

PORTOFOLIO

ELECTRICAL ELECTRONICS ENGINEER

YİĞİTCAN KARTAL



ABOUT ME

I graduated in 2025 from Çankırı Karatekin University with a degree in Electrical and Electronics Engineering and a GPA of 3.41. My first internship was in 2023 at TRT Çukurova Directorate, where I worked in the Transmission and Energy Department as a trainee engineer. My second internship was in 2025 at Mersin International Port, where I worked within the Equipment Department. In addition to my internships, I participated in various projects and conducted independent research during my university years. These projects include an Energy Management System, Digital Technologies in Industry, a Battery Management System, and a Spreader Project, all of which are detailed in bellow.





EDUCATION

CANKIRI KARATEKIN UNIVERSITY

Electrical and Electronics Engineer
2020-2025

SPECIAL MERSIN CULTUR ANATOLIA HIGH SCHOOL

2018-2020





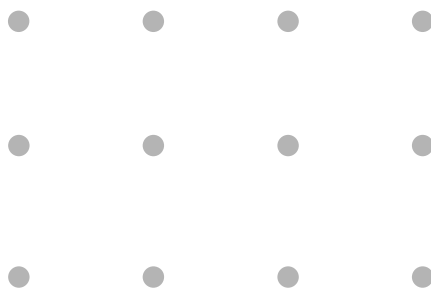
INTERN EXPERIENCE

TRT Çukurova Directorate

Intern Engineer - 2023

Mersin International Port

Intern Engineer - 2025



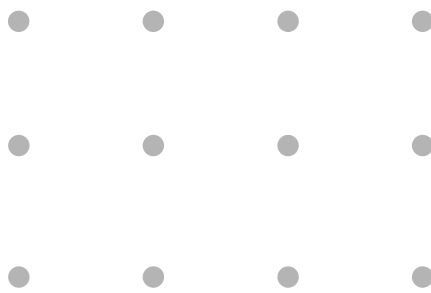
MERSIN INTERNATIONAL PORT, INTERN

During my internship at the Equipment Department of Mersin International Port, I was actively involved in the maintenance, repair, and operational continuity of critical port machinery and equipment. This role provided me with hands-on experience in managing complex mechanical and electrical systems essential for efficient port operations.

A significant part of my responsibilities focused on Programmable Logic Controller (PLC) systems. I developed competencies in reading technical project documentation, diagnosing faults, and programming PLCs to optimize equipment performance. One of my key contributions was the detailed modeling of the spreader device used for container handling at the port. Based on this model, I designed and implemented a complete PLC control program from scratch, which aimed to enhance operational reliability and efficiency.

This internship significantly strengthened my problem-solving skills, attention to detail, and ability to work under real industrial conditions. Additionally, it deepened my understanding of automation systems in an industrial environment and reinforced my capability to integrate theoretical knowledge with practical applications.





TRT CUKUROVA DIRECTORATE, INTERN

During my internship at TRT Çukurova Directorate within the Transmission and Energy Department, I had the opportunity to work closely with RF Combiner devices responsible for merging multiple FM broadcasting frequencies. This experience provided me with an in-depth understanding of frequency management and the technical operations required to maintain clear and reliable FM broadcast signals.

In addition to working with FM systems, I gained valuable exposure to AM transmitter technologies, learning about their operational principles and maintenance procedures. My role also involved studying and applying signal processing techniques, particularly in the combination and transmission of high-frequency signals, which enhanced both my theoretical knowledge and practical skills in communications engineering.

Working in a professional broadcasting environment allowed me to develop strong analytical and problem-solving abilities, as well as attention to detail. I also improved my ability to collaborate with multidisciplinary teams, adapt to technical challenges, and ensure the smooth operation of critical broadcasting equipment.





