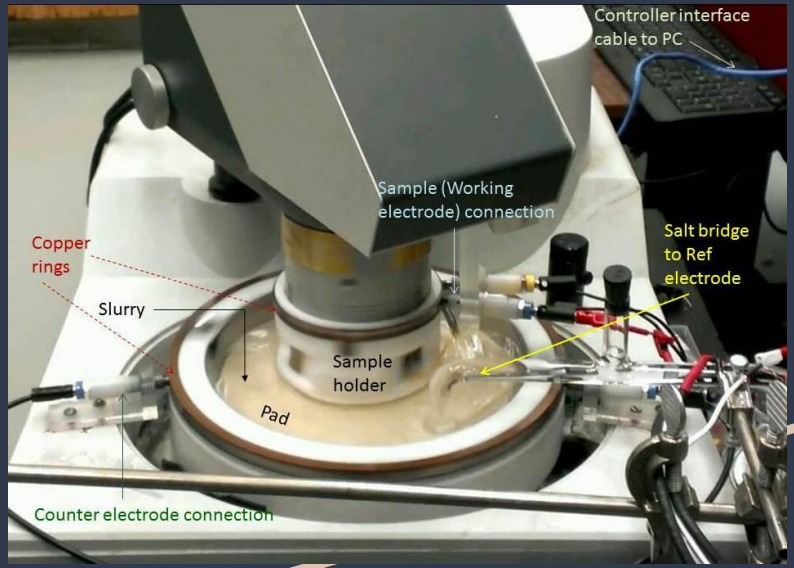
CMP Slurry

Team Members: Billy, Rosalia, Jason, Noah, Landon

Background Info



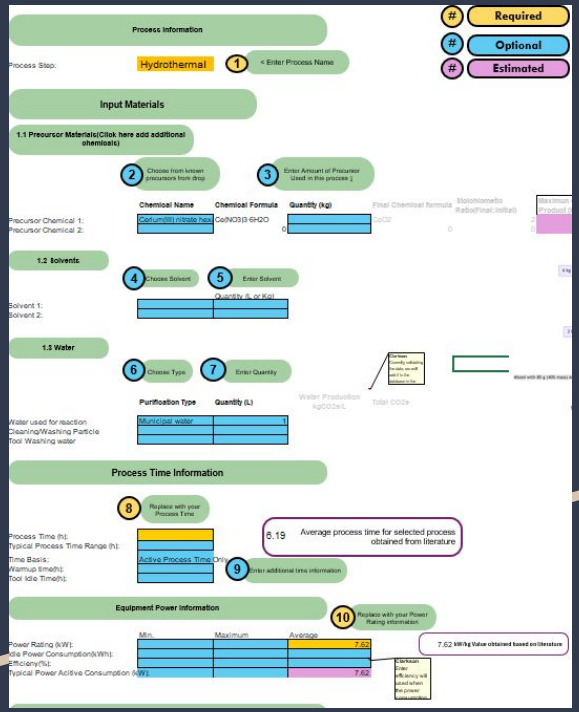
What is CMP?

CMP stands for chemical mechanical planarization. CMP utilizes mechanical and chemical procedures to polish wavers which create smooth and planar surfaces on materials. It is primarily used in semiconductor manufacturing for such as circuits and chips.

Why is it important?

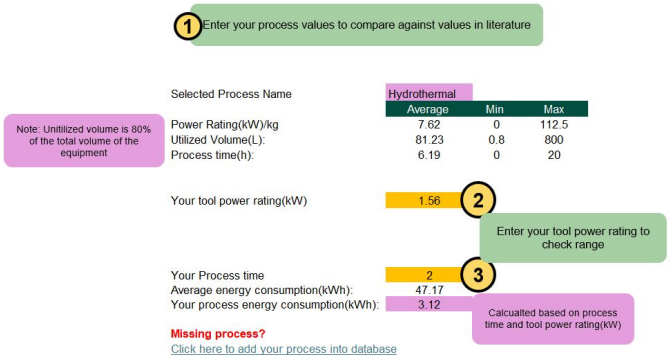
It is important because CMP enables the creation of complex and highly functional microchips.

