**Project:**
**Magnetic Resonance Imaging Compatible Infusion Pump**

**Team Members:**
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**Date:** 2-17-04 thru 2-24-04

**Problem Statement:** MRI compatible infusion pump for gadolinium and saline solutions has pumps that are syringe driven but limited in their sequence capability and in the amount each can hold. The client wants two new pumps that are programmable and can effectively control the infusion rates of gadolinium and saline independently without having to refill the syringes. New pumps will not only save client’s time, but it will also save money since refilling the syringes wastes a lot of gadolinium.

**Restatement of Team Goals from Last Week:** We will meet Dr. Block and Professor Frank from the ME department this week to get an idea as to how we should approach in making the three designs. Professor Frank will help us figure out what types of designs we can use to solve the problem at hand. And Dr. Block will help us with the types of materials that are feasible with MRI. With their help, we hope to have two more designs sketched out by 2/24/03.

**Summary of Accomplishments:** We were able to meet with Professor Frank last week on Friday. He was very helpful. He went over all the pumps he knew of that would work with fluids and flow rates. He taught us the basics of three types of hydraulic pumps that exist. He also gave us a handout on various pumps that describes the function of each type of hydraulic pump and under what circumstances they work best. Professor Frank showed us the spur gear, vane pump and crescent pump that he had in his office. All of them work effectively with fluids. One can change the displacement or the rate at which the pump rotates to adjust the flow rate. All members of the group have gone through the handout and decided that spur gear and vane pump are two other good possible designs. However, we are
meeting tonight once again to finalize our three designs. We have not been able to meet with Dr. Block yet. Since Prakash works with one of Dr. Block’s colleague at the hospital, he will talk to him on Wednesday regarding our three designs and potential materials we can use to build our pumps.

**Individual Goals:**
1. Aman Ghotra: Finish Progress Report 5; Sketch design 1 in detail; Start working on Power Point.
2. Can Pi: Make an appointment with Dr Tompkins; Evaluate designs 1-3; Help with the Power Point.
3. Prakash Rao: Post Progress Report 5; Sketch design 2 in detail; Update Website; Help with the Power Point; Put the slides together.
4. Miguel Benson: Inform us on BSAC meeting; Sketch design 3 in detail; Help with the Power Point

**Statement of Team Goals:** We will start working on the Power Point tonight now that we have decided on three possible designs. We will continue to research for information relating to pumps that can help either help us understand the pump mechanism better or help us find companies that sell parts for hydraulic pumps. We will also meet with Dr. Tompkins next week to figure out how we will program the pump so it can deliver fluids at various flow rates. If Prakash is unable to get a hold of Dr. Block tomorrow, we will also set up an appointment with him.

**Rough Project Schedule:**
1/23/04: Made teams and assigned roles
1/29/04: Meet our client
1/30/04: Develop PDS
2/13/04: Brainstorm possible designs
2/24/04: Sketch out the three designs
2/27/04: Evaluate Ideas and work on power point
3/05/04: Mid-Semester Presentation
3/05/04: Choose final design
3/05/04 – 4/23/04: Work on final design
4/23/04: Work on final power point, final paper and PDS
4/30/04: Poster Presentation

**Difficulties:** None. Professor Frank helped us get back on track by teaching us about hydraulic pumps.

**Activities:**
Aman Ghotra: Progress Report 5; Research; Read the handout; Met Frank; Group meeting (5.0 hours)
Can Pi: Met frank; Research; Set up appointment; Group meeting (4.5 hour)
Prakash Rao: Met Frank; Research; Updated the Website; Group meeting (4.5 hour)
Miguel Benson: Met Frank; Research (2.5 hour)

**Running Total: 63.0 Hours**
Aman Ghotra: 18.0 hours
Can Pi: 16.0 hours
Prakash Rao: 17.0 hours
Miguel Benson: 12.0 hours