MY WORKS



GRADUATE PROJECT

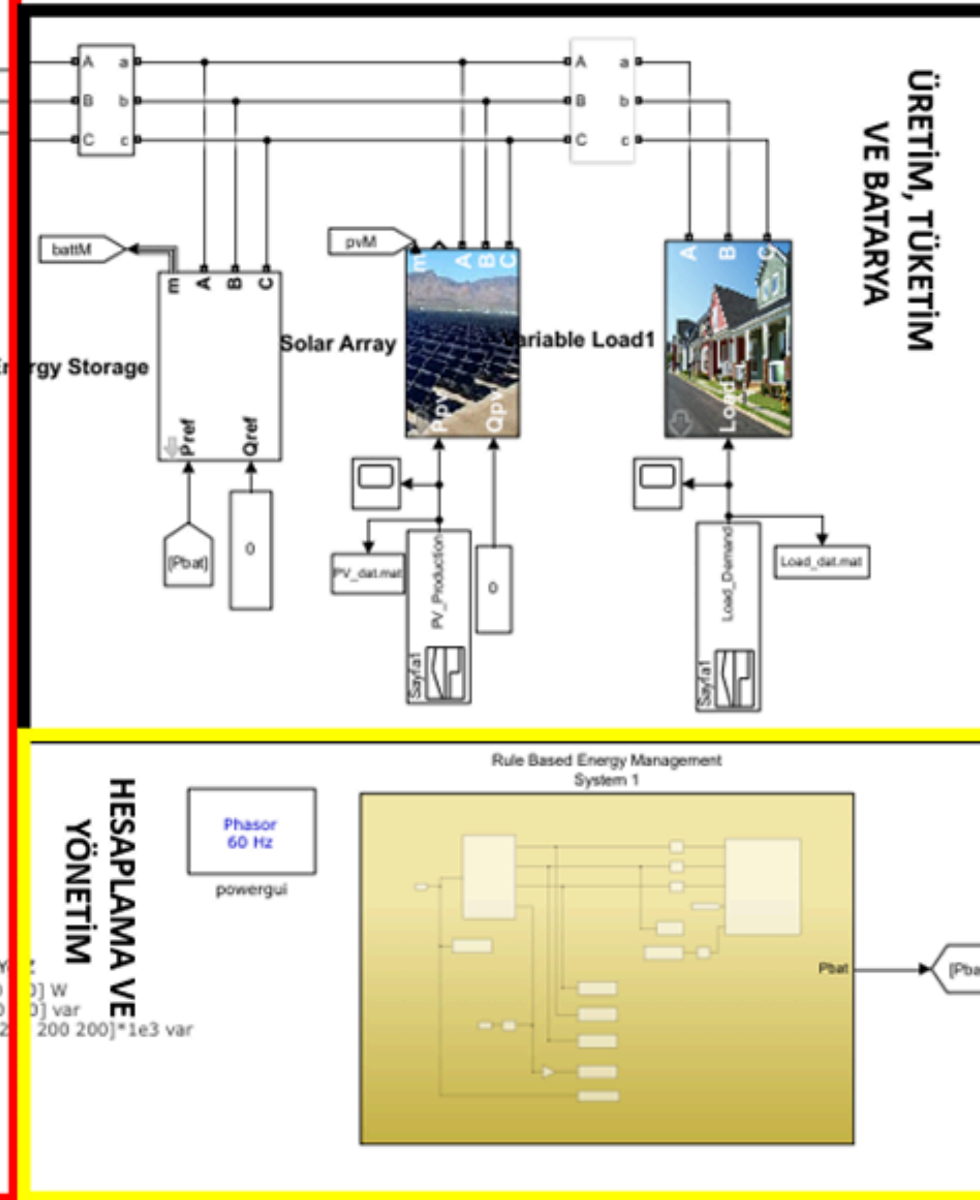
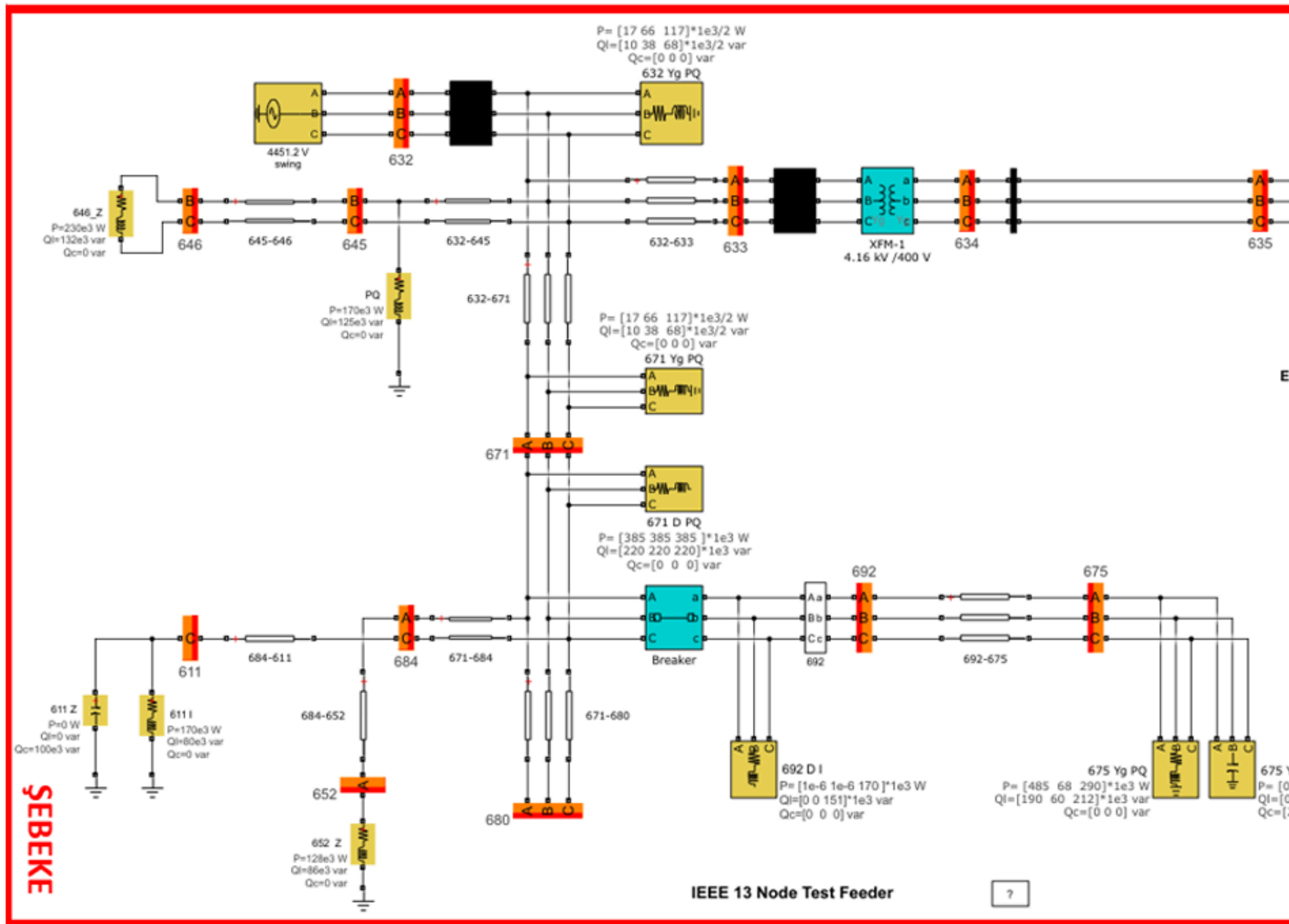
ENERGY MANAGEMENT SYSTEM

I have completed my graduation project focused on Energy Management Systems (EMS). The primary objective of the project was to efficiently and accurately manage the energy generated from solar panels, thereby increasing energy efficiency and minimizing electricity costs.

In the project, future energy consumption forecasts were performed, and two different management algorithms were compared to identify the most optimal solution. The system was meticulously modeled and simulated in the Matlab Simulink environment. During the simulations, power flows, energy states, and voltage levels were closely monitored, allowing for comprehensive analysis and validation.

Furthermore, the EMS incorporates a future energy consumption forecasting feature, which significantly enhances the system's accuracy and performance. This forecasting was implemented in Python using the exponential smoothing method. As a result, the system is capable of making more dynamic and precise decisions in energy management processes.

