Siemens Winter Internship Report

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**Overview**

This report is a summary of my work, learning, and the experience that I gained during my Winter Internship at Siemens Pakistan. The Winter internship started from 23rd December 2019 and ended on 17th January 2020, with the duration of 4 weeks. I was interning in the SI DS Business unit of Siemens Pakistan, and this report briefly covers my experience in the various divisions of Siemens that I worked in.

**Introduction**

This section of the report underlays the process of how the internship was offered. The Career Office of Habib University was contacted by Siemens HR department mentioning that they require few Computer Science students for their Winter Internship Program. The email from Siemens was forwarded to the students by the Career Office with all the details, including the job description, prerequisites, and about the company. The job description indicated that Siemens was looking for Interns with experience in Nodejs, Electron, and VueJs. I had significant experience with Nodejs and Electron, and thus decided to apply for the opportunity by sending in my CV. Just like me, a significant number of other students also applied for the opportunity.

After 5 days, I along with 3 other students received a call from the HR department of Siemens Pakistan, that they were offering the winter internships to us four. On the call, the person told us about the duration, the start and the end date, about the opportunity, timings, and about the stipend.

**Orientation**

On our first day most of us reached the place at 9 where we were told to wait in the waiting area. Soon after that, Ms. Mariam Saad from HR Department accompanied us to a meeting room, where we were given an orientation. The orientation started by a presentation on the company profile, portfolio, aim, and experience. After that, the HR head Faraz joined us and asked us to introduce ourselves one by one. This included our names, universities, semesters, our hobbies, etc. After the introductions and a little bit talks that lasted around 2 hours, we were given our packages with and the offer letter. The packages included the names of our supervisors and we were told that we are going to spend the rest of the internship period with our supervisors. Each student was given a separate supervisor, along with a department that they will be interning in. The number of interns that were selected for the internship were close to 12.

**Drafting the timetable**

After the orientation I went to my supervisor where he redirected me to another person who drafted a timetable for me and 2 other students who were in the same department as I was, i.e. SI DS Business Unit. The timetable had the details of where, how, and with whom will we be spending our next one week to build an introductory understanding on how Siemens and its departments operate. The timetable had information on where who will we spend our first and the seconds half of the day, and on what subject.

**EHS Induction**

Safety comes first. And there is absolutely no doubt in it. The first things that was in our timetable was an EHS Induction, i.e. Environment Health and Safety Induction. The presentation was held by Mr. Usman Bin Rashid where he explained us the importance of Safety and how Siemens is thriving to achieve a zero accidents score. This was the health part. He then talked about the environment and health part of EHS where we told us how Siemens is working to have a positive impact on the environment and health by reducing its carbon emission and taking some other steps.

**Engineering**

The second presentation on the timetable for the three of us was on Engineering by Mr. Ubaid. He explained us about the products that Siemens make all around the world, especially those products that are manufactured and/or assembled in Pakistan. He shared with us the technical details and used a lot of technical words, with at that time didn’t make much sense, but now that we have seen a lot, we can understand what he meant. He explained us about the different kinds of panels/Switchgears that are made in Pakistan, and about the customers that its sold to.

**Proposal**

Mr. Arshad gave us a presentation on the different aspects of a proposal. He showed us various flow chart explaining how a set of predefined instructions are followed for each task that happens in the business unit. This included submitting the quotation, forwarding the project from order management to operation, communicating with the material management and other operations that occur in the business unit.

**System, Solution, and Service**

Mr. Sayeed Afzal, a very chill and friendly person held a presentation, briefing on his work in Siemens. This included mainly the Systems, Solution, and Service. One can’t get much for the terms that I have above. But, to explain everything in layman terms, he explained us the whole process from RFQ (Request for Quotation) to the process of dispatching the order. This included the workings of all the departments that play their role in the fulfillment of order. These departments mainly included the Sales department that was responsible for getting orders, the Order management that was responsible for looking at the order overall, ranging from building a timetable for completion of the project to the communicating the order to material management department. Other departments included, Operations, Quality Control, Material Management and many others.

**Order Management**

Order Management is the department that acts as a backbone for the orders that any organization takes. Mr. Salman Khalid who gave us a presentation of the order management explained to us the whole hierarchy of Siemens International. He explained us how Siemens is divided into 6 major companies, such as Oil and Gas, and Smart Infrastructure which operates in Pakistan. SI or Smart Infrastructure further divides into multiple divisions, one of them which is DS, i.e. Distribution Systems. He explained us the working of all the subdivisions of Siemens along with the functions of each. He also explained the reporting hierarchy of Siemens globally, shedding light on how Pakistan reports to UAE, which then reports directly to the head office in Germany.

