Corey Wise – Team Leader

Discussed positions and formulated Gnatt chart.

Rosani elected to produce the Gnatt Chart

Took apart lathe and collect and organized objects.

Tool Slide – auto cad

Split in to, three groups of 3

Control: Corey , Miguel , Uc Tren

Electrical: Sunny, Sundeep, Nimesh

Mechanical: Rosani, Seam, Alexey

-Researched ball screws , the formula need and using this calculated the ball screws needed for our lathe

$$Lead = \frac{Chuck\ angular\ velocity\ (RPM) \times Feed\ rate\ \left(\frac{mm}{rev}\right)}{Manual\ angular\ velocity\ (RPM)}$$

$$T_{ball\ screw} = \frac{F_{mot} \times Lead}{2\pi \times \eta_{ball\ screw} \times 1000}$$

With these two formulas and also the breakdown of our forces and determining the cutting forces (produced by Miguel) we were able to obtain the toque on the ball screws

For the z-axis or The Apron we got a total force of **4632.5N**

$$F_{mot} = F_F + F_A = 1182.5N + 3450\ N = \mathbf{4632.5N}$$

Then using the above ball screw formula we get **8.2Nm**

And apply the safety factor we obtain the final **10.9Nm**

Repeating this method for the x-axis or tool post

We get $\mathbf{2868.2N}$ for total collective force which makes our ball screw torques **5.1Nm** which makes it **6.8Nm** with a safety factor.

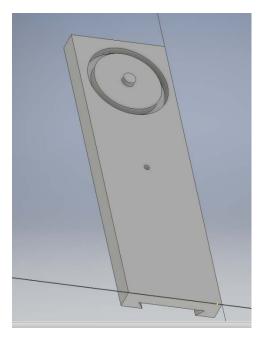--

Bill of materials for our contract

I was tasked with creating a rough bill of materials which include part from all three groups and the approximate pricing already placed into the contract and github

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3D auto cad of the gauge slide that sit atop the saddle (rough)

Still need some minor detail the be completed and polished for the future assemblys

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