CNC Saw Outfeed Table

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Client: Avvid Corporation
A high precision high production machine shop.
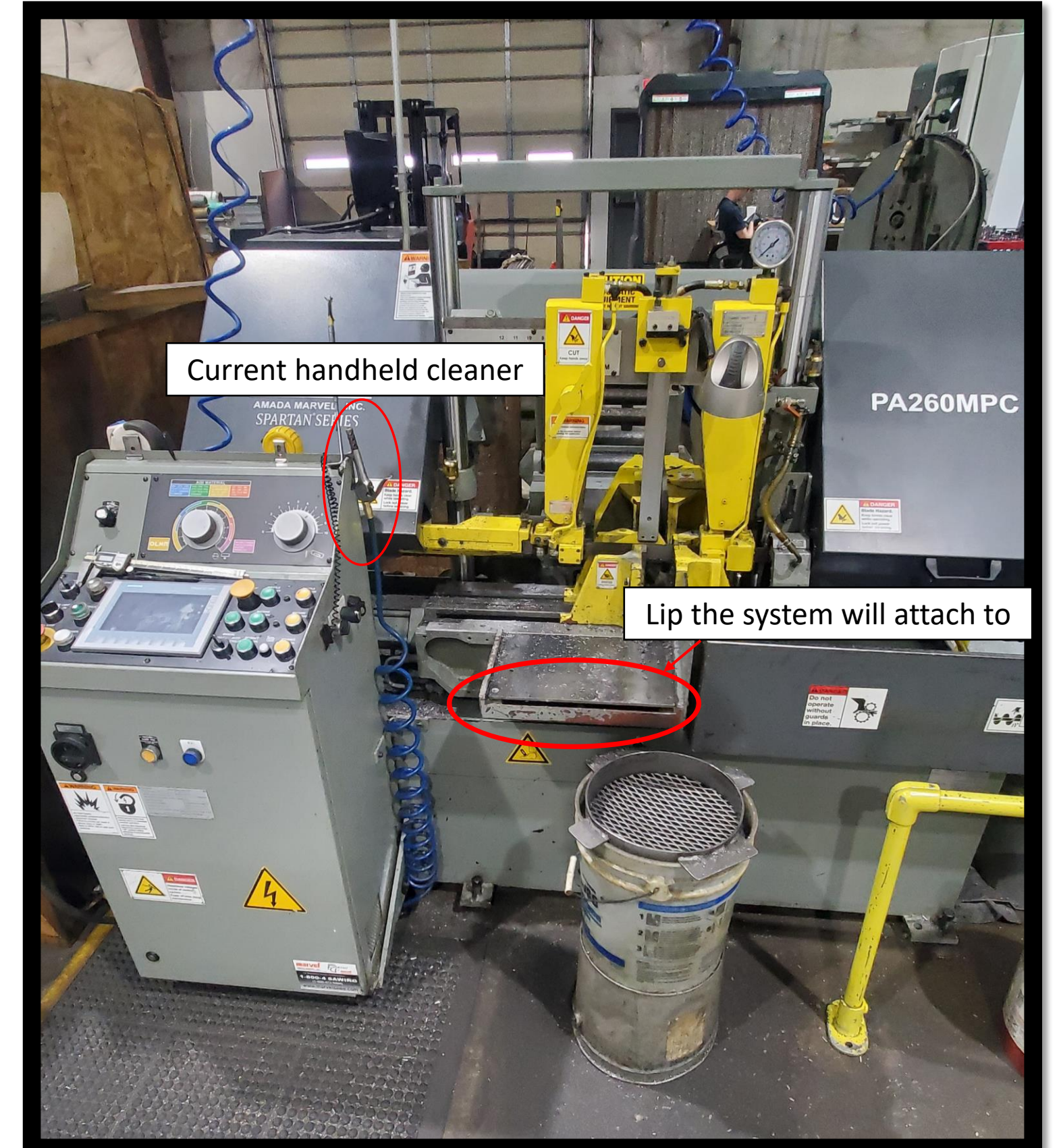
AVVID CORPORATION

Project Description:

