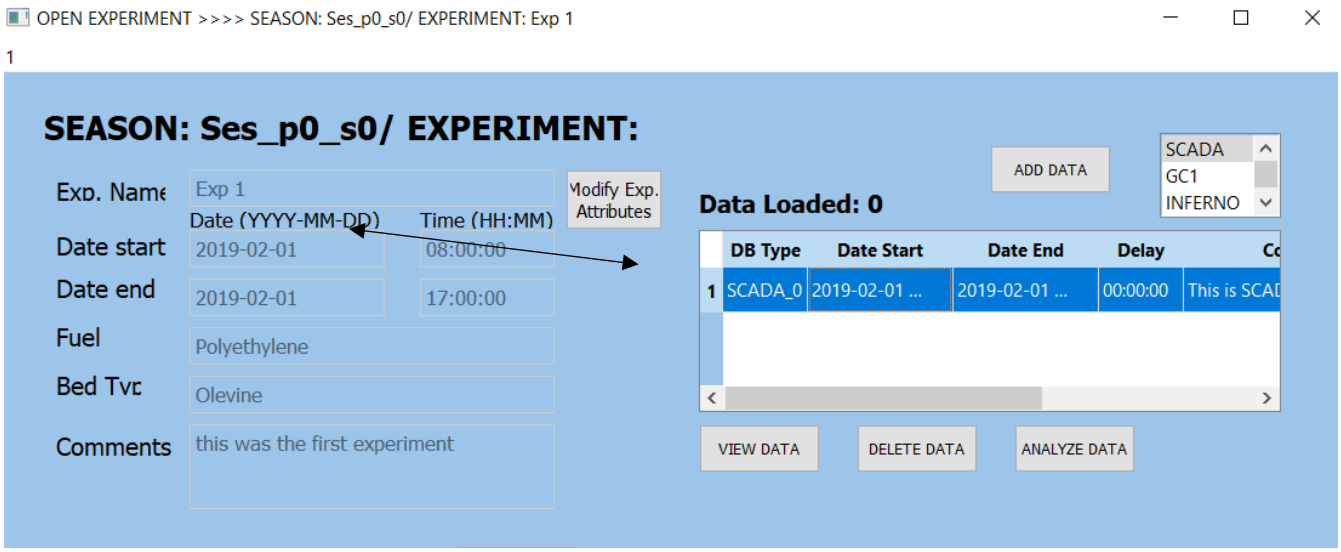


Example searching for SCADA file (i.e. YYMMDD trend.xls)

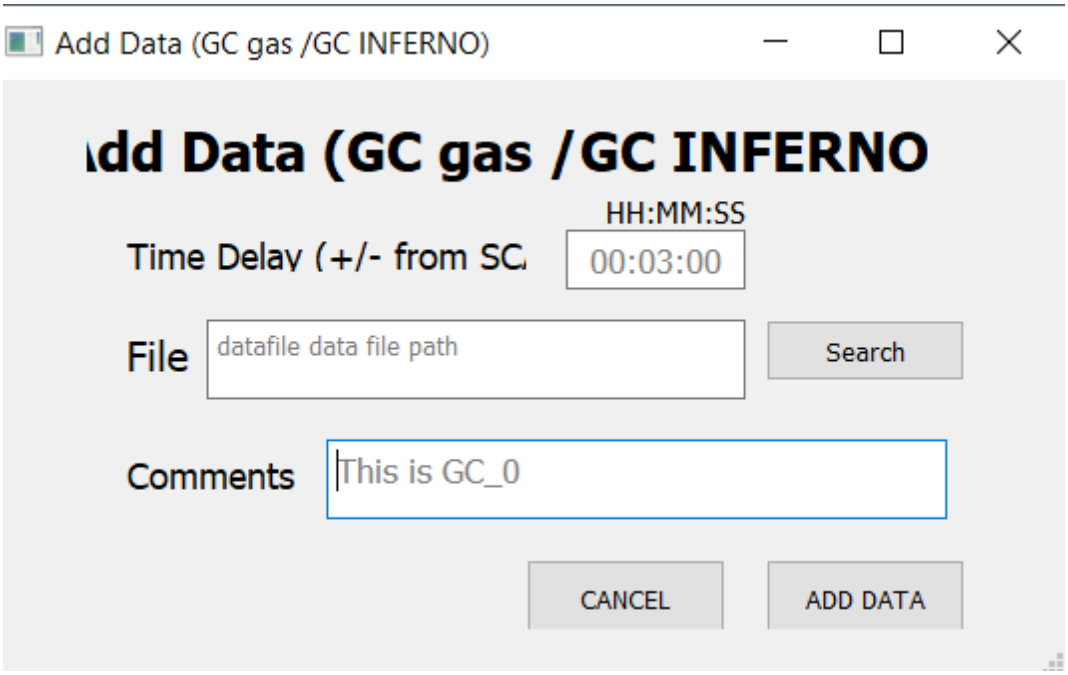
If the file data does not correspond with the dates included in the season an error will occur:



If the dates are correct, the data will be added successfully:

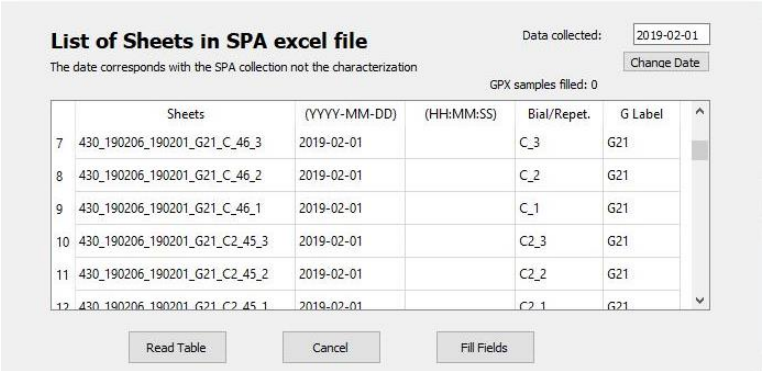


For GC data is the same procedure, but the delay of the GC computer (not connected to internet) with respect the SCADA computer must be added (For example if GC time is 10:05 and SCADA 10:02, the delay is +3).

