

Online Validation of Test Certificate of Products in Steel Plant

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ABSTRACT: The main objective of this project is to develop a Online Validation of Steel Test Certificate. Nowadays the steel sector growth is vast due to various construction process, manufacturing and other purposes. This ensures the growth and the demand of steel industry in day-to-day life is rising. Due to that the customer numbers are countless. This will lead to a misuse and malpractice of the Steel Test Certificate. In order to avoid such a practice we confront this paper. This paper is purely based on the Web designing and development using HTML, PHP and database creation using MySQL. We first create the centralized database using MySQL in which the original certificates are stored. From the client side we use the PHP to online log in for the clients and validate the steel using the Steel ID number which is unique for different steels.

KEYWORDS : MySQL, HTML, PHP, Database, Test Certificate.

I. INTRODUCTION

The various functions of steel mills from ore to finished goods are undergone many processes like iron making, steel making, Casting of iron, roughing and rolling of iron. Iron making is the process in which the ore form of iron is made to liquid form. Steel making is the one which the process of conversion of pig iron into liquid steel. Casting of iron undergoes the solidification process of steel. Finally the steel bars are made to laboratory to the testing process and after the testing process the BIS engrave will be provided with the standard test certificate for the steel. From there the steel is sold to roughing and different rolling mills. The steel has many applications and basically they have five major sectors like Construction, Transport, Energy, Packaging, Appliances and Industry. From manufacturer to dealer to customer the chain of this network is large and there is a easy way of misleading the goods and earn easy money out of it. This will lead to misuse of the test certificate and anyone can create their own datas of steel and sell it to the customer for huge tag. For this we are working with help of the Programming Languages for developing a structured and centralised database for the different parameters of steel. And the customer who is purchasing will not be cheated and will be provided with secured login. Also the manufacturer will keep the original databases and also be updating the databases for every seller and buyer in this network.

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II. TEST CERTIFICATES OF STEEL PRODUCTS

Fig 1: Test certificate for High Strength Deformed Steel Bars of AGNI STEELS LTD^[3]