**Material Management**

Mr. Asad Mustafa gave a presentation on Material Management. He elaborated on how his departments operates and arranges material for the factory. He explained to us the 3 different kinds of vendors from where the material is taken from. He also told us about the grading scale on which the vendors are judged based on the factors such as, performance, order fulfillment delay, work force, machines, portfolio and other factors. Based on these factors, a vendor is given a grade from A to C, and the grade is revised every 6 months. He also explained is the process of getting new vendors on board, or the process of giving an order to a vendor.

**Manufacturing**

Mr. Mahboob-ur-Rehman who is currently heading the manufacturing department in Siemens took us to the factory floor for the first time to show us how things are done on the factory floor. Before doing so, we were told to wear safety shoes and then he took us to the factory. There he showed us the different divisions of the factory floor while elaborating us on the purpose of each division. There we saw the FAT Area, the FIT Area, punching machines, the assembly area for low and medium sized panels, the bending area, the storage area of black and galvanized plates, along with the storage area for different sizes of copper rods.

**Final Inspection and Testing**

Mr. Faraz Fateh, who was also my supervisor during my time in Siemens was responsible for Quality Control. He explained us how in order to insure the quality of production, two ends have to be checked, i.e. the entry and the exit point. He explained to us the steps that are taken as a part of the Final Inspection and Testing. This mainly included the FIT and the FAT. FIT means Final Inspection Test which is carried out by the factory to insure the quality of its products. The second step is the FAT, which is the Factory Acceptance Test, which happens after the FIT and is carried out by the client. After this, the developed product is dispatched to the client.

**Receiving Inspection**

Mr. Aslam Ansari is the head of Receiving Inspection. He briefed us on the different steps that are taken in the Receiving Inspection, and also on how the department operates. He showed us the way receiving inspection is done by demonstrating it on some plastic handles that have been rejected by the department. We also saw a folder of NXAIR, a panel that is in demand these days, and we learned to test the sizes of some of its sheets. There, we learned to do data entry of the sizes of these panel onto excel file. He also elaborated on what happens when some item is rejected and some of the other processes and practices that are followed in the department.

After we have met all the people in our department, and had got to know the basics of how Siemens Global and specially Siemens Pakistan was operating, it was time to get ourselves engaged in the process to have the maximum learning.

**FAT**

Our on-field learning started from FAT. We were called by Sir. Samad to a FAT that was happening on around 8 panel by Karachi Electric. We spent close to 4 days where we learned about the different process that happen in FAT. This included from technical knowledge such as the types of test, names of parts used, specification of panels, to non-technical knowledge such as how to interact with clients, how to negotiate, and other details. These FATs were done of different kinds of panels with different representatives from KE each day for carrying out various kinds of tests.

**Power Supply Inspection**

During the period of our internship, we were told to write a report on all the power supplies on the factory floor that are used for testing in FIT and FAT. This technical report mainly focused on the condition of the power supplies such as whether the Ammeters are working or not, if the wires are in good condition or if there covering is tearing. I along with 2 EE students inspected a total of around 10 power supplies and the report was then submitted to Dr. Samad, i.e. the person responsible for carrying out FAT.

**Anexair Measurements Specification**

In our orientation, we got to know that Siemens Pakistan is starting a program where it’s trying to digitalize most of the things that it does in order to save precious work hours. As a part of this program, earlier the measurements of each Anexair part was taken by hand and then compared with the original drawings so that these parts can be tested properly and approved. This takes a lot of time. Thus, in order to digitize the process, what they are aiming to do is to put all the readings of all the parts in a software, so that for testing of new parts, and machine such as Vernier caliper can automatically validate the measurements of the panel being tested with the original measurements store in the software. Thus, my job was to study the Anexair Measurements Specification document and put all the values in the document to an excel file so that it can then be exported to the software.

**Digitalization**

As a part of the digitalization program that Siemens is undergoing, we saw some of the softwares and tech that have been developed in this regard. We also got to know the ways the digital infrastructure of Siemens operates, and how it addresses issues such as data security and privacy. We also got to know about some of the softwares that Siemens uses of its business including the very famous SAP software. The briefings are mainly carried out by Sir. Rafay who is a key resource in the Siemens Pakistan’s digitalization program and has built a software that has saved +800 work hours in a month.

**Resource Management Report**

We spent two days of our internship at the Vendors Shed, a place where vendors work in-house to do the internal wirings of the panel. The current problem that is being faced in this division of Siemens is that there is a lot of resource wastage, namely the wires. Long wires are used in the internal circuits where the wastage can easily be addressed by using the right length wires. Thus, to do so, Siemens was experimenting with a new approach of wiring and they wanted to collect data for it by spending our time with the vendors to see if the new approach is being beneficial or not. After the data collection, the data collected was then forwarded to Mr. Osama for further Analysis. Then the three of us were told to analyze the data collected and gave a presentation on whether Siemens Pakistan should start this practice and abandon the old practice, and whether there was a good tradeoff between time and cost.