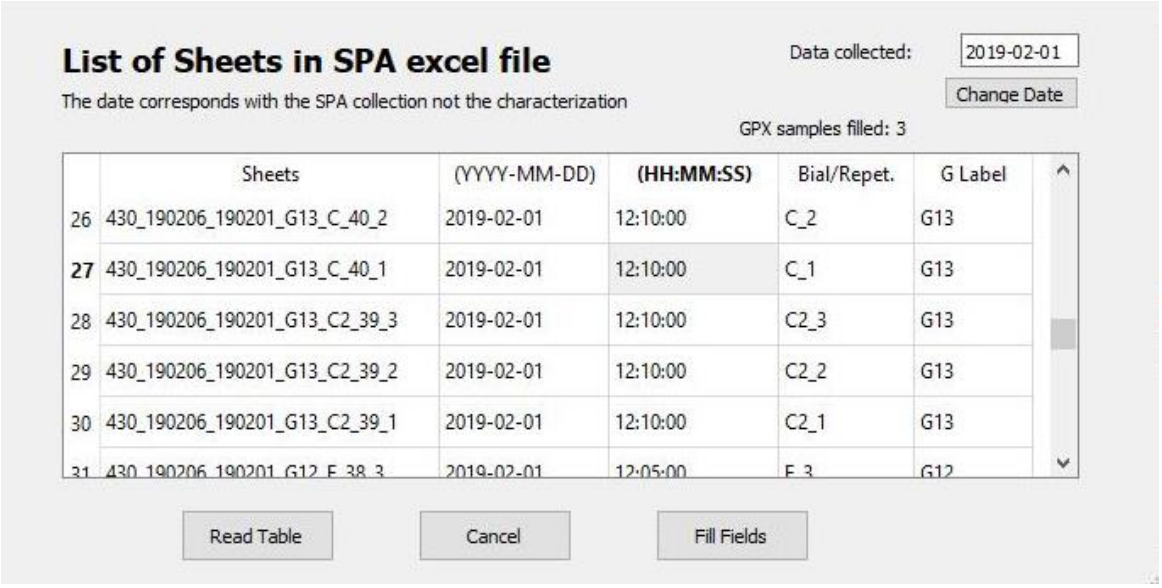


Adding SPA data

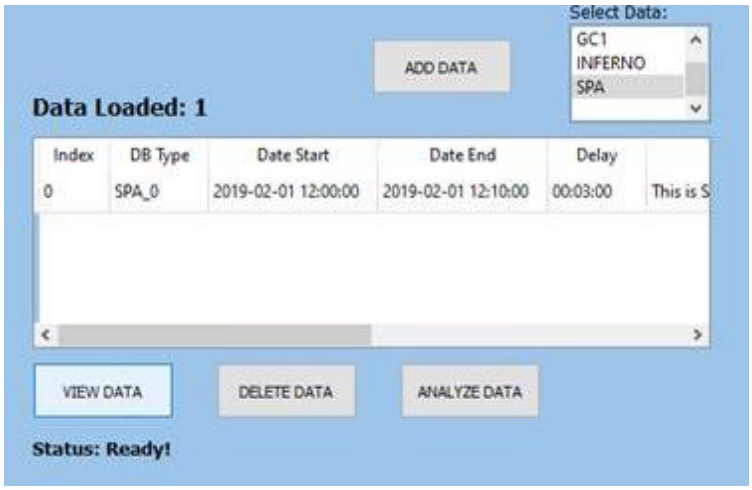
When adding a file type of SPA data, it will automatically fill a table with the different samples and repetitions.



Add the time of sample collection where it corresponds. You can change the dates of all the points simultaneously in the upper right corner (*Change Date*)



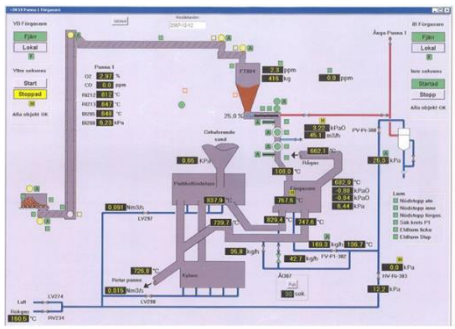
When clicking *Read Table*, the data will be added to the experiments:



DATA TYPES

Important!!! The data extracted from the KC measurement equipment should stay intact. Any modifications of variable or sheets names will interfere with the automatic analyses of the program.