- Self-contained modular system that automatically cleans and dries part blanks from CNC bandsaw
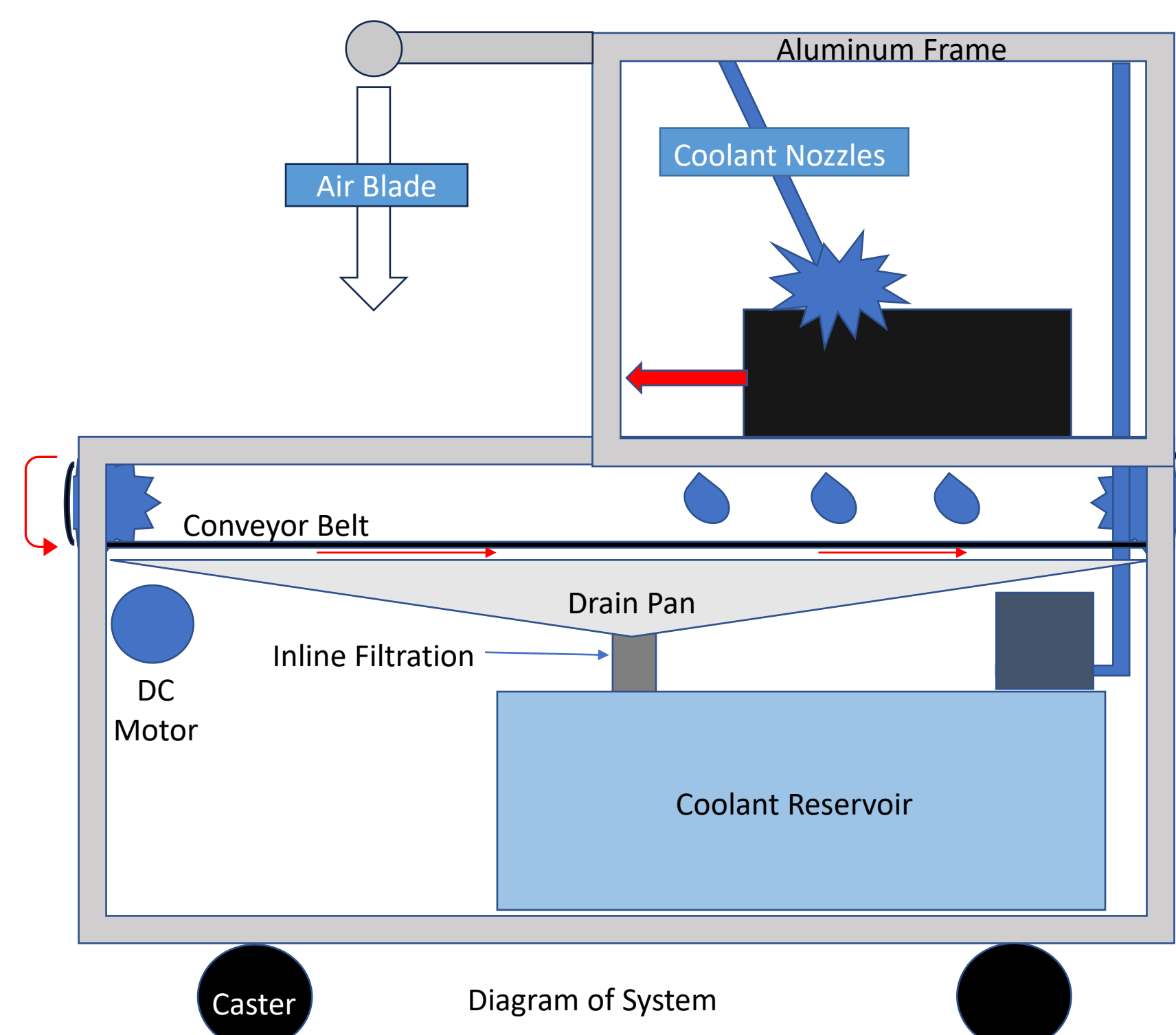
Problem:

- Currently parts are cleaned by hand with a hand nozzle
- CNC machines can usually be left alone, this saw cannot be due to the parts being cleaned by hand
- Previous system has faulty sensors and frame joint failures

Initial Design:

- A previous design team constructed a system that was not robust enough
  - Used sensors and an Arduino to operate the systems that failed
- This design will limit failure modes to improve reliability