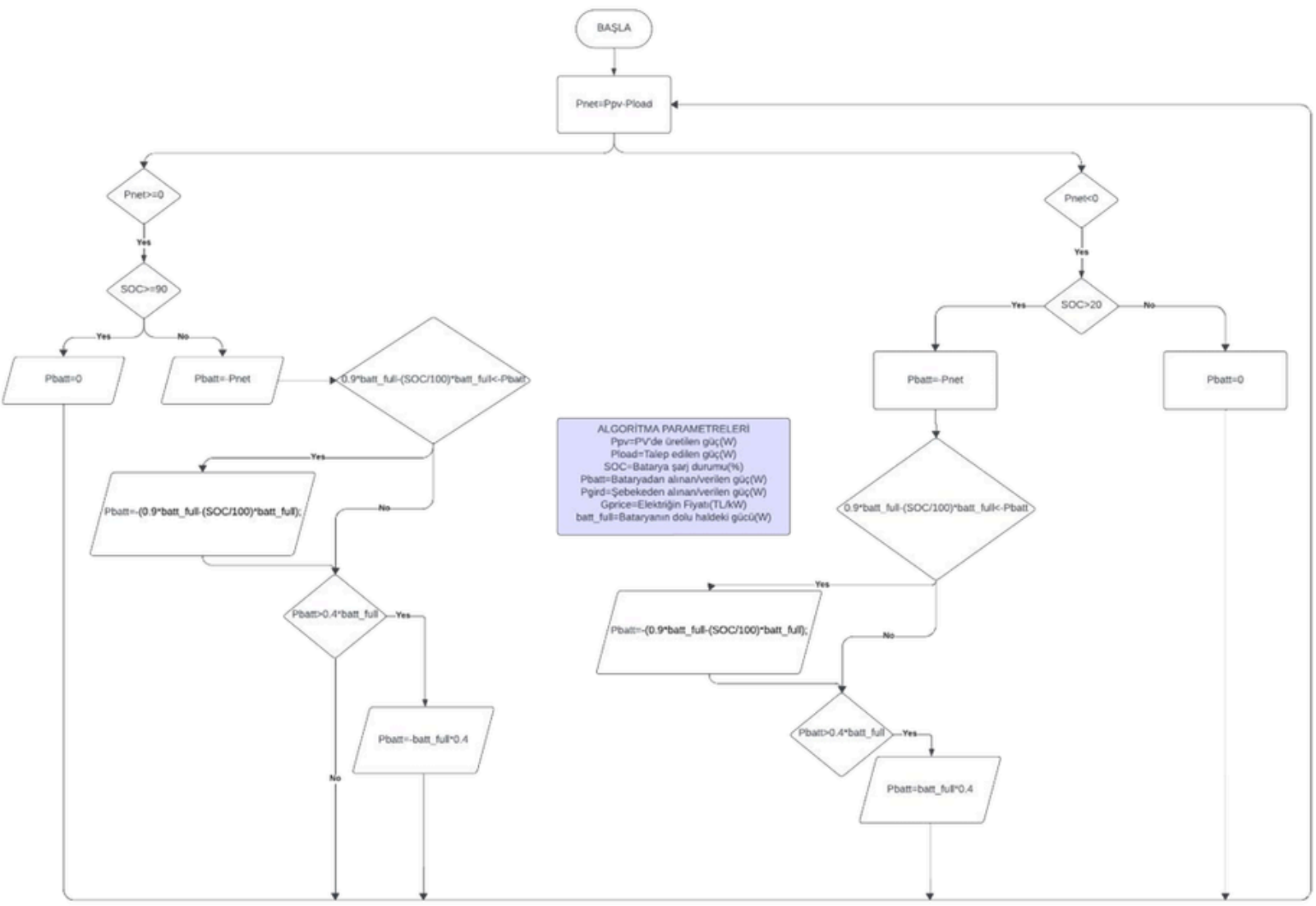




SIMULATION

Time	Load (W)	PV_Production (W)	Pbatt (W)	SOC (%)	Pgrid (W)	Purchase_price (TL/kW)	Sale_price (TL/kW)	Total_Bill (TL)	Energy_Balance (W)
0-1	13.800	0	6000	53	7.800	₺ 0,82	₺ 0,47	₺ 6,40	-
1--2	13.800	0	4500	23	9.300	₺ 0,82	₺ 0,47	₺ 7,63	-
2--3	13.200	0	0	20	13.200	₺ 0,82	₺ 0,47	₺ 10,82	0
3--4	10.800	0	0	20	10.800	₺ 0,82	₺ 0,47	₺ 8,86	-
4--5	12.600	0	0	20	12.467	₺ 0,82	₺ 0,47	₺ 10,22	-
5--6	8.100	133	0	20	6.467	₺ 0,82	₺ 0,47	₺ 5,30	0
6--7	11.900	1633	0	20	5.714	₺ 0,82	₺ 0,47	₺ 4,69	0
7--8	13.800	6186	0	20	2.680	₺ 0,82	₺ 0,47	₺ 2,20	0
8--9	10.400	11120	-1040	25	- 3.400	₺ 0,82	₺ 0,47	-₺ 1,60	-
9--10	15.200	14840	-6000	52	- 3.907	₺ 0,82	₺ 0,47	-₺ 3,20	-
10--11	14.300	17293	-2026	75	- 900	₺ 0,82	₺ 0,47	-₺ 0,42	0
11--12	14.300	17226	-1434	86	- 2.639	₺ 0,82	₺ 0,47	-₺ 1,24	-
12--13	20.200	18373	0	90	1.680	₺ 0,82	₺ 0,47	₺ 1,38	0
13--14	13.700	18520	5594	72	- 6.500	₺ 0,82	₺ 0,47	-₺ 3,06	-
14--15	15.100	14606	3010	44	1.400	₺ 0,82	₺ 0,47	₺ 1,15	0
15--16	10.100	10690	1896	28	1.431	₺ 0,82	₺ 0,47	₺ 1,17	0
16--17	17.300	6773	0	20	13.334	₺ 0,82	₺ 0,47	₺ 10,93	-
17--18	26.200	3966	0	20	25.427	₺ 0,82	₺ 0,47	₺ 20,85	-
18--19	13.600	773	0	20	13.080	₺ 0,82	₺ 0,47	₺ 10,73	0
19--20	11.200	520	0	20	11.200	₺ 0,82	₺ 0,47	₺ 9,18	0
20--21	16.000	0	0	20	16.000	₺ 0,82	₺ 0,47	₺ 13,12	-
21--22	14.200	0	0	20	14.200	₺ 0,82	₺ 0,47	₺ 11,64	-
22--23	13.900	0	0	20	13.900	₺ 0,82	₺ 0,47	₺ 11,40	-
23--24	13.900	0	0	20	13.900	₺ 0,82	₺ 0,47	₺ 11,40	-
TOTAL								₺ 155,95	