SCADA



Definition: Power central process conditions

Format: Excel, two sheets: channel and data

Example channel sheet:

	A	B	C	D	E	F	G	H	
	nBlock	sPrefix	nChannelNumber	sSource	sTag	sDescription	nType	sUnits	fMir
	4	C	101	CALCULATED CHANNELS	LV 210	TOTAL AIR FLOW	2	kg/s	
	4	C	102	CALCULATED CHANNELS	LV 204	PRIMARY AIR FLOW	2	kg/s	
	4	C	103	CALCULATED CHANNELS	RV 205	RECIRC. FLUE GAS FLOW	2	kg/s	
	4	C	104	CALCULATED CHANNELS	LI 203	TOT. SEC. AIR FLOW	2	kg/s	
	4	C	110	CALCULATED CHANNELS	LV 286	AIR/FLUE GAS TO PART. SEAL FLOW	2	kg/s	
	4	C	115	CALCULATED CHANNELS	LI 226	FUEL SPREADER FLOW	2	kg/s	
	4	C	120	CALCULATED CHANNELS	DD89+90	MEAN TEMP. IN BOTTOM BED	2	°C	
	4	C	121	CALCULATED CHANNELS	DC27+DC28	MEAN TEMP. IN TOP	2	°C	
0	4	C	134	CALCULATED CHANNELS	C102+C103	Gas velocity in primary zone	2	m/s	
1	4	C	135	CALCULATED CHANNELS	C101	luftshastighet i toppen	2	m/s	
2	4	C	136	CALCULATED CHANNELS	C103	Rökgasåterföringshastighet i top	2	m/s	
3	4	C	137	CALCULATED CHANNELS	C101+C103	Gas velocity in top	2	m/s	
4	4	C	153	CALCULATED CHANNELS	BUNKER NR 4	Fuel flow to gasifier	2	kg/h	
5	4	C	154	CALCULATED CHANNELS	ÅI-302	Mass flow of steam to gasifier	2	kg/h	
6	4	C	155	CALCULATED CHANNELS	ÅI-305	Mass flow of steam to seal 1	2	kg/h	
7	4	C	156	CALCULATED CHANNELS	ÅI 306	Mass flow of steam to seal 2	2	kg/h	
8	4	C	157	CALCULATED CHANNELS	ÅI 302	Density of steam (gas law)	2	kgm3	
9	4	C	158	CALCULATED CHANNELS	ÅI-320	Mass flow of steam to dividers.	2	kg/h	
0	1	DC	220	DATASCAN_1	26-27	DP 4380 _ 5385 mm	0	kPa	
1	1	DC	221	DATASCAN_1	27-28	DP 5385 _ 6540 mm	0	kPa	
2	1	DC	222	DATASCAN_1	28-29	DP 6540 _ 7040 mm	0	kPa	
3	1	DC	223	DATASCAN_1	29-30	DP 7040 _ 7540 mm	0	kPa	
4	1	DC	224	DATASCAN_1	30-31	DP 7540 _ 7940 mm	0	kPa	
5	1	DC	225	DATASCAN_1	31-32	DP 7940 _ 9300 mm	0	kPa	
6	1	DC	226	DATASCAN_1	32-33	DP 9300 _ 9800 mm	0	kPa	
7	1	DC	227	DATASCAN_1	33-34	DP 9800 _ 10400 mm	0	kPa	
8	1	DC	228	DATASCAN_1	34-35	DP 10400 _ 11820 mm	0	kPa	
9	1	DC	229	DATASCAN_1	35-36	DP 11820 _ 12410 mm	0	kPa	
0	1	DC	230	DATASCAN_1	36-37	DP 12410 _ 13070 mm	0	kPa	
1	1	DC	231	DATASCAN_1	9300mm	P_CYCLONE INLET	0	kPa	