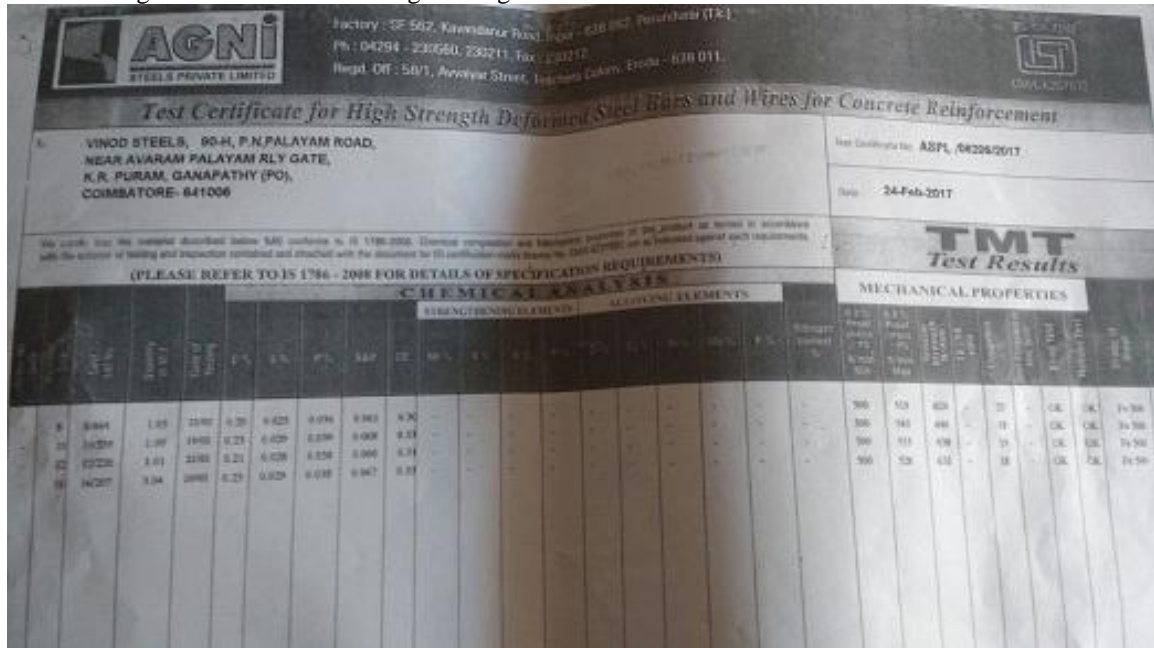
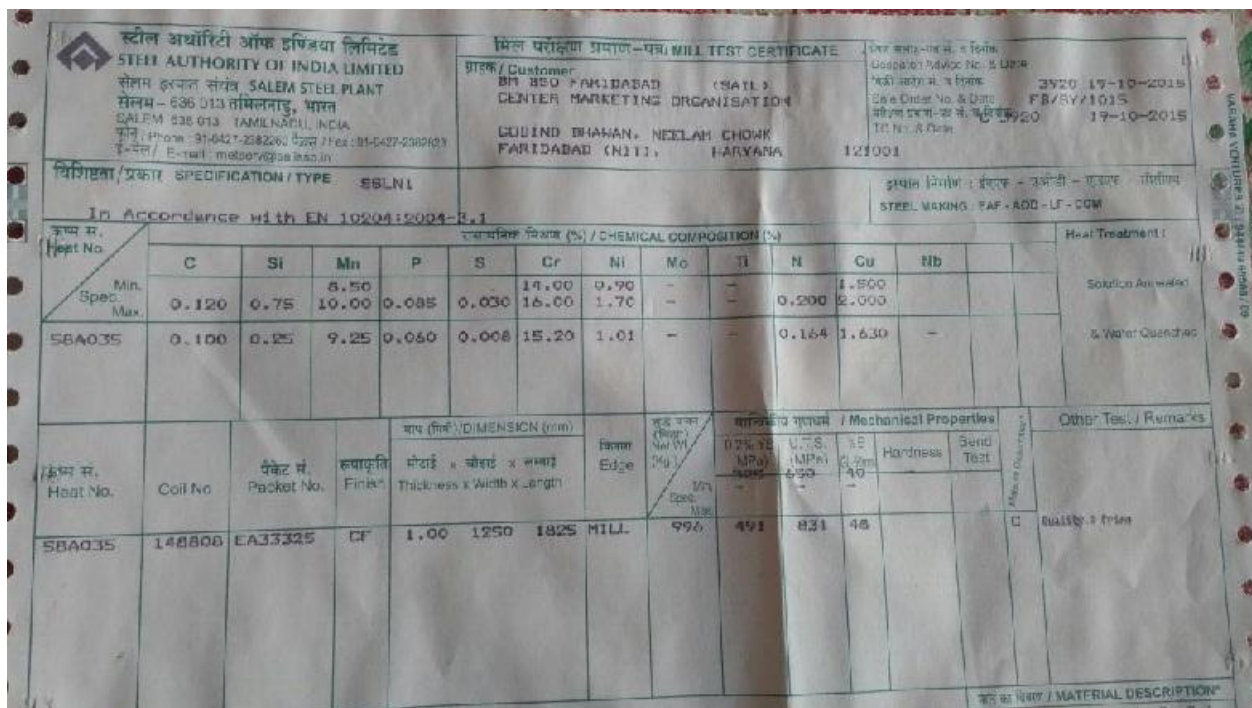


Fig 2: Test certificate provided by the SAIL in Salem Steel Plant to its Customer^[4]



A Test Certificate is a quality assurance document used in the metals industry that certifies a material's chemical and physical properties and states a product made of metal (steel, aluminum, brass or other alloys) compliance with an

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international standards organization specific standards such as ANSI, ASME etc. It is also known as Mill Test Report (MTR), Certified Mill Test Report, Certified Material Test Report, Mill Test Certificate (MTC), Inspection Certificate and Certificate of Test. Mill here refers to an industry which manufactures & processes Raw Materials.^[1] One MTC must contain the following information: steel mill's name, heat number, batch number, final test result, steel pipe dimension (steel pipe diameter, wall thickness, length), quantity, steel grade, standard/specification, chemical analysis composition results, mechanical test properties results. If applicable, there also should be hydro test result, UT result, hardness test result, CVN impact results, metal graphic result etc. When purchased steel plates come with a set of inspection documents. These are commonly known as mill certificates or mill test certificates) MTC. In order for purchasers to be sure of the quality of the steel that they bought, for engineering and quality assurance purposes as well as commercial ones there are detailed requirements about what the certificates are like and what can be included on them. European standard EN10204 defines what the various types of certificate are and what they mean^[2]. MTC EN 10204 3.1 and MTC EN 10204 3.2 are two main types of Test Certificates issued for steel products.