Objective



What we're trying to achieve in this project?

Our goal is to transform an Excel-based analysis into an interactive and user friendly web application. By utilizing data collected by Clarkson faculty members, we aim to make this accessible to a wider audience, enabling researchers, engineers, and industry professionals to make informed decisions regarding CMP slurry manufacturing.



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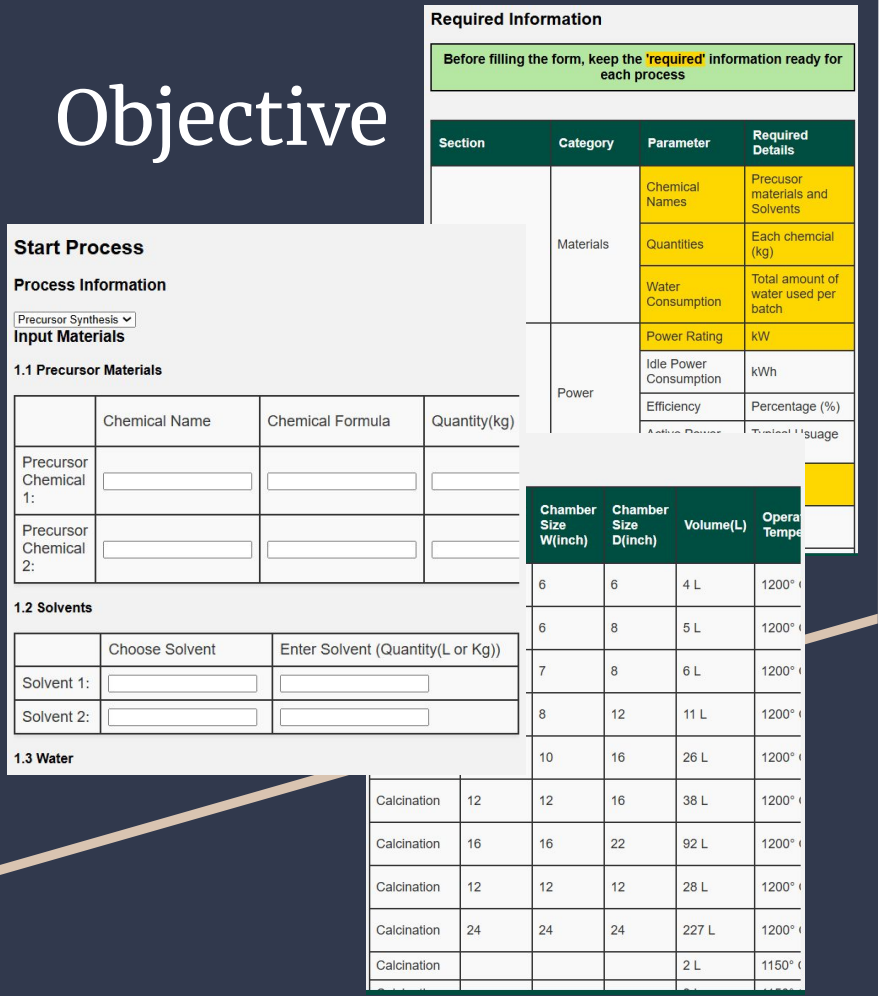
Objective



Required Information

Before filling the form, keep the 'required' information ready for each process

Section	Category	Parameter	Required Details
	Materials	Chemical Names	Precusor materials and Solvents
		Quantities	Each chemcial (kg)
		Water Consumption	Total amount of water used per batch
	Power	Power Rating	kW
		Idle Power Consumption	kWh
		Efficiency	Percentage (%)

Start Process

Process Information

Precursor Synthesis

Input Materials

1.1 Precursor Materials

	Chemical Name	Chemical Formula	Quantity(kg)
Precursor Chemical 1:			
Precursor Chemical 2:			