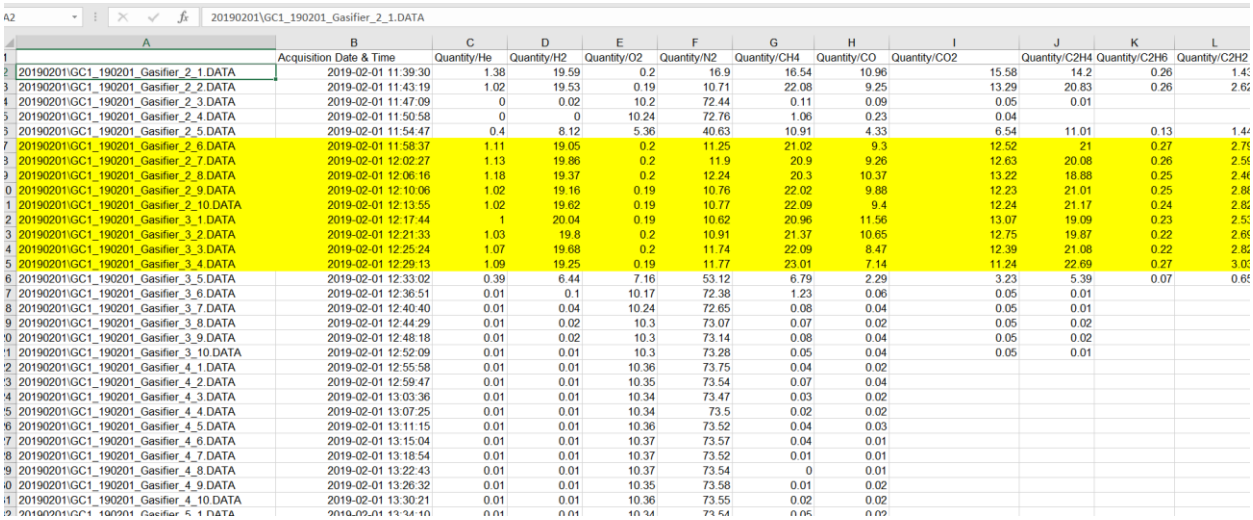
Example data sheet:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
	TIME	LV 210	LV 204	RV 205	LI 203	LV 286	LI 226	DD89+90	DC27+DC28	C102+C103	C101	C103	C101+C103	BUNKER NR 4	ÅI-302	ÅI-305	ÅI 306	ÅI 302	ÅI-320	26-27	27-28	28-29	29-30	30-31	31-32	32-33
	8:00:00	2.8597	1.8550	0.0016	0.6727	0.2194	0.2027	855.7303	864.6620	2.8819	3.9340	0.0021	3.9361	-4.3323	261.2099	55.4692	55.3333	0.6309	371.9922	1.5799	0.0499	0.0165	0.0175	0.0147	0.1103	#######
	8:01:00	2.8663	1.8613	0.0019	0.6721	0.2214	0.1992	855.8229	865.4597	2.8924	3.9459	0.0025	3.9485	-3.6495	260.3644	55.4826	55.3064	0.6309	371.9712	1.5799	0.0496	0.0172	0.0176	0.0117	0.0810	#######
	8:02:00	2.8585	1.8544	0.0021	0.6726	0.2208	0.2006	855.8100	866.0333	2.8819	3.9371	0.0028	3.9399	-2.6031	259.9103	55.4847	55.3536	0.6309	372.0305	1.5799	0.0484	0.0184	0.0204	0.0121	0.0175	#######
	8:03:00	2.8523	1.8490	0.0000	0.6713	0.2205	0.2017	855.8181	864.9004	2.8704	3.9247	0.0000	3.9247	-1.9039	259.7924	55.4789	55.3345	0.6308	371.9143	1.5799	0.0490	0.0163	0.0177	0.0101	0.1154	#######
	8:04:00	2.8678	1.8642	0.0031	0.6719	0.2204	0.2010	855.7743	865.0612	2.8987	3.9465	0.0042	3.9507	0.8860	260.3113	55.4788	55.2966	0.6307	371.9250	1.5799	0.0464	0.0160	0.0177	0.0038	0.0813	#######
	8:05:00	2.8678	1.8655	0.0006	0.6715	0.2197	0.1998	855.8018	865.9154	2.8970	3.9495	0.0008	3.9504	-4.4208	259.8647	55.4836	55.1868	0.6309	372.0160	1.5799	0.0483	0.0168	0.0185	0.0104	0.0881	#######
	8:06:00	2.8655	1.8650	0.0024	0.6699	0.2202	0.2003	855.7532	867.0096	2.8988	3.9502	0.0032	3.9534	-0.9990	260.7802	55.4821	55.1887	0.6309	371.9890	1.5799	0.0480	0.0163	0.0174	0.0121	0.0249	0.0046
	8:07:00	2.8435	1.8444	0.0000	0.6702	0.2213	0.1997	855.8019	865.9264	2.8632	3.9161	0.0000	3.9161	-0.9090	260.3137	55.4863	55.3042	0.6309	371.9844	1.5799	0.0451	0.0171	0.0169	0.0119	0.0857	#######
	8:08:00	2.8523	1.8495	0.0012	0.6716	0.2196	0.2007	855.8818	864.7214	2.8731	3.9240	0.0016	3.9256	1.2806	259.4340	55.4828	55.3809	0.6309	371.9778	1.5799	0.0462	0.0172	0.0176	0.0129	0.0601	#######
	8:09:00	2.8558	1.8542	0.0006	0.6698	0.2194	0.2014	855.9515	865.8651	2.8797	3.9328	0.0007	3.9336	-5.0844	259.5792	55.4817	55.2076	0.6308	371.9925	1.5799	0.0529	0.0195	0.0171	0.0076	0.0648	#######
	8:10:00	2.8707	1.8684	0.0000	0.6719	0.2201	0.2012	856.0325	867.3860	2.9010	3.9587	0.0000	3.9587	1.2482	259.7323	55.4891	55.2783	0.6310	372.0483	1.5798	0.0503	0.0180	0.0187	0.0084	0.0460	#######
	8:11:00	2.8459	1.8408	0.0004	0.6732	0.2204	0.2007	856.0455	867.2843	2.8589	3.9241	0.0006	3.9247	-1.1297	260.8292	55.4924	55.4068	0.6311	372.0500	1.5798	0.0492	0.0180	0.0182	0.0134	0.0870	#######
	8:12:00	2.8579	1.8515	0.0008	0.6742	0.2200	0.2016	856.0925	866.3036	2.8762	3.9373	0.0010	3.9383	3.6105	260.5528	55.4909	55.3000	0.6310	371.9996	1.5798	0.0501	0.0180	0.0172	0.0081	0.0313	#######
	8:13:00	2.8543	1.8496	0.0008	0.6734	0.2211	0.1999	856.1866	866.0531	2.8735	3.9315	0.0012	3.9326	-0.9788	260.4616	55.4904	55.3134	0.6310	372.0421	1.5798	0.0469	0.0182	0.0180	0.0087	0.0929	#######
