

Risk Item	ID	Effect	Cause	Likelihood	Severity	Importance	Action to Minimize Risk	Owner
Cannot get ProMetal powder	1	Test results cannot be directly related to ProMetal process	ProMetal wont provide powder or not given enough leadtime to provide it	1	2	2	Contact ProMetal / Find Replacement powders	Team
Cannot get ProMetal binder	2	Test results cannot be directly related to ProMetal process	ProMetal wont provide binder or not given enough leadtime to provide it	2	2	4	Research alternative binders compatible with metal powders	Matt
Run out of ProMetal supplies	3	Cannot finish relating test results to ProMetal process	Careless with supply of powder/binder	1	2	2	Test with ProMetal powder/binder only when necessary, contact ProMetal to determine availability of extra supplies	Team
Project goes over budget	4	Cannot complete project	Parts are too expensive	1	2	2	Research alternate suppliers for parts	Team
	5	Cannot complete project	Design includes too many high price items	1	2	2	Utilize alternative designs using cheaper parts	Team
Ordered parts do not arrive in time	6	Design cannot be assembled	Wrong part ordered	1	2	2	Maintain contact with suppliers / order parts as soon as need is recognized	Team
	7	Design cannot be assembled	Supplier send the wrong part	2	2	4	Maintain contact with suppliers / order parts as soon as need is recognized	Team
	8	Design cannot be assembled	Late ordering, unreliable supplier	2	2	4	Maintain contact with suppliers / order parts as soon as need is recognized	Team
	9	Design cannot be assembled	Delayed for weather	2	2	4	Maintain contact with suppliers / order parts as soon as need is recognized	Team
Wrong parts recieved	10	Design cannot be assembled	Team member orders wrong part	1	2	2	Have another member check order before sending, call suppliers as soon as errors are recognized	Team
	11	Design cannot be assembled	Supplier sends wrong part	2	2	4	Contact supplier as soon as parts are received to begin exchange process	Team
Cannot assemble the design	12	Cannot complete project	Interference between parts in design	1	1	1	Use 3D CAD modeling to ensure there are no interferences between parts	Nick
Lifting mechanism binds	13	Cannot create multiple layers of powder	Lifting screws not synchronized properly	2	3	6	Design lifting screws with timing belts to ensure synchronous motion	Nick & Chris
Motor is too weak to move build platform	14	Design is not completed, failure to satisfy customer needs	Insufficient research into available Fab@Home parts, failure to order new parts if needed	1	3	3	Determine compatibility of Fab@Home parts, order larger motor if needed	Nick & Chris
No motor control	15	No motor control	Wrong wiring	1	2	2	Research motor control	Chris
	16	No motor control	Control software not designed properly	1	2	2	Research motor control	Chris
Build platform step is larger than marginal value	17	System fails to satisfy customer needs	Insufficient research into available Fab@Home parts, failure to order new parts if needed	1	3	3	Determine compatibility of Fab@Home parts, order new leadscrew if needed	Chris
Parts break	18	Cannot finish assembly, need to reorder/remachine parts	Poor design and insufficient analysis	1	2	2	Use FEA to analyze critical load bearing parts and design to avoid braekage	Nick
Powder density is not even throughout test specimen	19	Failure to satisfy customer needs	System is poorly designed	2	2	4	Build early, allow room for error	Team
	20	Failure to satisfy customer needs	System is not an improvement to ProMetals'	2	2	4	Follow through with risk assessment, early testing	Team
	21	Failure to satisfy customer needs	Testing procedure is not accurate	2	2	4	Accurate testing procedure, validate results	Carlos
Powder layer is uneven thickness	22	Spreader creates curved surface	Deflection of spreader	1	3	3	Use FEA to analyze spreader and design to avoid large deflection	Nick
	23	Powder is unevely distributed	Spreader head is not parallel to build platform	1	3	3	Take extreme care when mounting spreader head to ensure parallelism	Team
System cannot maintain accurate spreading depth	24	Cannot properly create test specimens	Deflection in spreader supports	1	2	2	Use FEA to analyze spreader supports and design to avoid large deflection	Nick
	25	Cannot properly create test specimens	Deflection in build platform and supports	1	2	2	Use FEA to analyze build platform and design to avoid large deflection	Nick

