

Standards and constraints

The following tables include the IEEE standards utilized in this project:

CODE	Power Electronics
295-1969	IEEE Standard for Electronics Power Transformers
1573-2003	IEEE Recommended Practice for Electronic Power Subsystems: Parameters, Interfaces, Elements, and Performance

CODE	Components, Circuits, Devices and Systems
200	IEEE standard Reference Designations for Electrical and Electronics parts and Equipment
255	IEEE standard Letter Symbols Semiconductor Devices
33	AIEE standard – Electrical Measuring Instruments
176-198	IEEE Standard on Piezoelectricity

CODE	Health and Safety
C2-2017	IEEE standard Reference Designations for Electrical and Electronics Parts and Equipment.

The following includes the constraints utilized this project: -

- **Time:** Project time (how long it will take to deliver) is a critical metric of project success and one of the most important stakeholder factors. The aim is to estimate project time as precisely as possible, which necessitates a combination of research and expertise. Gathering all of the project's components took at least one month. The connecting of these components took at least two months to accomplish, so there was not enough time to connect a microcontroller with a battery for storage.
- **The project:** Different topologies have been tested in connecting piezoelectric sensors, as they have been connected in more than five ways, at least. Then, after two months of experiments, the last method was reached, which is two arrays connected in series, and each array has eight PZTs connected in parallel.
- **Total cost:** The total cost of the project is one of the most important factors that we worked on and took into account, and the total cost of the project must be appropriate and not expensive.
- **Components:** Some of the components that were not used in this system were ordered.
- **Availability of the required components:** It was hard to find some of the components for the proposed system.

A Sample Checklist for Minimum Requirements

Supervisor Name		Dr. Saad F. Al-Gahtani	
Project Title		POWER GENERATION USING PIEZOELECTRIC MATERIALS	
Student Names (s)		Safar Mohammed Safar Al-Shaharani 439800792 Ali Khalid A Assiri 439800800 Abdullah Saeed Abdullah Alzahra 439800805	
ITEM*		IMPLEMENTED	
		Yes	No
		Indicate page(s) in the report for yes, cite reason(s) for no**	
Real life problem		✓	Page 1
Advisory committee	One from industry		examiners
	From other specializations		
Situation description		✓	Page 2
Problem definition		✓	Page 8
Open-ended		✓	Page 7
Alternative solutions		✓	Pages 35-39
Aesthetics		✓	
Specifications and regulations		✓	
Statistics and reliability			✓
Teamwork		✓	
Professional ethics		✓	
Environmental impact statement		✓	Page 8
Cultural and social assessment			✓
Financial analysis and marketing			✓
Final product		✓	Page 32
(*) See Appendix A for definitions			
(**) Student(s): Indicate page(s) in the report for yes, cite reason(s) for no Supervisor(s): Verify page(s) in the report for yes and reason(s) for no Examiner(s): Verify reason(s) for yes or no			