

Team 501 Customer Needs

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Customer Needs

Customer needs are interpreted statements that show what the customer wants from a project. It is important to quantify the customer needs to direct the success of the project. The project brief gives engineers the basic need of the project, but the customer possesses further detailed needs that must be obtained. Many different methods of gathering customer needs exist, but a teleconference was all that was needed for this project.

A teleconference was held between our design team and our sponsor Dr. Flatter (on 9/17/2019). During this call, the current steel powder recycling process was broken down into three basic phases, and all pertinent information was recorded. Additionally, with the permission of our sponsor, a voice recording was taken for further analysis. It may be noted that while our team had begun the conference with pre-written questions, most were not asked as they had been unknowingly answered by our sponsor. Customer statements must be translated into simpler, tangible, design statements. These interpretations must reflect the customer's statements, not specify solutions, and be worded in such a way to not impede the design team's innovative freedom. The statements from Dr. Flater were interpreted and can be seen in Table 1.

The teleconference started with a project introduction from Dr. Flater. This was initiated by the question, "What are the specific uses of the current method?" Dr. Flater then explained what the current process is. During this explanation, it was made clear that the main needs are increasing the recycled powder (needs number 1 and 5) and continuity with the existing process (needs number 2 and 4). These are main needs because they were stated multiple times in different ways.

The next two questions were related to the likes and dislikes of the current system. These customer statements further showed the importance of increased powder recycled (needs number 6, 8, and 9) and further enforces safety (needs number 3 and 7). Need number 9 is specifically important to note. This is important because it specified a scenario that is a problem area for the current process. Removing powder from tight areas must be a topic of research.

Table 1. Synthesized customer needs from sponsor's statements.

Customer Needs - Synthesizing Customer Data		
Question/Prompt	Customer Statement	Interpreted Needs
What are the specific uses of the current method?	Recover as much powder through stage 1, 2 and 3	1. The amount of powder recovered is increased somewhere in the process
	Device is connected or not connected to an existing process, preferably integrated	2. The product interfaces with existing processes
	Must be safe for operators to use	3. The product is safe for operators to use
	Should be compatible with existing hardware	4. The product is compatible with existing hardware
	Should recycle powder more efficiently and effectively	5. The product recovers an increased quantity of powder
What do you like about the current method?	The current system currently has approximately 90% recovery, but we want more	6. The product increases the total percentage of recycled powder
What do you not like about the current method?	Dry methods are less safe, (fire and explosion hazard) but you should consider them	7. The product considers dry method if they are safe
	The wet method is effective but the powder that it removes is wasted	8. The product considers methods that helps recover more recyclable powder
	Big problem is cylinder filled with lattice is that there are a ton of little nooks and a vacuum can't pull it out	9. The product improves the quantity of powder removed from tight areas

Many of the interpreted needs overlap in such a way that they can be narrowed down into three fundamental needs. These needs are:

1. The product increases the amount of recycled powder in the process.
2. The product does not impede the existing process or hardware.

3. The product operates with safety in mind.

Using these fundamental needs, the customer satisfaction can be ensured in this project. These needs will be kept in mind for project targets and concept selection.