1.2 Solvents

	Choose Solvent	Enter Solvent (Quantity(L or Kg))
Solvent 1:		
Solvent 2:		

1.3 Water

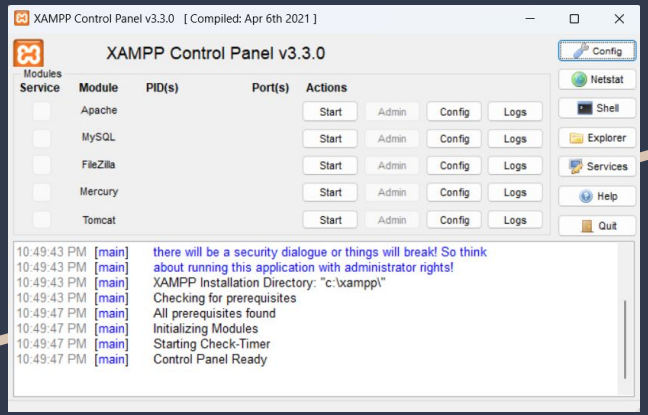
Chamber Size W(inch)	Chamber Size D(inch)	Volume(L)	Opera Tempe
6	6	4 L	1200°
6	8	5 L	1200°
7	8	6 L	1200°
8	12	11 L	1200°
10	16	26 L	1200°
Calcination	12	12	16	38 L	1200°
Calcination	16	16	22	92 L	1200°
Calcination	12	12	12	28 L	1200°
Calcination	24	24	24	227 L	1200°
Calcination				2 L	1150°

What are the success criteria? Plan?

We made three plans:

- Plan A:
  - An open source website that anyone could have access to, this would be the most useful for accessibility for research.
- Plan B:
  - An app you could download from Github or partial functionality of the website. This would allow for partial use as well as accessibility.
- Plan C:
  - An accessible script.

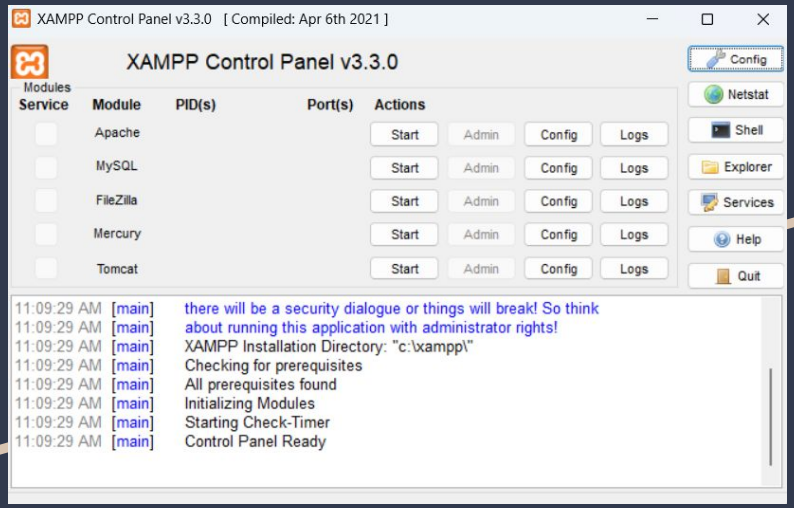
Implementation



During the implementation phase of the website, we based the design and layout of it on the design diagrams and graphs which we created.