III. TECHNOLOGY USED

For implementation of online validation, the web programming languages such as HTML, PHP and JavaScript are used. HTML is used for Front end web page creation and PHP is used for Back end Validation. MySQL is used for database management and the test certificates are stored in database.

A. PHP

PHP is a [server-side scripting](#) language designed primarily for [web development](#) but also used as a [general-purpose programming language](#). PHP code may be embedded into [HTML](#) or HTML5 code, or it can be used in combination with various [web template systems](#), [web content management systems](#) and [web frameworks](#). The web server combines the results of the interpreted and executed PHP code, which may be any type of data, including images, with the generated web page. PHP code may also be executed with a [command-line interface](#) (CLI) and can be used to implement [standalone graphical applications](#).

B. HTML

HyperText Markup Language (HTML) is the standard [markup language](#) for creating [web pages](#) and [web applications](#). With [Cascading Style Sheets](#) (CSS) and [JavaScript](#) it forms a triad of cornerstone technologies for the [World Wide Web](#). [Web browsers](#) receive HTML documents from a [webserver](#) or from local storage and render them into multimedia web pages.

C. MySQL

MySQL is an [open-source relational database management system](#) (RDBMS). MySQL is one of the best RDBMS being used for developing web-based software applications.

D. XAMPP

XAMPP is a [free and open source cross-platform web server solution stack](#) package developed by Apache Friends, consisting mainly of the [Apache HTTP Server](#), [MariaDB database](#), and [interpreters](#) for scripts written in the [PHP](#) and [Perl programming languages](#). XAMPP stands for Cross-Platform (X), Apache (A), MariaDB (M), PHP (P) and Perl (P). It is a simple, lightweight Apache distribution that makes it extremely easy for developers to create a local web server for testing and deployment purposes. Everything needed to set up a web server – server application (Apache), database (MariaDB), and scripting language (PHP) – is included in an extractable file.

IV. ARCHITECTURE

The architecture of the Test Certificate validation process through online is shown in Figure 3. The whole process is divided into two main categories i.e. Client Side and Server side. The Client Side and Server Side is done through HTML and PHP respectively. The customers provide details and they are taken through database, after which the validation is done. The web dynamic programming language effectively stores the data and it checks each and every user when they try to access the test certificate. The link between the pages is made through hyperlinks and the confidential data such as password is highly encrypted.