INPUT AND OUTPUT VALUES



ALGORTIHM

TEKNOFEST

DIGITAL TECHNOLOGIES IN INDUSTRIES

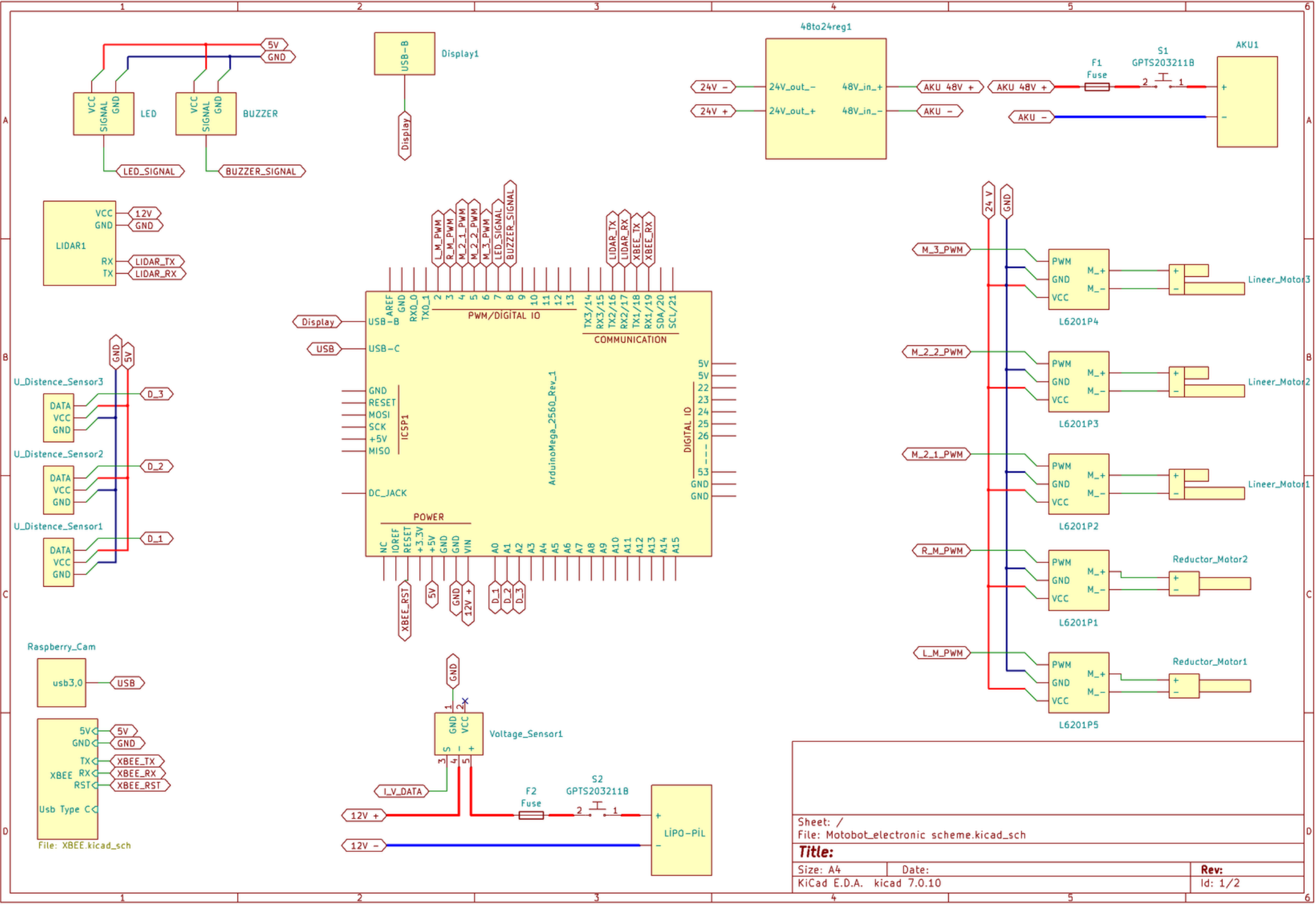
In 2022 and 2023, I participated in the "Digital Technologies in Industry" competition, where the goal was to design an autonomous vehicle capable of transporting loads within its operational area. As part of a multidisciplinary team, we developed the project and prepared for the competition, conducting field tests to validate our design.

My responsibilities included the design, simulation, and implementation of the electronic system, as well as the design, analysis, and detailed modeling of the mechanical system using computer-aided tools. I completed all assigned tasks diligently and on schedule. Although the project scored 83.5 points and did not advance to the final stage, the technical knowledge, problem-solving skills, and project management experience I gained throughout this process were invaluable.

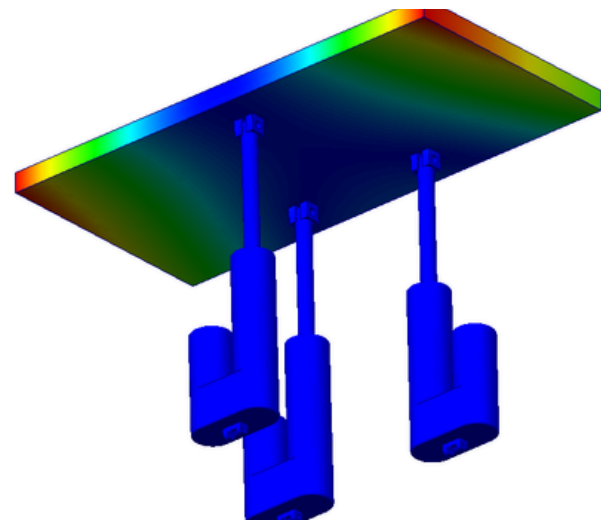
During the project, I utilized SolidWorks and ANSYS for mechanical design and analysis, KiCad for electronic circuit design, and Matlab Simulink for testing and simulating the electronic systems. Additionally, I supported my designs by consulting datasheets, technical articles, and up-to-date resources to ensure accuracy and reliability.

