

INTERNSHIP REPORT

PREFACE :

Internship Report on the project “PTTech Web Tools” in the Product Technology department in Timken Engineering and Research India Private Limited Bangalore submitted in fulfilment of the requirement of the degree B.Tech Computer Science from Indian Institute of Technology , Palakkad.

Intern Duration : 1 May 2019 to 15 July 2019

Submitted to :

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ACKNOWLEDGEMENT :

We thank Timken Engineering and Research India Private Limited Bangalore for selecting me as their intern out of many applicants and its a great pleasure for us to work there. We would sincerely thank Koyakonda **Riyaz Hussain**(Project Leader) and **Shreenath** (Head of Product Technology) for mentoring me and guiding me throughout the intern period . Finally , We would also thank **T.P.O** for providing us with this opportunity.

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ABOUT TIMKEN :

Timken is a world-leading manufacturer of bearings and mechanical power transmission products, continuously improving its portfolio and related services to make global industries stronger.

The Timken Technology Center in Bangalore is one of four captive Timken innovation and development centres around the world, which provides our customers a unique opportunity to access a global pool of engineering expertise and the latest technological advancements. It provides products, services and technical support that help equipment perform better. Customers rely on Timken for solutions ranging from design optimization, reducing operating costs and providing expertise.

The technology centre in Bangalore leads innovation in customer product & application engineering, manufacturing advancement, information technology and shared services.

Website Link : www.timken.com

Headquarters : North Canton, Ohio, United States

CEO : Richard G. Kyle

Founder : Henry Timken

Founded : 1899, St. Louis, Missouri, United States

PROBLEM DEFINITION :

“PTTech Web Tools” :

Our aim was to design an ASP.Net MVC web application for PTTech who are the clients of Timken. This web app should provide information about mechanical tools like SLA, HPTO, CDB in an effective and efficient manner.

Tools And Technologies Used :

- 1) ASP .Net MVC
- 2) HTML 5
- 3) CSS 3
- 4) BOOTSTRAP 4
- 5) Javascript(JQuery)
- 6) ADO .Net
- 7) SQL Server Management Studio 2014
- 8) Visual Studio Professional 2015
- 9) TFS(Team Foundation Server)

Journey of the Project :

We were given about one and a half week, to familiarize ASP.NET MVC, Javascript, Bootstrap and other basic requirements. Then, we were introduced to the project and were given a glimpse of what all functionalities the web app should comprise. The mechanical team of Timken gave us a gist of the project. We had to design three web tools for them, namely, SLA(Shock Load Analysis), HPTO(Hydraulic Pump Tower Operator) and CDB(Calliper Disk Brake).We designed the User Interface(UI) part of the tool and got it approved by the PTTech team. The process of UI designing took around 2 weeks to complete, since it was a huge application. For each tool there will be two categories of analysis like new analysis and existing analysis. In new analysis a new analysis will be created for analysis of that tool. While in Existing Analysis the previously stored analysis which is stored in database is fetched and can be further edited.

We started with SLA , we had to write the background calculations in c# which is in the controller part of application. The formulae had to be hardcoded. There was a particular graph which filters out about 2000 types of TLC models . This graph is done using JQPlot in the javascript page. A lot of features like zooming, resizing are also implemented for making it user friendly. On hovering a point on the graph the information of that particular model will be shown in a tooltip. And clicking on that model the output fields will be automatically populated. We created a format of report

for this tool using JsPdf in javascript. It allows us to download the report of the analysis in a pdf format.

Then we moved on to HPTO where based on the given inputs we had to recommend favorable HPTO models to the customer. And we had to display the details like graph , image of that particular HPTO model selected. We also had to give the status of the particular HPTO model based on the different inputs given for that model. We plotted the graph of a particular model using the pre-existing data points with JQplot functionality . Save option is also provided for saving the input values in the text box into the database which then will be used in existing analysis section. Pdf format of the report is also created similar to the SLA tool.

In CDB selection tab , we have a total of 7 different tools to select the CDB based on torque, resistance etc...All these tools followed a similar strategy. Based on the given inputs by the customer, the most probable CDB should be proposed. A report in JsPdf format is designed for each of them. The whole process of background calculations and designing took us about 2 months to complete.

Meanwhile, we had several meetings with the clients and took their suggestions to improve the web tool. The last phase of the project was the testing phase. Our project was tested by the mechanical team as well as the IT team of Timken and we took about 15 days to fix the bugs and improvise the tool to the next level, so that the user doesn't feel lot while surfing through the web app.

Learning Outcomes :

We learnt technical skills like HTML CSS Bootstrap Javascript(jQuery) C#.

We also learnt how to use SQL server and how to retrieve data from the database using ADO.Net which returns the data in json format from controller to the script page by an ajax call.

Usage of the visual studio software has helped us a lot in developing the tool. We even learnt ASP.NET MVC which is the heart of this project.

We were also able to learn how to manage large scale projects and deal with clients in a proper manner.

Conclusions:

We faced some technical problems while designing this tool. We faced some difficulties using the SQL server of the company and plotting of graph in SLA tool. The graph took a lot of time as the back-ground calculations were really huge accounting about a 100 variables.

Our mentor was really friendly with us and guided us through the technical aspects of the project at various stages.

As this was our first intern, working in a company was a whole different thing for us. It took us a while to adjust to the norms and ethics of the company. We had to attend client meetings, manage and satisfy their requirements. This interaction with them gave us a good experience.



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CERTIFICATE

This is to certify that **Mr. Srikar Reddy**, of **Indian Institute of Technology, Pallakad** pursuing Electrical Engineering Dual Degree has successfully completed his internship program in the Product Technology department in Timken Engineering & Research India Pvt. Ltd., Bangalore from May 1, 2019 – July 15, 2019.

The project being undertaken by him was **"PTTech Web tools, Bearing Type Selection"**.

He has been working on the following technologies: **ASP.Net MVC, C#, JQuery and SQL Server 2014**

During the course of his internship he has ably handled responsibilities & the Timken Company appreciates his dedication & commitment.

The management would like to place on record the contributions made by him during the tenure of his Internship in our organization & wish him success in future endeavours.



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CERTIFICATE

This is to certify that **Mr. Jupalli Madhav**, of **Indian Institute of Technology, Pallakad** pursuing Electrical Engineering Dual Degree has successfully completed his internship program in the Product Technology department in Timken Engineering & Research India Pvt. Ltd., Bangalore from May 1, 2019 – July 15, 2019.

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