	8:14:00	2.8658	1.8605	0.0000	0.6754	0.2209	0.2014	856.2126	865.6756	2.8892	3.9459	0.0000	3.9459	-3.7242	260.8571	55.4929	55.3056	0.6311	371.9812	1.5798	0.0464	0.0161	0.0176	0.0147	0.0392	#######
	8:15:00	2.8344	1.8255	0.0032	0.6775	0.2201	0.2032	856.2142	864.1885	2.8397	3.8976	0.0043	3.9019	-0.9766	260.7242	55.4928	55.4425	0.6311	372.0866	1.5798	0.0454	0.0156	0.0166	0.0109	0.0962	#######
	8:16:00	2.8904	1.8842	0.0010	0.6746	0.2200	0.1986	856.1840	864.8873	2.9274	3.9770	0.0013	3.9783	-1.8775	259.3630	55.4933	55.3052	0.6313	372.1237	1.5798	0.0493	0.0176	0.0174	0.0071	0.0936	#######
	8:17:00	2.8736	1.8689	0.0000	0.6726	0.2196	0.2023	856.1979	866.6602	2.9023	3.9601	0.0000	3.9601	-0.1918	258.7725	55.4901	55.2587	0.6310	372.0542	1.5798	0.0490	0.0174	0.0190	0.0088	0.0650	#######
	8:18:00	2.8592	1.8558	0.0055	0.6717	0.2207	0.1999	856.1735	867.4019	2.8903	3.9428	0.0075	3.9503	-3.0013	259.3098	55.4928	55.2190	0.6311	372.0469	1.5798	0.0481	0.0164	0.0181	0.0109	0.0287	#######
	8:19:00	2.8680	1.8643	0.0026	0.6731	0.2206	0.2032	856.0876	868.2343	2.8988	3.9578	0.0036	3.9614	0.8174	260.2886	55.4936	55.2689	0.6311	372.0857	1.5798	0.0492	0.0164	0.0185	0.0028	0.0190	#######
	8:20:00	2.8613	1.8596	0.0000	0.6718	0.2201	0.2000	856.0536	867.7916	2.8874	3.9471	0.0000	3.9471	-1.4812	259.9655	55.5007	55.2939	0.6312	372.1225	1.5798	0.0492	0.0173	0.0171	0.0049	0.0533	#######
	8:21:00	2.8419	1.8396	0.0015	0.6720	0.2218	0.2025	856.0051	867.1839	2.8586	3.9183	0.0021	3.9204	-1.3075	260.8609	55.4955	55.3806	0.6311	372.0285	1.5798	0.0459	0.0174	0.0178	0.0135	0.0295	#######
	8:22:00	2.8630	1.8609	0.0000	0.6721	0.2201	0.2008	856.0325	867.1884	2.8895	3.9474	0.0000	3.9474	-3.5104	260.0691	55.5028	55.1577	0.6313	372.1164	1.5798	0.0509	0.0175	0.0181	0.0145	0.0588	#######
	8:23:00	2.8508	1.8473	0.0063	0.6732	0.2203	0.2004	856.1201	867.2991	2.8782	3.9309	0.0086	3.9395	1.7419	260.4594	55.5007	55.1880	0.6313	372.0917	1.5798	0.0501	0.0178	0.0186	0.0095	0.0677	#######
	8:24:00	2.8714	1.8688	0.0000	0.6707	0.2197	0.1995	856.2061	867.3235	2.9022	3.9594	0.0000	3.9594	-0.9601	259.8447	55.4946	55.2484	0.6312	372.0817	1.5798	0.0492	0.0200	0.0205	0.0106	0.0570	#######
	8:25:00	2.8614	1.8601	0.0016	0.6705	0.2212	0.2019	856.2321	869.0156	2.8912	3.9515	0.0022	3.9537	-1.6262	259.8835	55.4980	55.2643	0.6312	372.1171	1.5798	0.0508	0.0166	0.0183	0.0134	0.0560	#######
	8:26:00	2.8576	1.8562	0.0015	0.6697	0.2206	0.1995	856.1948	867.1522	2.8848	3.9398	0.0020	3.9418	0.1786	259.9637	55.4975	55.2927	0.6313	372.1001	1.5799	0.0501	0.0175	0.0182	0.0126	0.1065	#######
	8:27:00	2.8473	1.8430	0.0014	0.6715	0.2200	0.2015	856.2304	866.2780	2.8642	3.9226	0.0019	3.9245	-0.1228	260.7441	55.4954	55.3721	0.6312	372.0984	1.5798	0.0480	0.0160	0.0182	0.0111	0.0135	0.0043
	8:28:00	2.8465	1.8403	0.0002	0.6735	0.2193	0.1992	856.2564	866.2208	2.8584	3.9212	0.0003	3.9215	-1.1940	260.8955	55.5070	55.3411	0.6314	372.0825	1.5799	0.0472	0.0160	0.0169	0.0114	0.0131	#######
	8:29:00	2.8699	1.8637	0.0046	0.6726	0.2195	0.2007	856.2936	866.6605	2.9014	3.9550	0.0062	3.9612	1.0254	260.5975	55.5090	55.3017	0.6314	372.1452	1.5799	0.0500	0.0169	0.0187	0.0086	0.0807	#######

