

Project Title: **Prototype Cell Wash Base Unit**

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Area: **Multidisciplinary**

Sponsored by: **Zimmer Biomet**

The most common hospital procedure is allogeneic red blood cell (RBC) transfusion. Currently, the RBC rejuvenation and wash devices are stationary and are often located in a blood bank or in the operation room. Oftentimes, each step of the blood wash process is performed by a different device, which adds time. A need has been recognized by Zimmer Biomet, headquartered in Warsaw Indiana, for a more efficient, portable, and faster system. The washing system will be designed from the current process outlined in Figure 1 below.

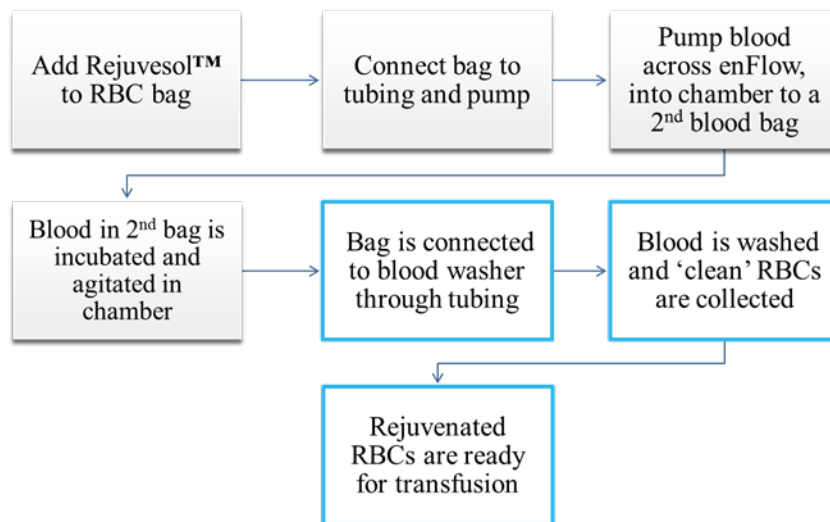


Figure 1: Blood Transfusion Process

Zimmer has requested a senior design project to create a cell wash base unit to implement the blue highlighted parts in Figure 1 above. This project is composed of both mechanical and electrical subsystems. The design is intended to reduce the waste caused by disposable components used in the typical blood transfusion process. The objective for the team will be to create the drive and control systems for the existing rotor design. The device must be able to drive a rotor through electrical circuits generating magnetic force. Additionally, the device must be able to be fixed to a cart and rolled in the OR, ICU, or patient floor. The design will include the electronic circuitry, electronic feedback, mechanical components, and stability of the rotor.