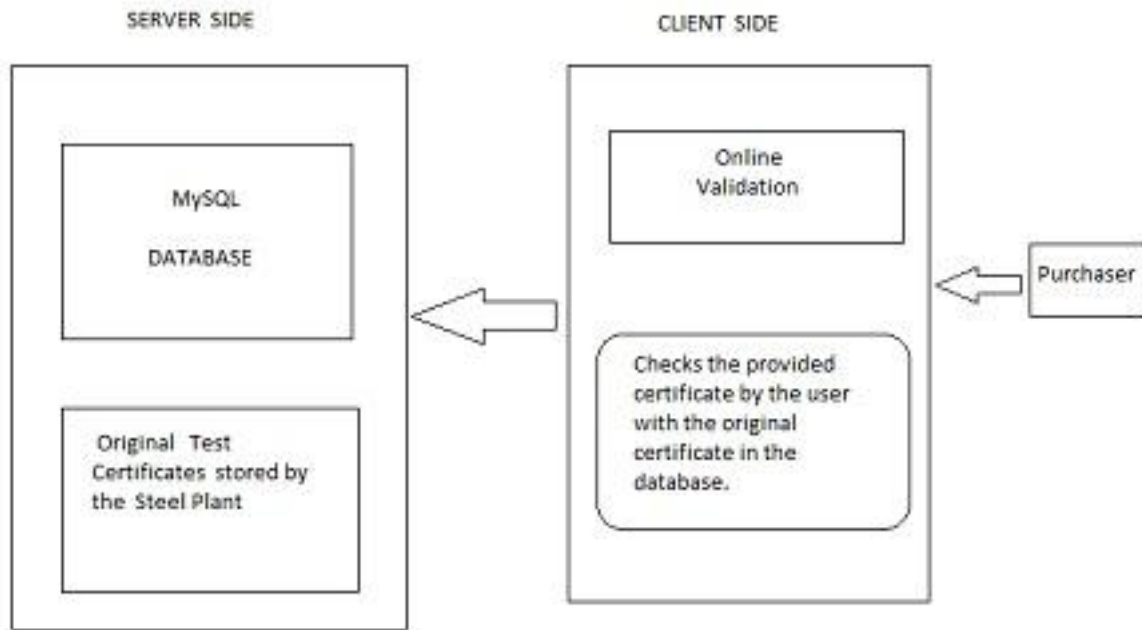


Fig 3: Architecture of Online Validation of Test Certificates

V. IDEA AND WORKING

The main idea is used to store the test certificate as PDF document and a database with the Test Certificate Number is created and the details of the manufacturer such as Name, Address, Email ID and mobile number are entered. Email ID or mobile number forms the Primary Key and they becomes the Login Name for the test certificate page. Now, the access for the test Certificate page is with the manufacturer. The Test Certificate number is embedded into the associated steel product whatever may be. It forms the link between the steel product and the updated test certificate. Once the customer wishes to buy the Steel Product, the details of the customer are given to the Seller. Since the seller has login rights to the test Certificate page, he will be taken to the page which contains the link for test Certificate document and the seller enters the buyers information in the form. Once the submit button is clicked, the details of the customer gets stored in the database and a mail is sent to the customer's mail ID regarding the product certificate details. The image of the mail is shown in Figure 4. Now the customer gets the access rights to the Test Certificate Login.

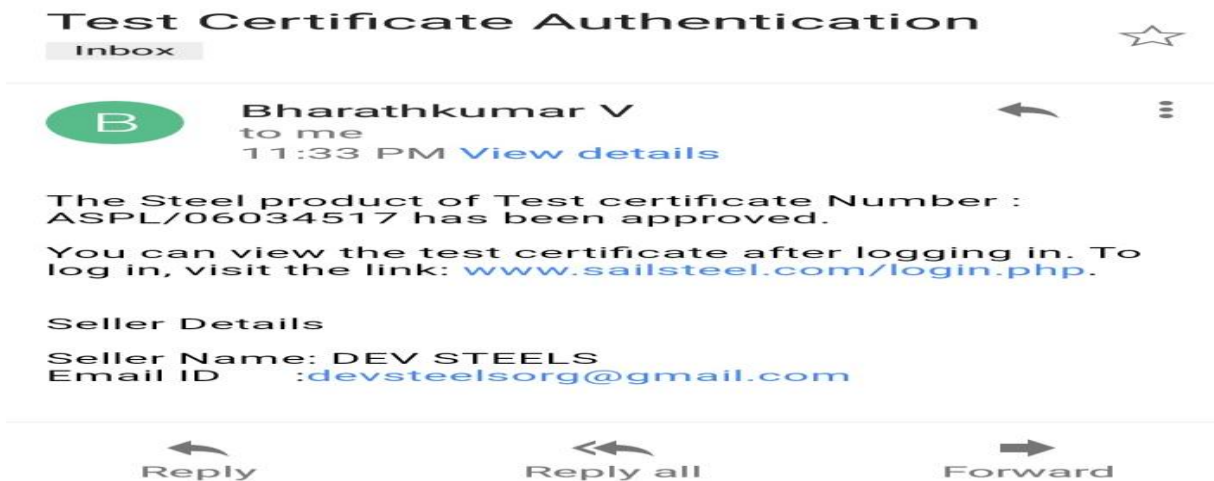


Figure 4: Image of Mail to the Customer from the webpage

When the customer visits the login webpage, he should give the test Certificate number and his valid Email ID in which the seller has registered ,like shown in figure 5. Once the submit button is clicked, the email ID given is verified with the database whether it is present or not. If the mail ID is valid, then One time Password is sent to the customer's mail to check whether he is the right user. The password is encrypted and once he enters the OTP, he will be directed to the Test certificate page. If the customer in turn sells the same product of steel to the another customer , their details should be entered . This process continues for every buyers and sellers.

