

## 1.2 Customer Needs

The customer needs were extracted from the initial project description that our sponsor provided us. Key customer needs were described within the project description section. (Flater, 2017). Customer needs were also gathered through conference with the sponsor. Table 1 below displays the information that was provided to us through the project definition or through conference with the sponsor, the customer response and the interpreted need the team will need to apply for the project.

Table 1 *Customer Needs derivation table*

Information Provided	Verbalized Need	Interpreted Need
“Ensure uniform distribution of polymer infill while eliminating air voids/porosity for a variety of bulk shapes.”	Lattice must be infiltrated with silicone without voids	Fills lattices with specified polymer
		Fills lattice without porosity
	Can fill multiple lattice geometries	Fills small cube, large cube, and cylindrical lattices
		Specimens unconstrained in height
“Validate infiltration effectiveness”		Specimens constrained by length and width
“Be compatible with AFRL processes and equipment.”		Ensure a working device
“Provide user and safety manuals.”		Use standardized equipment
		Use standardized parts
		Provide guidelines for safe and effective device operation

The needs expressed by the sponsor and in the project brief were broken down to understand what the customer needs. The team then transformed the customer needs into technical statements. The technical translations of the customer needs were adopted in order to eliminate miscommunication between the team and the sponsor. This is shown in Table 1, where the sponsor expressed that multiple geometries should be able to be filled. The team was able to clarify that the device must be suitable for a small cube, a large cube, and a cylindrical lattice. Some more technical aspects were established which included that the specimen is constrained in length and width but has a variable height. In addition, some of the sponsor's information was decoupled to identify each need for the project. In the project definition, our sponsor specified that the device must "ensure uniform distribution of polymer infill while eliminating air voids/porosity for a variety of bulk shapes." This was broken up into two separate needs: the lattice being infiltrated with silicone without voids and the device should be able to accommodate different geometries. (Flater, 2017)