

# MIDDLE EAST TECHNICAL UNIVERSITY

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

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### EE400 Summer Practice II Report

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**SP Beginning Date:**

*09.07.2018*

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*03.08.2018*

**EE300 SP Location:**

*TÜRKSAT A.Ş.*

**EE400 SP Company Name:**

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**EE400 SP Company Division:**

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# 1 Introduction

## 2 Description of the Company

In this chapter, I will introduce the company in five parts:

### 2.1 Company Name

ASELSAN ELEKTRONİK SANAYİİ VE TİCARET A.Ş.

### 2.2 Company Location

ASELSAN has six campuses in Turkey, one of them being in Istanbul, other campuses are located at Ankara. Throughout my summer practice, I spent my time at Macunköy Campus. **Address: Macunköy Campus:** Mehmet Akif Ersoy Mahallesi 296. Cadde No: 16, 06370 Yenimahalle-Ankara, Türkiye

**Phone:** +90 (312) 592 10 00

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#### 2.2.1 Macunköy Facilities

Macunköy Facilities was established on an area of total 186.000 m2, 110.000 m2 of which is the closed area. General Directorate, Communication Tools Group, Defense System Technologies Group and Radar, Electronic Warfare and Information Systems Groups are at Aselsan Macunköy Facilities.

### 2.3 General Description of the Company

ASELSAN is a company of Turkish Armed Forces Foundation, established in 1975 in order to meet the communication needs of the Turkish Armed Forces by national means. Currently (5,43% of the shares are owned

by the Foundation whereas the remaining 15,3% runs in İstanbul Borsa stock market.

ASELSAN is the largest defense electronics company of Turkey whose capability/product portfolio comprises communication and information technologies, radar and electronic warfare, electro-optics, avionics, unmanned systems, land, naval and weapon systems, air defence and missile systems, command and control systems, transportation, security, traffic, automation and medical systems. Today ASELSAN has become an indigenous products exporting company, investing in international markets through various cooperation models with local partners and listed as one of the top 100 defence companies of the world (Defense News Top 100).

ASELSAN, together with the technology emphasis in its vision, has targeted to be a company that maintains its sustainable growth by creating value in the global market; preferred due to its competitiveness, trusted as a strategic partner, and caring for the environment and people.

Together with the highly qualified engineering staff within more than 5000 employees, being the main driving factor of the company's success, ASELSAN allocates 6% of its annual income for self-financed research and development activities.

## **2.4 The Organizational Chart of the Company**

The organizational chart of ASELSAN can be seen in *Figure ??*.

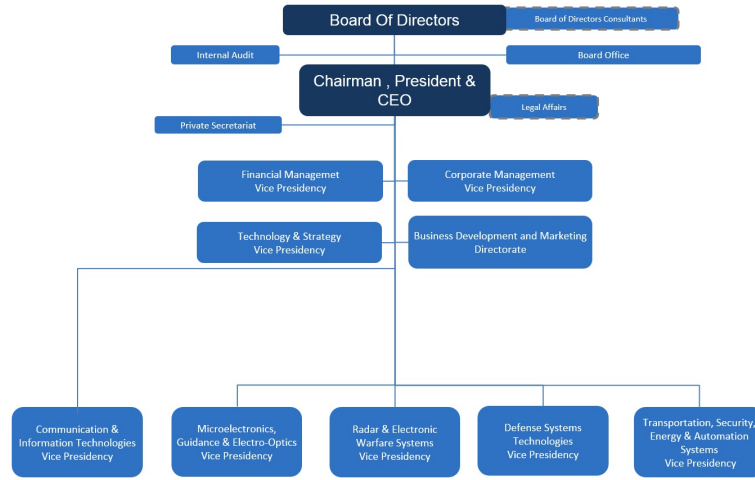


Figure 1

## 2.5 A Brief History of the Company

- **1978**

The first premises in Macunköy Facility were completed and the manufacturing operation started.

- **1980**

The first manpack and tank wireless radios were delivered to the Turkish Armed Forces.

- **1983**

The first export was realized.

- **1982-1985**

New products such as Field Telephones, Computer Controlled Central Systems and Laser Distance Measurement Appliances were included in the inventory.

- **1987**

ASELSAN was included in a common project attended by 4 NATO countries for the manufacturing of Stinger Missile and started the required investment for the thick film hybrid circuit production.

- **1988**

ASELSAN produced the first avionic appliance for the F-16 program.

