Design & Development of LABVIEW Based Monitoring System for PV Power Generation

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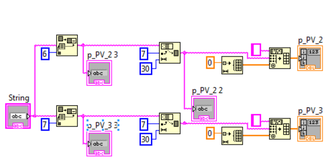
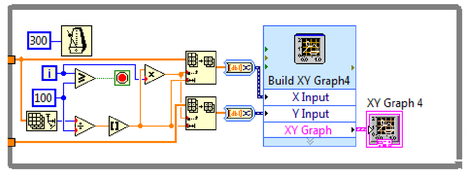
OBJECTIVES

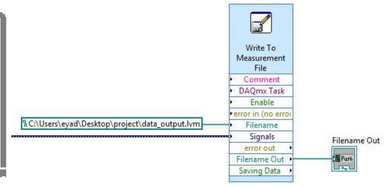
- Design a plan for LABVIEW Interface modules.
- Develop the monitoring modules and integrate the whole interface based on the available existing sensors.
- Use the available real existing PV system data to test the monitoring system.
- Use the developed System to draw conclusion about the performance of the PV output.

FINITE ELEMENT MODELING:

- Building the model consisted of three stages







- String reading
- Plot data block
- Write to measurement file

Faced Problems:

- First time using LABVIEW Program took a while to learn how to use it.
- RS232 interfacing effects.
- Wind turbine was corrupted and stuck so we did not get read of wind turbine generation.

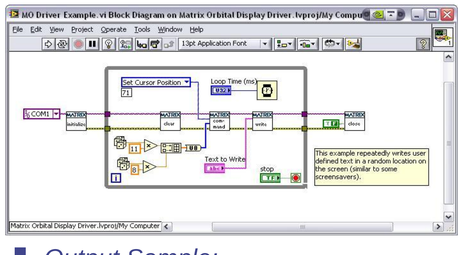
LABVIEW

- Example:

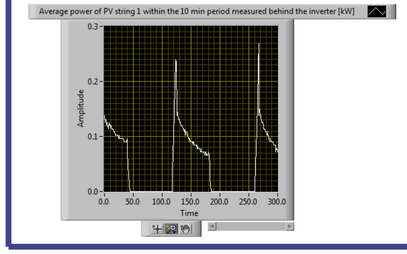
Monitor solar producing power:

- *PV system producing 5 kwh*

- *Acquiring data from the manufacturer system Program and program it as we want to enhance the monitoring system using rs232 serial communication.*



- *Output Sample:*



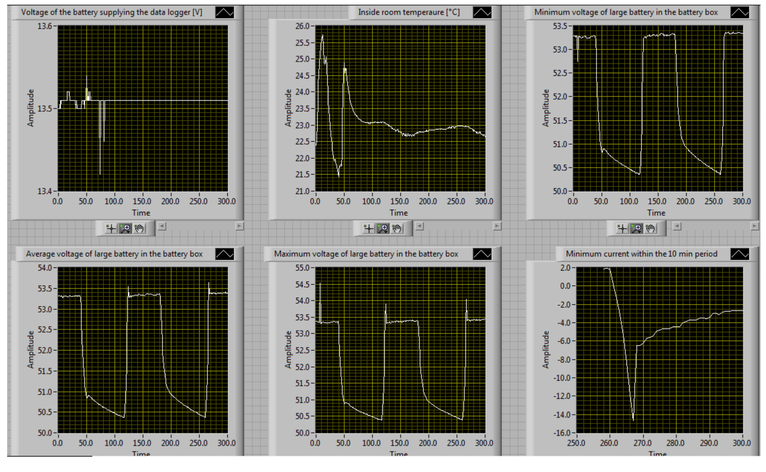
RESULTS

number of recording running	Voltage of the battery supply	Inside room temperaure [°C]	Minimum voltage of the larg
0	13.5	22.39	53.28
1	13.5	22.5	53.28
2	13.5	23.1	53.28
3	13.51	23.67	53.28
4	13.5	24.22	53.26
5	13.51	24.54	53.28
6	13.51	24.84	53.29
7	13.51	25.13	52.75
8	13.51	25.4	53.27
9	13.51	25.55	53.29
10	13.51	25.61	53.27
11	13.51	25.64	53.27
12	13.51	25.73	53.27
13	13.51	25.37	53.25
14	13.51	24.89	53.25
15	13.51	24.84	53.26
16	13.52	24.84	53.27
17	13.52	24.87	53.26
18	13.52	25.07	53.27
19	13.52	24.72	53.28

- *Offline data output implementation.*

	A	B	C	D	E	F
1	LabVIEW Measurement					
2	Writer_Version	2				
3	Reader_Version	2				
4	Separator	Tab				
5	Decimal_Separator	.				
6	Multi_Headings	Yes				
7	X_Columns	No				
8	Time_Pref	Relative				
9	Operator	eyad				
10	Date	12/22/2011				
11	Time	15:29.1				
12	***End_of_Header***					
13						
14	Channels	19				
15	Samples	1	1	1	1	1
16	Date	12/22/2011	12/22/2011	12/22/2011	12/22/2011	12/22/2011
17	Time	15:29.1	15:29.1	15:29.1	15:29.1	15:29.1
18	X_Dimension	Time	Time	Time	Time	Time
19	X0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
20	Delta_X	1	1	1	1	1
21	***End_of_Header***					
22	X_Value	number of recording	Voltage of the battery supply	Inside room temperaure	Minimum voltage of the l	Average voltage of the l
23		133	13.46	0	53.66	0

- *Online data output.*



- *Display the results "voltage, power consumption, drawn current…etc"*

DISCUSSION AND CONCLUSIONS:

- Know how to work in LABVIEW.
- Make the storing data instantaneously in excel file.
- Send data instantaneously to an excel file using measurement LABVIEW code.
- You can use the program to send data through internet communication so that you are aware about what is the output from the system in KFUPM beach.