

SUPERVISOR'S REVIEW OF BACHELOR'S THESIS

Name of student: Mina Bayat

Thesis title: Optimization the Power Output of Solar Panel Using Smart Hardware - Case Study about Dual Access Solar Tracker

Reviewer : Ing. Jan Štěpán

Thesis objective: Revise current state in solar energy area and implement small scale prototype to verify this observations.

Criteria required for evaluation	Evaluation scale (grade)					
	A	B	C	D	E	F
Content relevant to the field of study	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Setting and meeting objectives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Treating theoretical aspects of the topic	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Treating practical aspects of the topic	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adequacy of applied methods and their use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depth and accuracy of implemented analysis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dealing with literature sources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Logical structure and composition of the thesis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Language and terminology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Formal layout	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Student's contribution	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practical applicability of results	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and recommendations:

Schematic in Figure 27 could be drawn in more professional software than Fritzing. Pin markings are hard to read.

Some images (namely 15 and 10) are unnecessary large.

Code for Arduino could be a little more refined.

Chapter 3 could be split into two chapters.

Overall assessment and reasons for the final grade:

Introduction chapter presents significance of solar energy and thesis objectives. Second chapter discuss theoretical problems of collecting solar energy. First part show differences between fixed and axis trackers and impact on how much energy can be acquired. Focus of second part is on how to make prototype of dual axis tracker, especially motors for moving panel platform. I really appreciated detail devoted to this chapter. Part about stepper motors for example shows correct way of driving them, instead of using incomplete and inaccurate information which can be sometimes found online.

Third chapter shows prototype of dual axis tracker on Arduino platform which was build based on knowledge gained in previous chapter. Next chapter presents result from economical point of view. It

is proven that dual axis tracking is 13 percent more effective than fixed panel in area of Czech Republic. Conclusion shows possible paths of how to extend implemented prototype.

Vast majority of sources used by the author are books from renowned authors in their given areas. Online sources are used mostly from part manufacturers, which can't be avoided. Author often consulted her work progress and worked independently, but she did not hesitate to ask for advice when some problem occurred.

Questions for oral defence:

Are there any downfalls of using large solar energy farms?

I recommend the thesis for oral defence.

Suggested final grade: A

Hradec Králové, 13/09/2017

signature