This project experience enhanced my ability to work effectively within a team composed of diverse disciplines, while also improving my coordination and time management skills in a multidisciplinary environment.

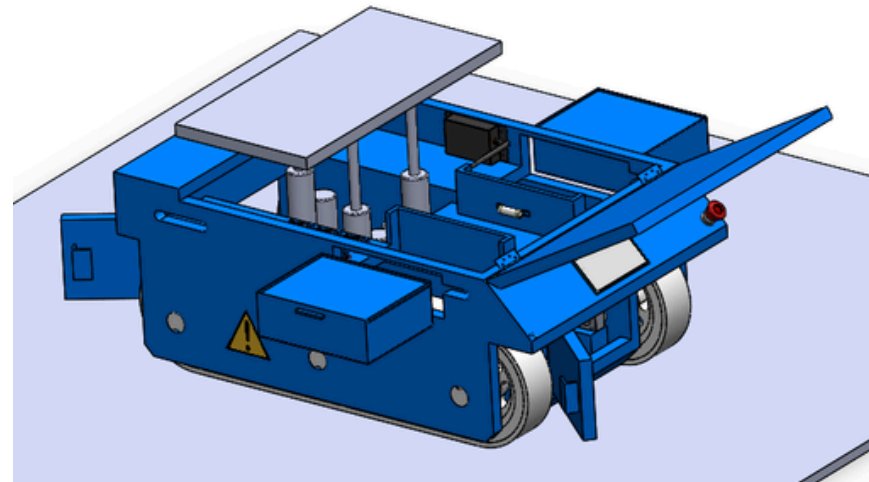
In conclusion, while the project's competitive outcome did not fully meet my expectations, I am highly satisfied with the knowledge and experience it provided me. All shared visuals and documents are original outputs of my work and may be freely shared.