- **1989**

The first technology transfer to Pakistan was realized. Wireless radio production was started with ASELSAN license in NTRC facilities in Pakistan.

- **1990**

On date 21.05.1990, the ASELSAN shares were offered to the public and as of date 01.08.1990, the shares were started to be traded in IMKB (İstanbul Stock Exchange)

The Radar systems were included in the ASELSAN product range.

- **1992**

- **1995**

The TASMUS agreement was executed.

- **1997**

ASELSAN 1919 Mobile Phone was launched to the market.

- **1998**

Thermal cameras, thermal weapon sight and thermal vision devices with target coordination addressing devices were submitted to the use of Turkish Armed Forces.

- **1999**

Agreements for Air Defence Early Warning and Command Control System, MILSIS Electronic Warfare and X-Band Satellite Communication System were executed.

- **2001**

ASELSAN took over 72% of the shares of ASELSAN MİKES A.Ş.

- **2002**

The equity capital of the company increased two and a half times compared to the previous year and reached the level of approximately one fourth of the aggregate resources.

- **2005**

HEWS, Helicopter Laser Warning Receiver system (LIAS) Project and Turkish Land Forces Avionic System Modernization Project was executed.

- **2007**

The construction of ASELSAN Integration Hall Building was completed and settlement activities were realized.

In 2007, MILGEM war system supply project was executed.

- **2008**

ATAK agreement and Multi Band Digital Common Wireless Radio (ÇBSMT) Project were executed and ASELSAN delivered the first originally developed Air Defense Radar.

- **2009**

In 2009, four Research and Development Centrals were established, Leopard-1 Tank modernization was completed, MILGEM Warfare System 2nd Vessel Project, Ammunition Transfer system Project for Self-Propelled Howitzer (Firtına- Storm) Ammunition vehicle and SAR / Reconnaissance System Supply Integration Project were executed.

- **2010**

- **2012**

Turkey's first national Air Defense System "Pedestal Mounted Stinger System" which has been designed and produced by ASELSAN, and whose delivery took nearly 23 years, last 5 pieces has been delivered to Turkish Armed Forces.

- **2013**

ASELSAN has continued its climb for the aim of being one of the top 50 defense companies, and ranked 74th according to annual sales.

ASELSAN was the company who has participated most at the 11th International Defence Industry Fair (IDEF 2013).

ASELSAN has won the “Leadership at Technology” award at the innovation week organized by Turkish Exporters’ Association. ASELSAN has also won “Year 2013 Innovativeness Creativity Product Award” among the large companies with the SERHAT Counter Mortar Radar product at the event of TESİD Innovativeness Creativity Awards.



## **3 Orientation and Mandatory Education**

### **3.1 Orientation**

### **3.2 Mandatory Education**

#### **3.2.1 Electrostatic Decharge (ESD)**

#### **3.2.2 İş sağlığı ve güvenliği**

## **4 Work Done at SP Company**

### **4.1 Mechanical & Electrical Tests of ASELSAN 9661 Radio Family**

#### **4.1.1 ASELSAN 9661 Radio Family**

#### **4.1.2 Electrical Equipments**

#### **4.1.3 Test Stand**

### **4.2 TVAC**

### **4.3 Mechanical & Electrical Tests of ULAK 4.5G Macro-cell Base Station**

#### **4.3.1 ULAK 4.5G Macrocell Base Station**

### **4.4 Research on Components of ULAK 4.5G Macro-cell Base Station**

#### **4.4.1 Alternate Components**

1. –
2. –
3. –
4. –
5. –

6. —

Figure 2: — — —

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1	—	—
2	—	—
3	—	—
4	—	—
5	—	—
6	—	—

Table 1: —



## 5 Conclusion

I completed my summer practice in ASELSAN A.Ş.(ASELSAN Electronics Industry and Ticaret A.Ş.) in Yenimahalle/Ankara. It was quite experiential time for me. Throughout my summer practice, I learned many things about professional work life. Firstly, I witnessed

Finally, I recommend my summer practice company for other students.

## 6 References

- [1] Raspberry Pi 2 & 3 Pin Mappings,  
<https://docs.microsoft.com/en-us/windows/iot-core/learn-about-hardware/pinmappings/pinmappingsrpi>
- [2] Temurtas Halil, *Sun Tracker System*, Bitbucket repository,(2017),  
<https://bitbucket.org/temurtas/pi/>