GC data

Definition: Gas measurement (H2, CO, CH4…)

Format: Excel, 1 sheets with all the data



	A	Acquisition Date & Time	Quantity/He	Quantity/H2	Quantity/O2	Quantity/N2	Quantity/CH4	Quantity/CO	Quantity/CO2	Quantity/C2H4	Quantity/C2H6	Quantity/C2H2
2	20190201\GC1_190201_Gasifier_2_1.DATA	2019-02-01 11:39:30	1.38	19.59	0.2	16.9	16.54	10.96	15.58	14.2	0.26	1.43
3	20190201\GC1_190201_Gasifier_2_2.DATA	2019-02-01 11:43:19	1.02	19.53	0.19	10.71	22.08	9.25	13.29	20.83	0.26	2.62
4	20190201\GC1_190201_Gasifier_2_3.DATA	2019-02-01 11:47:09	0	0.02	10.2	72.44	0.11	0.09	0.05	0.01		
5	20190201\GC1_190201_Gasifier_2_4.DATA	2019-02-01 11:50:58	0	0	10.24	72.76	1.06	0.23	0.04			
6	20190201\GC1_190201_Gasifier_2_5.DATA	2019-02-01 11:54:47	0.4	8.12	5.36	40.63	10.91	4.33	6.54	11.01	0.13	1.44
7	20190201\GC1_190201_Gasifier_2_6.DATA	2019-02-01 11:58:37	1.11	19.05	0.2	11.25	21.02	9.3	12.52	21	0.27	2.75
8	20190201\GC1_190201_Gasifier_2_7.DATA	2019-02-01 12:02:27	1.13	19.86	0.2	11.9	20.9	9.26	12.63	20.08	0.26	2.59
9	20190201\GC1_190201_Gasifier_2_8.DATA	2019-02-01 12:06:16	1.18	19.37	0.2	12.24	20.3	10.37	13.22	18.88	0.25	2.46
10	20190201\GC1_190201_Gasifier_2_9.DATA	2019-02-01 12:10:06	1.02	19.16	0.19	10.76	22.02	9.88	12.23	21.01	0.25	2.88
11	20190201\GC1_190201_Gasifier_2_10.DATA	2019-02-01 12:13:55	1.02	19.62	0.19	10.77	22.09	9.4	12.24	21.17	0.24	2.82
12	20190201\GC1_190201_Gasifier_3_1.DATA	2019-02-01 12:17:44	1	20.04	0.19	10.62	20.96	11.56	13.07	19.09	0.23	2.53
13	20190201\GC1_190201_Gasifier_3_2.DATA	2019-02-01 12:21:33	1.03	19.8	0.2	10.91	21.37	10.65	12.75	19.87	0.22	2.69
14	20190201\GC1_190201_Gasifier_3_3.DATA	2019-02-01 12:25:24	1.07	19.68	0.2	11.74	22.09	8.47	12.39	21.08	0.22	2.82
15	20190201\GC1_190201_Gasifier_3_4.DATA	2019-02-01 12:29:13	1.09	19.25	0.19	11.77	23.01	7.14	11.24	22.69	0.27	3.03
16	20190201\GC1_190201_Gasifier_3_5.DATA	2019-02-01 12:33:02	0.39	6.44	7.16	53.12	6.79	2.29	3.23	5.39	0.07	0.65
17	20190201\GC1_190201_Gasifier_3_6.DATA	2019-02-01 12:36:51	0.01	0.1	10.17	72.38	1.23	0.06	0.05	0.01		
18	20190201\GC1_190201_Gasifier_3_7.DATA	2019-02-01 12:40:40	0.01	0.04	10.24	72.65	0.08	0.04	0.05	0.01		
19	20190201\GC1_190201_Gasifier_3_8.DATA	2019-02-01 12:44:29	0.01	0.02	10.3	73.07	0.07	0.02	0.05	0.02		
20	20190201\GC1_190201_Gasifier_3_9.DATA	2019-02-01 12:48:18	0.01	0.02	10.3	73.14	0.08	0.04	0.05	0.02		
21	20190201\GC1_190201_Gasifier_3_10.DATA	2019-02-01 12:52:09	0.01	0.01	10.3	73.28	0.05	0.04	0.05	0.01		
22	20190201\GC1_190201_Gasifier_4_1.DATA	2019-02-01 12:55:58	0.01	0.01	10.36	73.75	0.04	0.02				
23	20190201\GC1_190201_Gasifier_4_2.DATA	2019-02-01 12:59:47	0.01	0.01	10.35	73.54	0.07	0.04				
24	20190201\GC1_190201_Gasifier_4_3.DATA	2019-02-01 13:03:36	0.01	0.01	10.34	73.47	0.03	0.02				
25	20190201\GC1_190201_Gasifier_4_4.DATA	2019-02-01 13:07:25	0.01	0.01	10.34	73.5	0.02	0.02				
26	20190201\GC1_190201_Gasifier_4_5.DATA	2019-02-01 13:11:15	0.01	0.01	10.36	73.52	0.04	0.03				
27	20190201\GC1_190201_Gasifier_4_6.DATA	2019-02-01 13:15:04	0.01	0.01	10.37	73.57	0.04	0.01				
28	20190201\GC1_190201_Gasifier_4_7.DATA	2019-02-01 13:18:54	0.01	0.01	10.37	73.52	0.01	0.01				
29	20190201\GC1_190201_Gasifier_4_8.DATA	2019-02-01 13:22:43	0.01	0.01	10.37	73.54	0	0.01				
30	20190201\GC1_190201_Gasifier_4_9.DATA	2019-02-01 13:26:32	0.01	0.01	10.35	73.58	0.01	0.02				
31	20190201\GC1_190201_Gasifier_4_10.DATA	2019-02-01 13:30:21	0.01	0.01	10.36	73.55	0.02	0.02				

SPA data

Definition: Aromatics and other heavy molecules

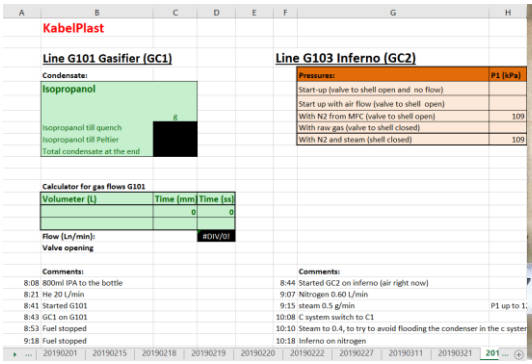
Format: Excel, multiple sheets with all the data