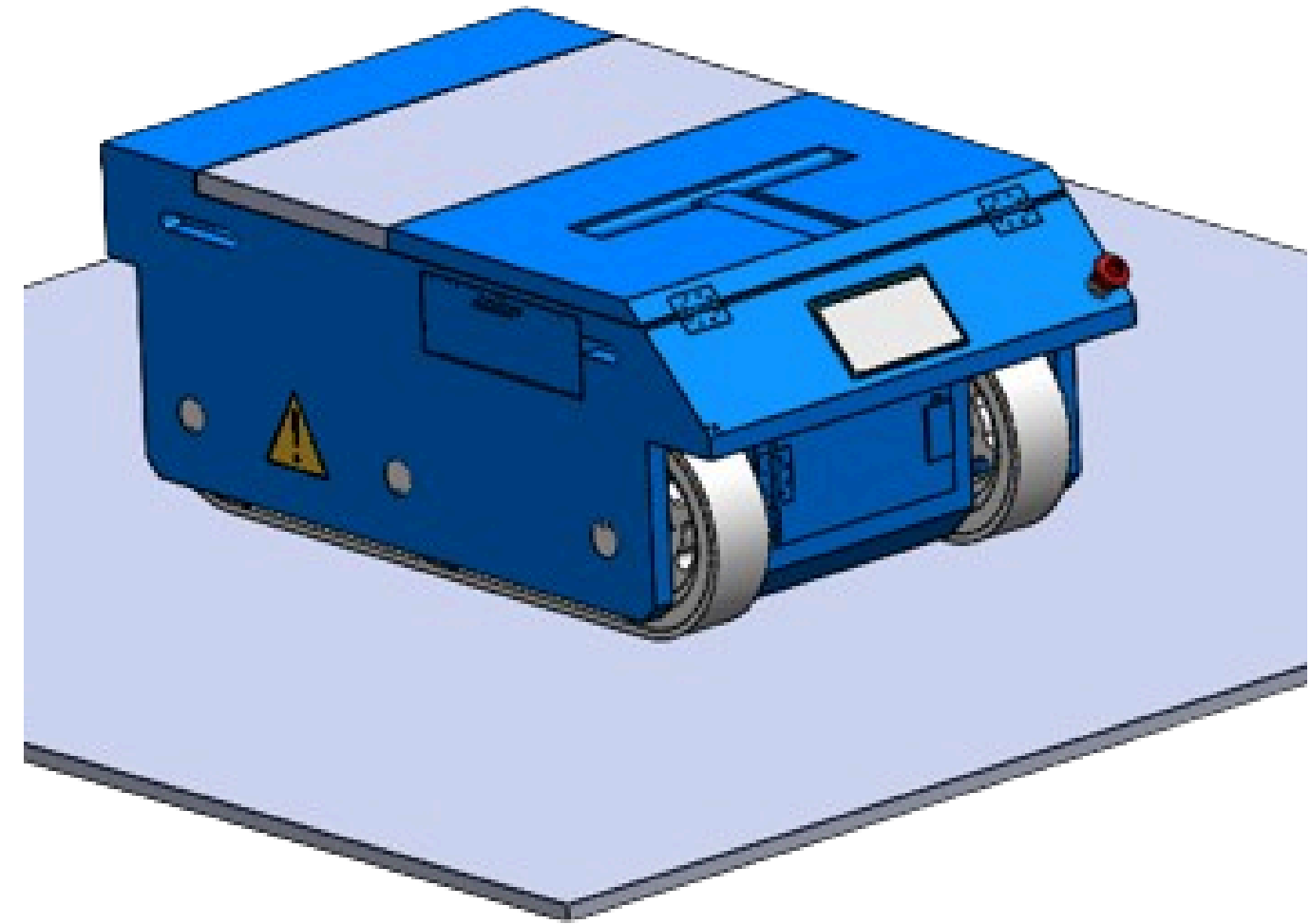
ELECTRONIC SCHEME



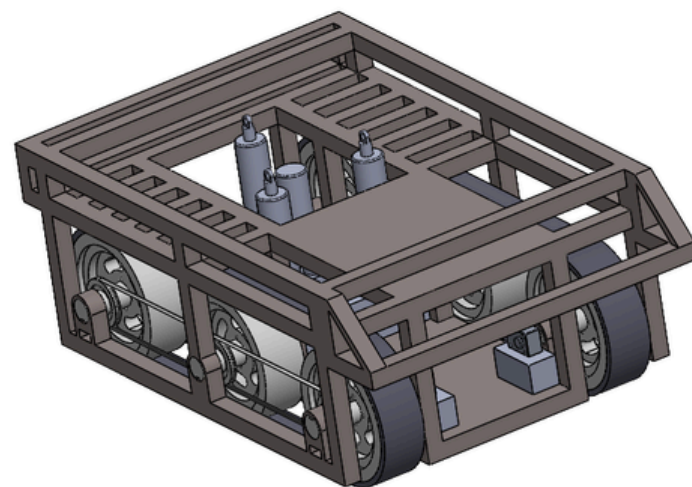
LIFTING PLATFORM



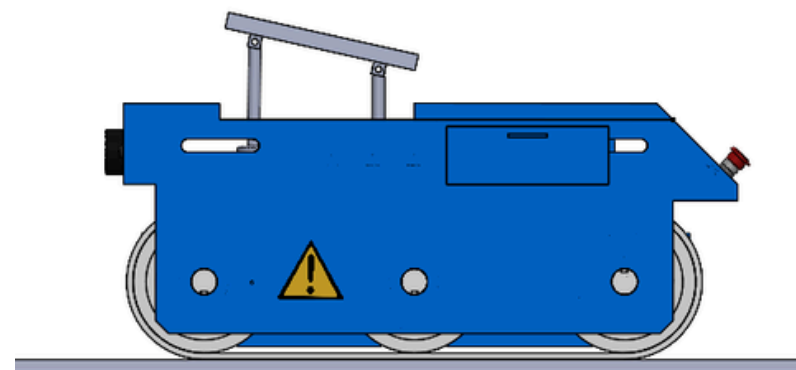
VEHICLES PHOTO



VEHICLE PHOTO



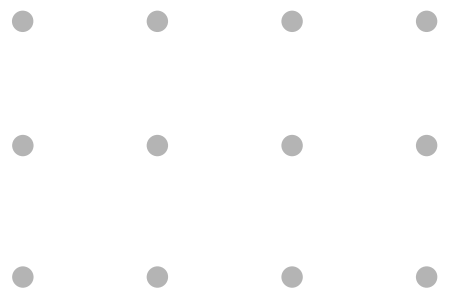
VEHICLE CHASSIS



VEHICLE PHOTO

PERSONAL PROJECT

BATARYA YÖNETİM SİSTEMİ



I have completed a Battery Management System (BMS) project that I developed independently based on my own initiative and research. The designed system aims to manage a battery pack of approximately 3 kW capacity, consisting of LiFePO4 cells, using a passive balancing method.

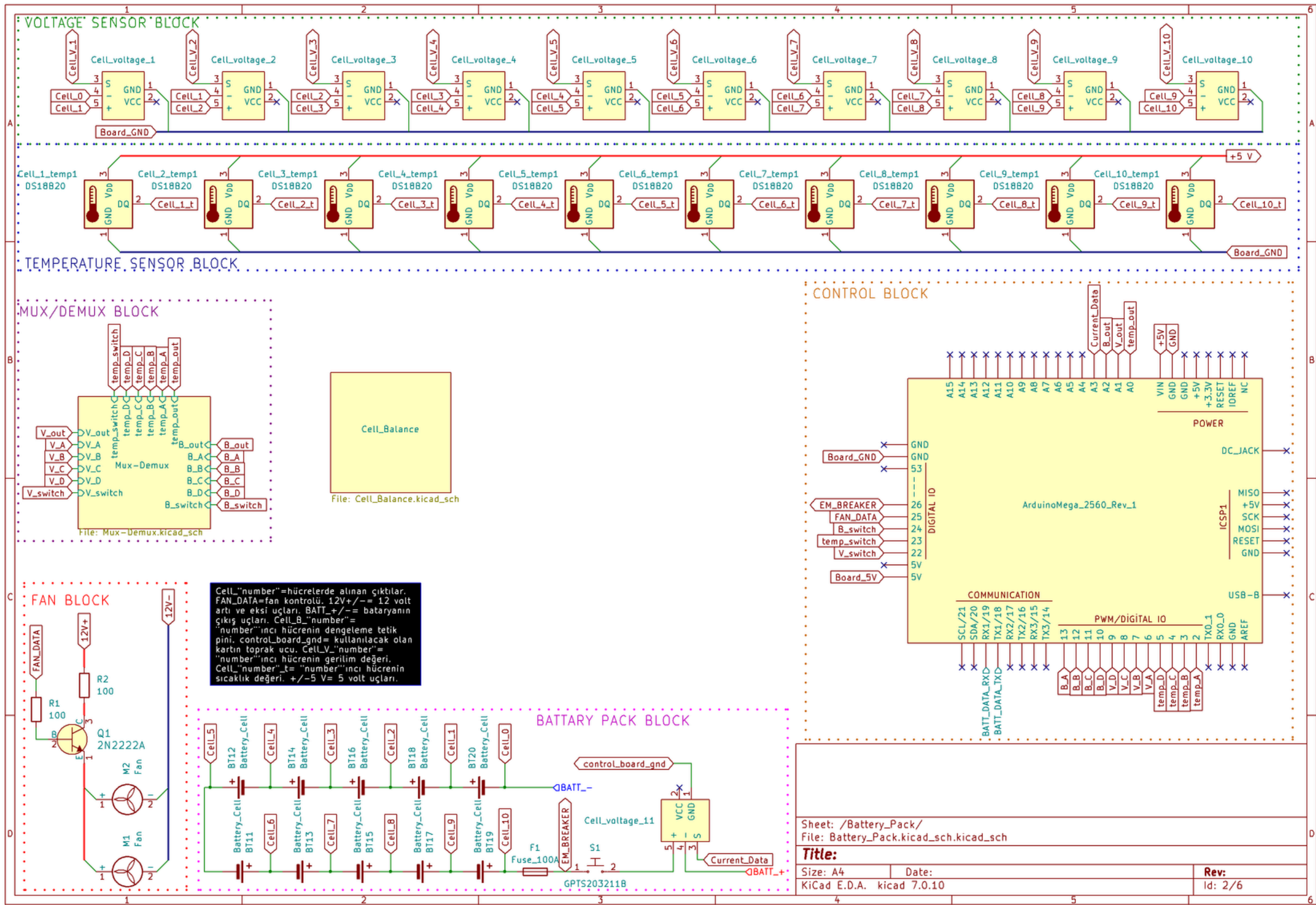
Within the scope of the project, the state of charge and capacity of the battery were accurately estimated using the Coulomb counting method. The system is designed to maintain balance among the cells, thereby enhancing battery performance and extending its operational lifespan.