- Software used
  - Html/css
  - Javascript
  - Php
  - Sql
  - XAMPP/APACHE

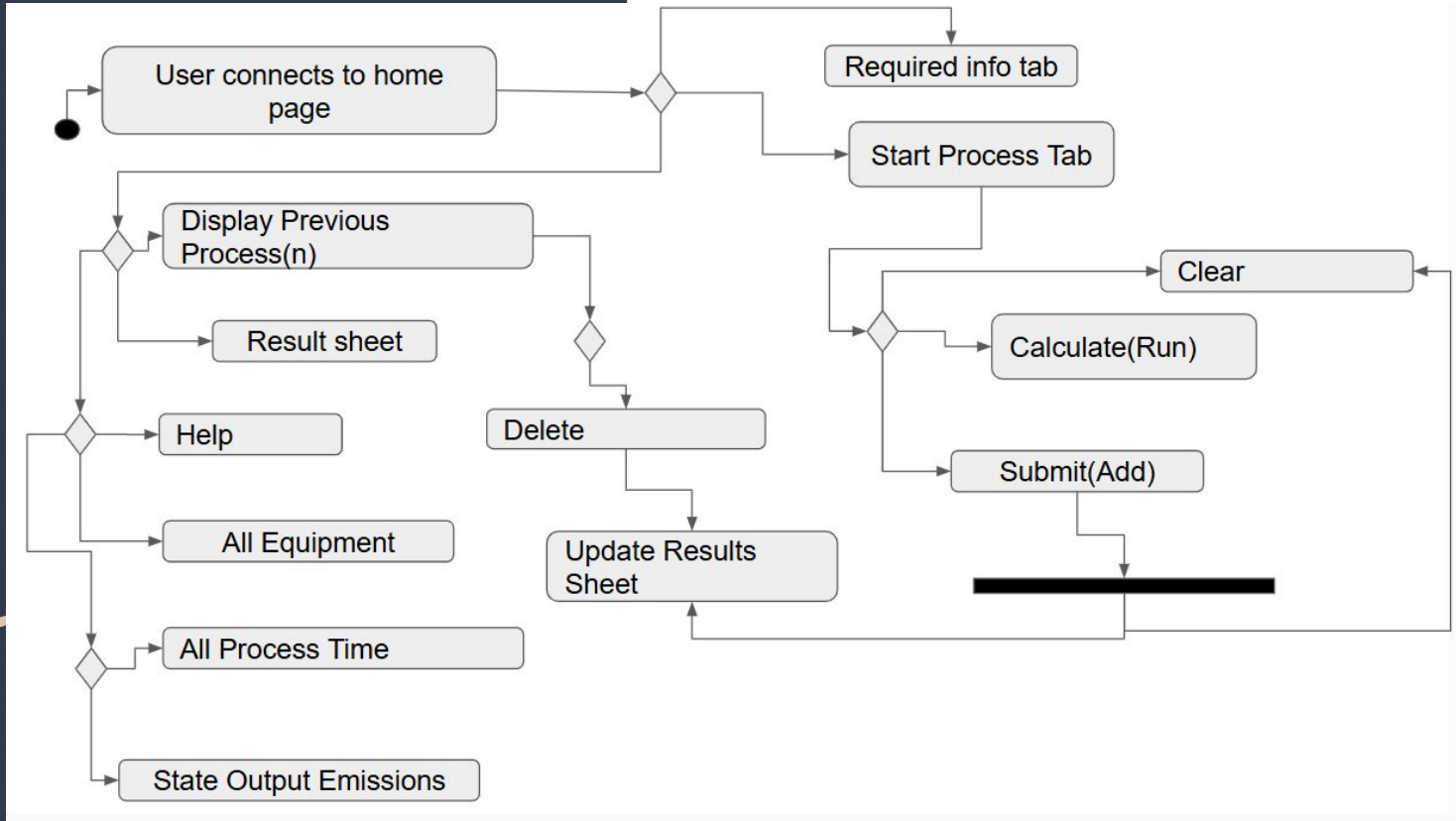
XAMPP
Apache distribution



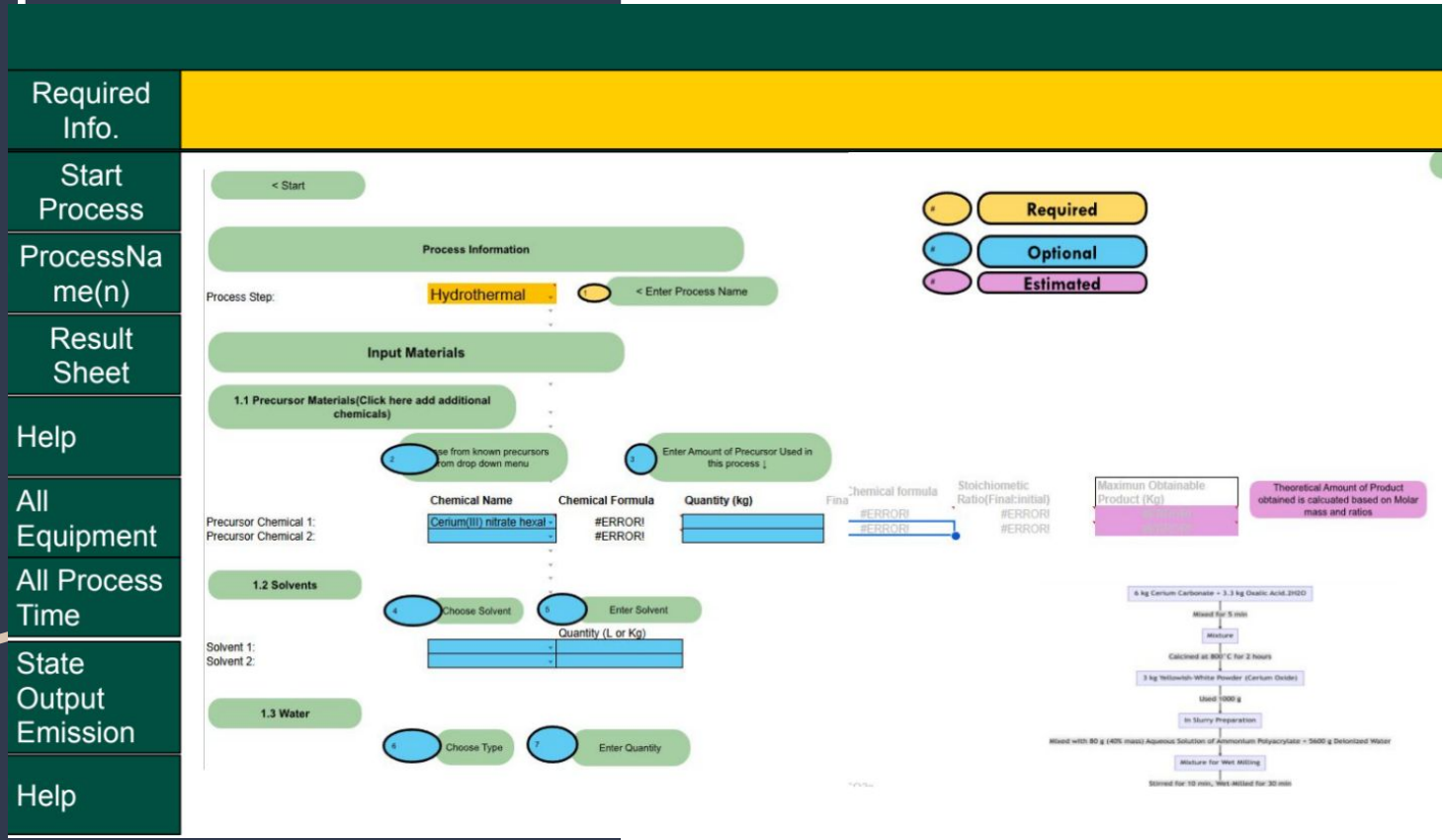
- Allowed us to create and test the website locally on our computer
- Allowed for the use of a database
- To run our website locally
  - Apache
  - MySQL

Show demonstration of website.

UML Diagram


User connects to home page
Required info tab
Start Process Tab
Display Previous Process(n)
Result sheet
Clear
Calculate(Run)
Help
Delete
Submit(Add)
All Equipment
Update Results Sheet
All Process Time
State Output Emissions

Example Format of Site



Questions?