	A	B	C	D	E	F	G	H	I	J
1	Index	Name	Time	Quantity	Height	Area	Area %			
2			[Min]	[mg/l]	[uV]	[uV.Min]	[%]			
3	1	Benzene	1.5	6.48	933.6	42.6	5.568			
4	2	UNKNOWN	1.98	3.61	226.5	24	3.142			
5	3	Toluene	2.29	2.4	273.1	16	2.087			
6	4	Styrene	4.87	1.49	184.7	10.1	1.318			
7	5	Indene	8.55	1.12	205.5	7.7	1.006			
8	6	Naphthalene	11.68	8.01	1884.9	56.9	7.436			
9	7	2-MethylNaphthalene	13.72	0.87	167	6.2	0.809			
10	8	Intern standard 1	14.02	90.68	12621.1	391.8	51.195			
11	9	1-MethylNaphthalene	14.28	0.96	178.6	6.8	0.891			
12	10	Biphenyl	15.9	0.92	160.1	6.7	0.87			
13	11	UNKNOWN	17.12	0.92	135.1	6.1	0.798			
14	12	Acenaphthylene	18.29	3.71	561.1	24.5	3.201			
15	13	Fluorene	21.2	0.9	150.8	6.6	0.859			
16	14	Phenantrene	25.14	2.61	612.8	19.2	2.511			
17	15	Anthracene	25.25	0.62	139.4	4.7	0.616			
18	16	UNKNOWN	29.13	0.98	205.6	6.6	0.856			
19	17	Fluoranthene	29.21	0.09	19.5	0.7	0.093			
20	18	Pyrene	30	1.49	339.6	11.4	1.485			
21	19	UNKNOWN	31.01	1	162.4	6.6	0.867			
22	20	UNKNOWN	32.61	0.89	117	5.9	0.776			
23	21	UNKNOWN	34.42	15.64	3385.2	104.2	13.615			
24										
25	Total	-	-	145.41	22663.8	765.3	100			
26										
27										
28										
29										
30										
31										
32										

... | 430_190206_190201_G14_F_44_2 | 430_190206_190201_G14_F_44_1 | **430_190206_190201_G14_C_43_3**

Other Files

Any file needed for research (Excel, photos, etc.). The program will only store but not analyse.



KabelPlast

Line G101 Gasifier (GC1)

Condensate:

Isopropanol

	g
Isopropanol till quench	
Isopropanol till Peltier	
Total condensate at the end	

Calculator for gas flows G101

Volumeter (L)	Time (mm)	Time (ss)
	0	0

Flow (Ln/min): #DIV/0!

Valve opening

Comments:

8:08	800ml IPA to the bottle
8:21	He 20 L/min
8:41	Started G101
8:43	GC1 on G101
8:53	Fuel stopped
9:18	Fuel stopped

Line G103 Inferno (GC2)

Pressures:	P1 (kPa)
Start-up (valve to shell open and no flow)	
Start up with air flow (valve to shell open)	
With N2 from MFC (valve to shell open)	109
With raw gas (valve to shell closed)	
With N2 and steam (shell closed)	109

Comments:

8:44	Started GC2 on inferno (air right now)
9:07	Nitrogen 0.60 L/min
9:15	steam 0.5 g/min
10:08	C system switch to C1
10:10	Steam to 0.4, to try to avoid flooding the condenser in the c syster
10:18	Inferno on nitrogen

P1 up to 1:

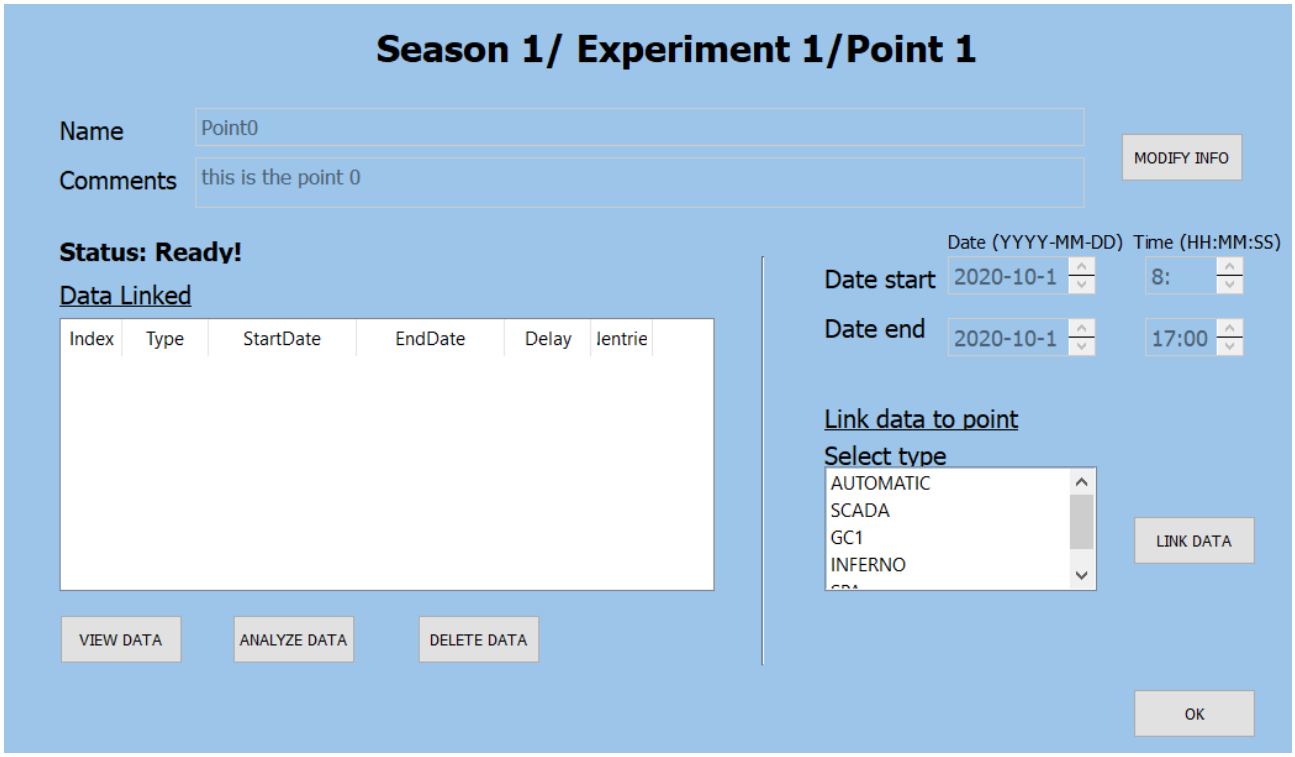
20190201 | 20190215 | 20190218 | 20190219 | 20190220 | 20190222 | 20190227 | 20190311 | 20190321 | 201...