This work encompasses design, modeling, and simulation phases; however, it did not progress to prototype development or implementation stages.

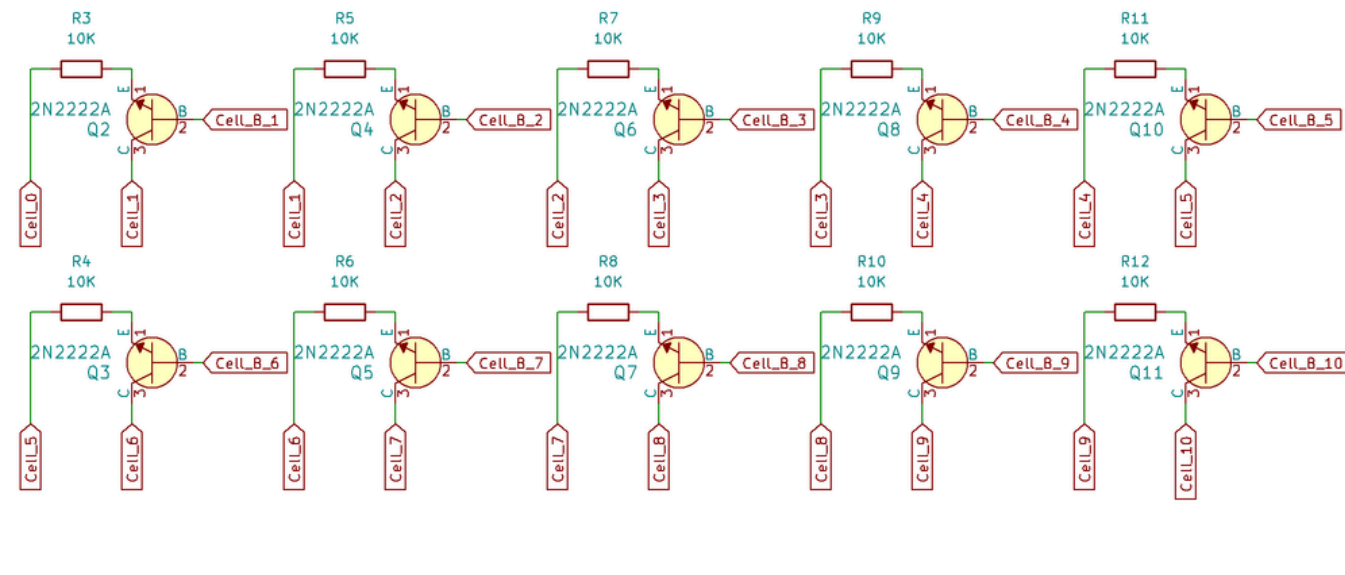
During the design process, KiCad was employed for electronic circuit design, while Matlab Simulink was utilized for system simulation and analysis.

Overall, this project significantly contributed to deepening my knowledge in energy management and battery technologies, while also strengthening my skills in interdisciplinary collaboration.

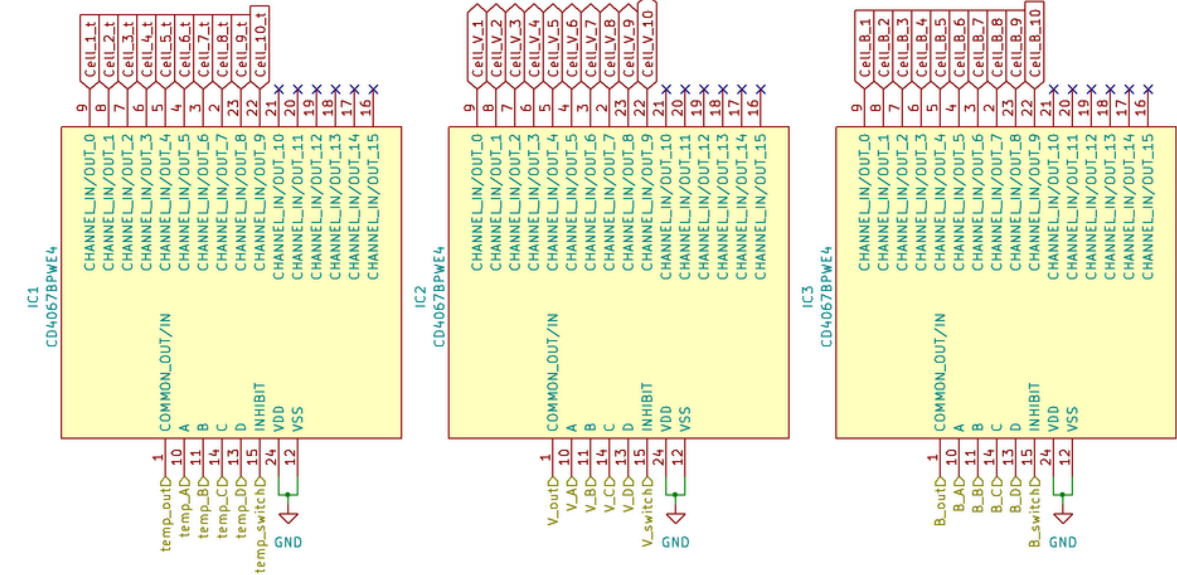




ELECTRONIC SCHEME



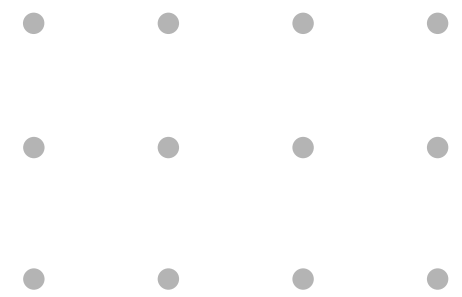
CELL BALANCING



MUX DEMUX

PERSONAL PROJECT

SPREADER AUTOMATION PROJECT



During my internship at Mersin International Port Operations, I worked on the Spreader Automation Project, which was developed to ensure the safe and precise handling of containers in port operations. The primary objective of the project was to automate the position control and movement management of the spreader device.