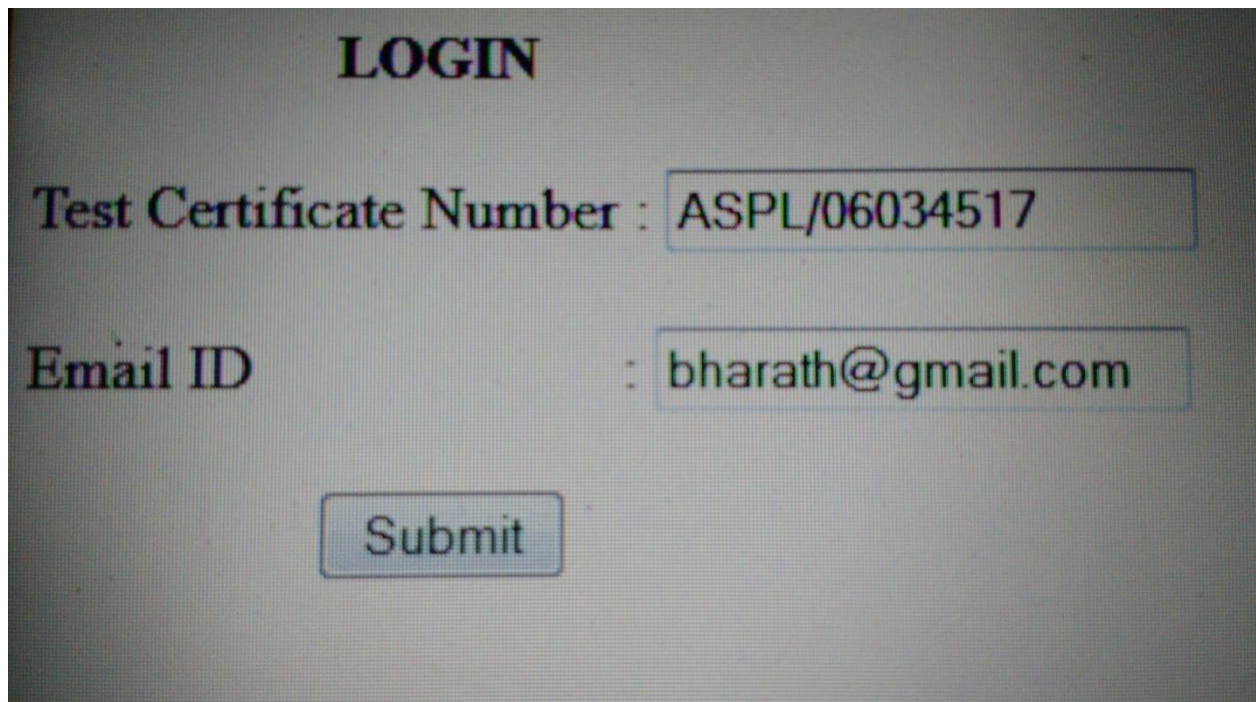


Figure 5: Image of Test Certificate Login Page

For development purposes, XAMPP is used since it is cross platform and open source. The web page is created using HTML and the CSS is used for styles in web page. The Database connectivity ,sending mails and the form validation

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are done through PHP and the password is encrypted using MD5. JavaScript is used for showing some error messages in case of improper connectivity and password mismatch. The above Web pages are given to the Central website which holds the centralized database to hold the details.

VI. CONCLUSION

The proposed idea is to provide the relational Database for the test certificates and the details of the customers who bought the steel containing the ID of the Test Certificate is created. When the customer wishes to see the Test Certificate, he will login to the Test certificate page using his E-mail or mobile number. The customer's information is fed into the database by the Seller and hence customer details gets entered into database identified by the Test Certificate number.

Our solution of centralized database can be easily implemented in the Government website so that every Steel manufacturers feed their information to the Government and hence any individual could see the details on the website about steel that he bought. Since login is provided for each test certificate, the person other than seller or customer could not see the details of the test certificate. This could eliminate the misuse of the certificate and also there is no possibility of creating fake certificates or any change in the certificate. Any suspicious activity is noted and in case of any malpractice, a complaint is generated by the Central Department.

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