Point Window

The *Point window* includes the main information of the Point: name, start and end date and time and comments. This information can be changed if needed in *Modify info*.

It also includes a table Data already linked to the point (*Data linked*) Including multiple actions.

If more data wants to be included/linked to the point, select the type of data and click *Link Data*.



Action 1: Modify info

In order to modify the information of a Point (names and comments) click *Modify Info.* The text will turn white (same as the Action 1: Modify Experiment Attributes) and you can modify any attribute, when finish, click *Modify Info* again.

Action 2: View Data

The table Data linked e shows the existing data linked to the point. If you want to see the raw data click *View Data.*

Action 3: Delete Data

The table Data linked shows the existing data linked to the point. If you want to delete the raw data click *Delete Data.*

Action 4: Analyze data

The table Data linked shows the existing data linked to the point. If you want to do calculation or analysis on this data click *Analyse Data.*

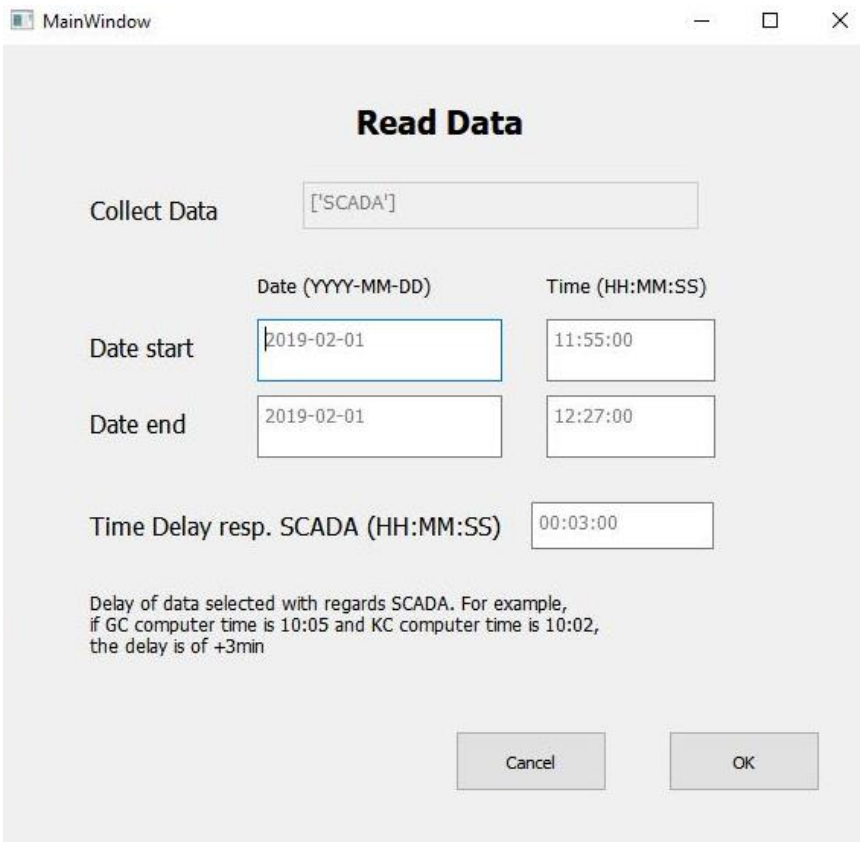
This function is under construction 

Action 5: Link data

If more data wants to be included/linked to the point, select the type of data and click *Link Data*.

For all data types is the same procedure, write down the time when the points take place (normally a point has a duration from 30 min to 1 hour and has stable operation conditions).

If there is a delay of the GC computer (not connected to internet) with respect the SCADA computer must be added (For example if GC time is 10:05 and SCADA 10:02, the delay is +3).



3. How to implement code changes

Please refer to: \Project_KC\docs\build\html and open file *index* in chrome or Firefox.