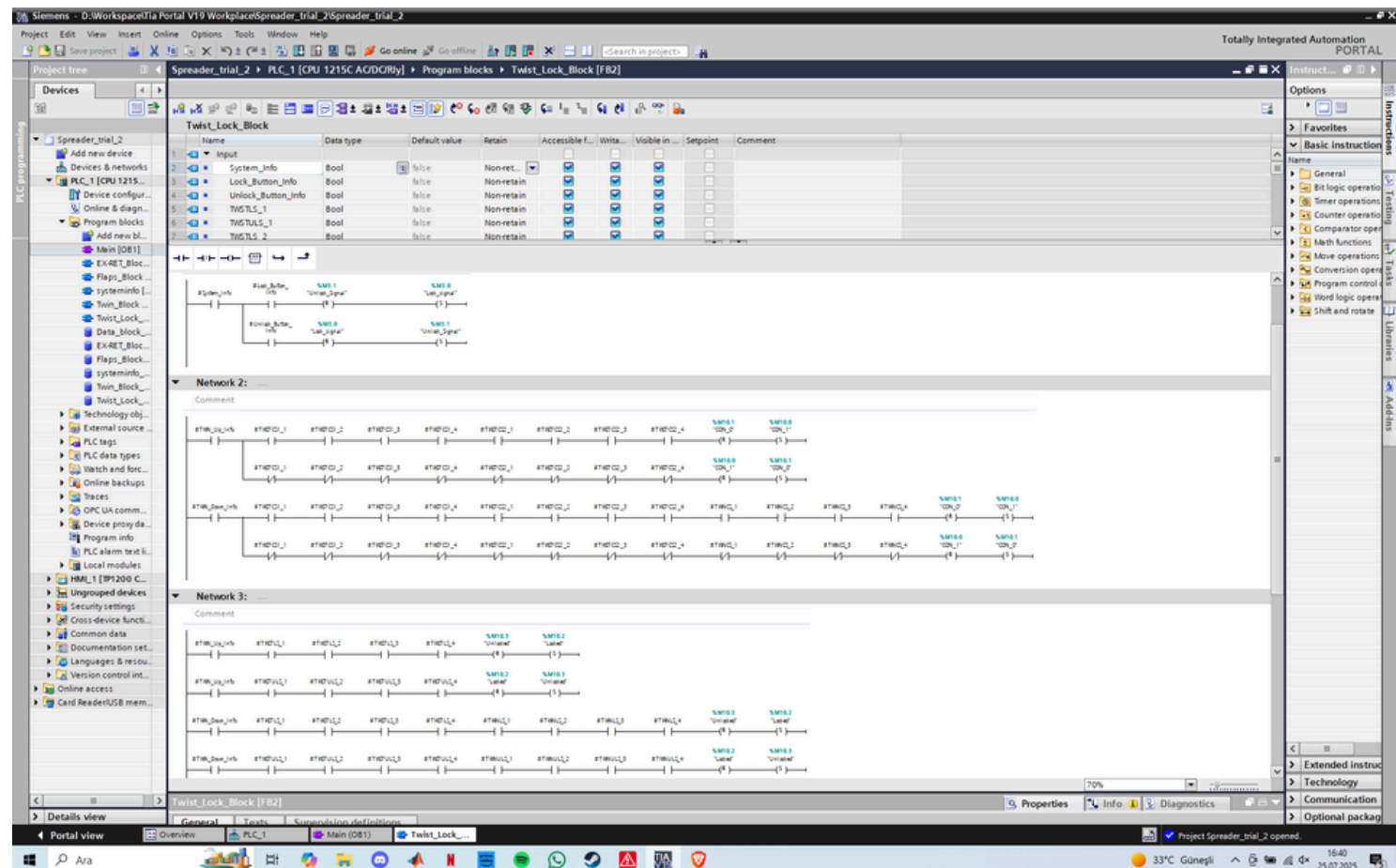
In the project, the spreader device used in the port was thoroughly examined, and its operating principles were analyzed. Accordingly, a PLC program controlling the forward and backward movement of the device was designed from scratch. Numerous proximity sensors were utilized to gather information about the device's status, and based on this data, the operation of the spreader was designed.

The PLC program processes the data received from the sensors to manage motor movements precisely, and when the spreader reaches a specified position, a flag is set to indicate the device's location. Thus, an automatic and reliable control system was established.

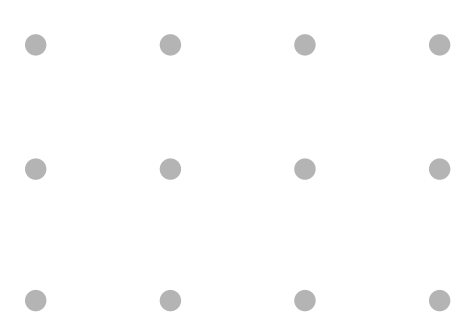
Critical phases such as accurate sensor reading, development of data processing algorithms, and integration of the PLC with the hardware were successfully completed. Throughout the internship, various tests were conducted to ensure the system's stable and reliable operation, and necessary improvements were made. The project was tested in a simulation environment.

This project enabled me to apply my theoretical knowledge of automation systems into practice and contributed significantly to the development of my problem-solving and project development skills. The Spreader Automation Project is an important application in improving port operation efficiency and is included in my portfolio.





EXAMPLE PHOTOS OF PROJECT



THANK YOU

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