

Advanced software system for monitoring of solar panels

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OUTLINE

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Introduction

- Advanced PV system monitoring software
- Efficiency and cutting costs
- Importance of monitoring
- Value of acquired data
- Data exchange speed and availability
- Data storage, reporting and display



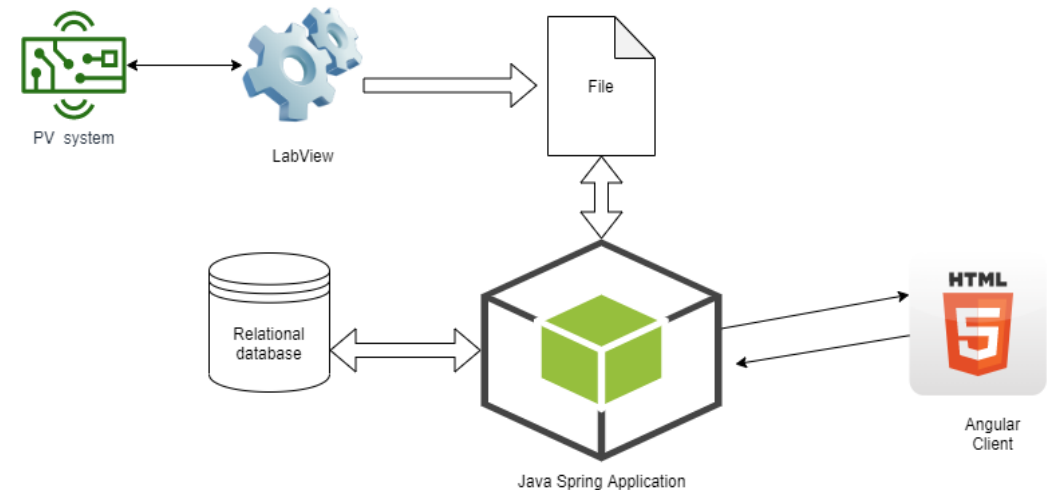
Introduction

- Raw data and computed data
- Real-time data display
- Open source
- Modern technologies and cross origin communication
- High availability and downtime



Implementation

- Software tools as integral part of any system
- NI6069 and LabView software tool
- Open source
- Communication protocols
- Three layer architecture



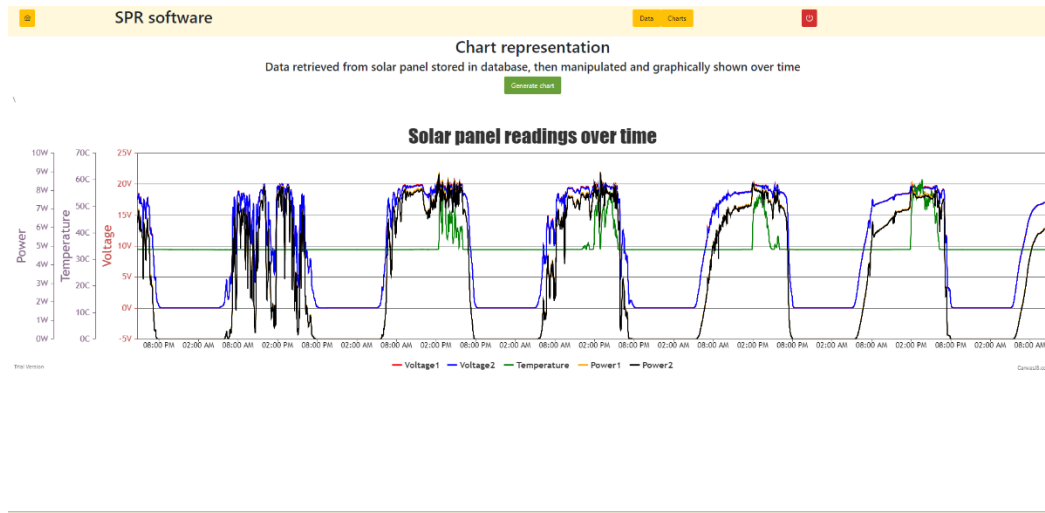
Results

- Real time data acquiring and parsing over a period of time
- LabView file data storage
- Application file parsing and computing
- Relational database data storage
- End user data representation



Results

- Datable representation and complex graph representation
- Searching and identifying data and points of interest



SPR software

Table data representation
Data retrieved from solar panel every 1 second, stored in database, averaged over one minute period, then represented in database

Hour T1	Minute T1	Time T1	U1 T1	U2 T1	Temperature T1	Power1 T1	Power2 T1	Date T1
16	45	16:45	17.860V	17.740V	34.117C	6.510W	6.423W	19.08.2020.
16	47	16:47	17.790V	17.680V	34.048C	6.459W	6.379W	19.08.2020.
16	48	16:48	17.710V	17.600V	33.980C	6.401W	6.322W	19.08.2020.
16	49	16:49	17.620V	17.510V	33.912C	6.350W	6.271W	19.08.2020.
16	50	16:50	17.530V	17.420V	33.843C	6.302W	6.220W	19.08.2020.
16	51	16:51	17.460V	17.350V	33.809C	6.265W	6.285W	19.08.2020.
16	52	16:52	17.380V	17.270V	33.807C	6.488W	6.408W	19.08.2020.
16	53	16:53	18.060V	17.950V	33.803C	6.698W	6.576W	19.08.2020.
16	54	16:54	18.380V	18.150V	33.802C	6.805W	6.723W	19.08.2020.
16	55	16:55	18.410V	18.290V	33.802C	6.917W	6.827W	19.08.2020.
16	56	16:56	18.510V	18.390V	33.801C	6.962W	6.902W	19.08.2020.
16	57	16:57	18.540V	18.430V	33.802C	7.015W	6.932W	19.08.2020.
16	58	16:58	18.530V	18.420V	33.802C	7.007W	6.924W	19.08.2020.
16	59	16:59	18.480V	18.370V	33.801C	6.977W	6.887W	19.08.2020.
17	0	17:00	18.430V	18.320V	33.803C	6.932W	6.849W	19.08.2020.
17	1	17:01	18.290V	18.190V	33.802C	6.827W	6.753W	19.08.2020.
17	2	17:02	18.100V	18.000V	33.803C	6.688W	6.612W	19.08.2020.
17	3	17:03	17.900V	17.810V	33.803C	6.539W	6.473W	19.08.2020.
17	4	17:04	17.530V	17.450V	33.798C	6.419W	6.358W	19.08.2020.
17	5	17:05	17.450V	17.350V	33.798C	6.271W	6.214W	19.08.2020.

No. of records : 8271



Conclusion

- Monitoring benefits
- Detecting flaws
- Future improvement
- Two way communication
- Application upgrade potential



Thank you.

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