Current handheld cleaner

Lip the system will attach to

PA260MPC

CNC Saw which cuts blanks to be rinsed and dried

Aluminum Frame
Coolant Nozzles
Air Blade
Conveyor Belt
Drain Pan
Inline Filtration
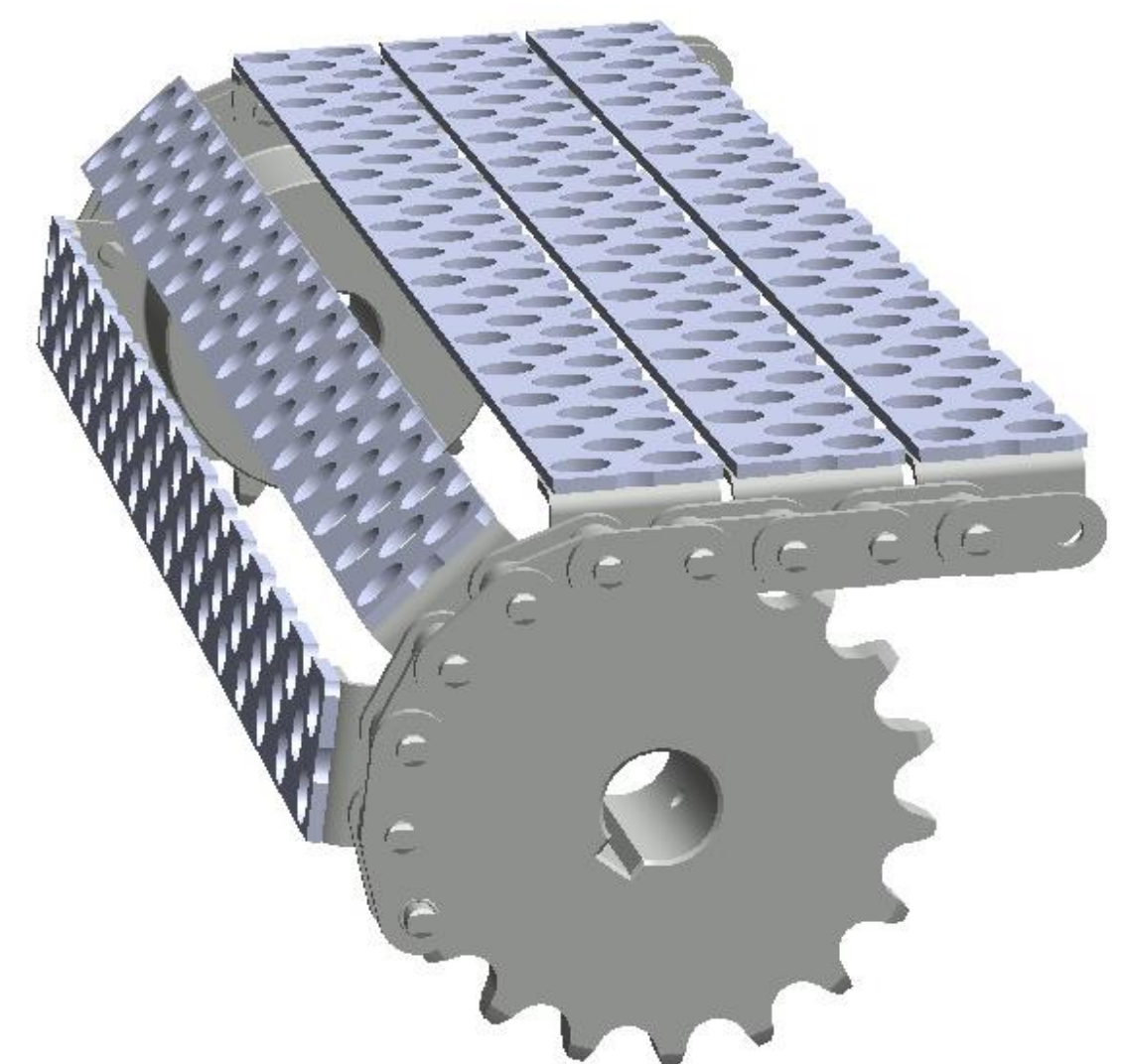DC Motor
Coolant Reservoir
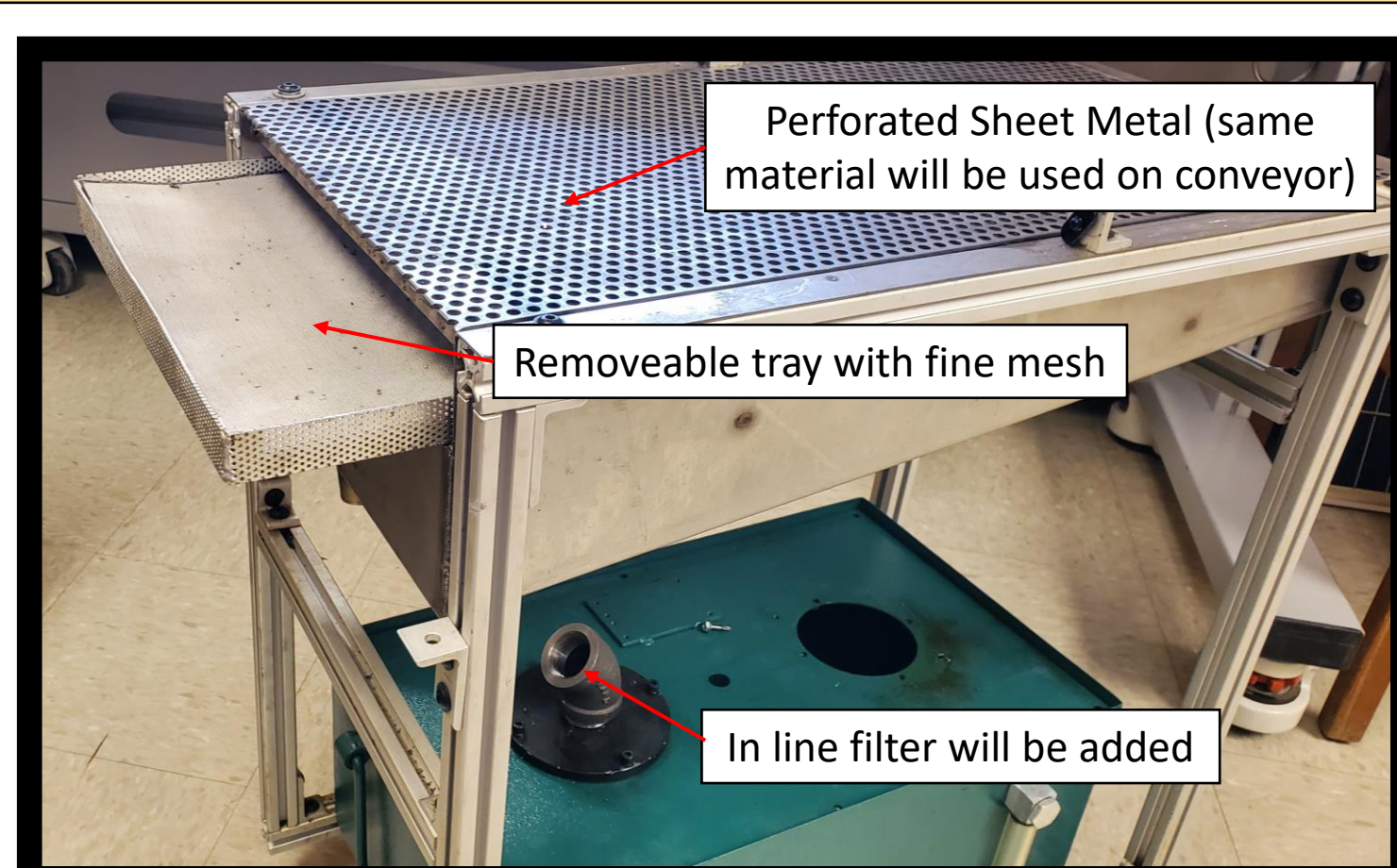Caster
Diagram of System

Objective:

- Clean each blank so that no shavings remain when the part is to be placed in a CNC Mill
- Self-cycle coolant to rinse the parts
- Supply compressed air in the form of an air blade to dry the parts
  - Air will be supplied from Avvid's inhouse air system (1/4 inch)
- Deposit the cleaned parts in a container
- Meet the client's desired levels of robustness and longevity
- Motor and pump will be powered by a simple 110V plug
  - 1/8 HP pump will be operated via a switch
  - DC motor will be operated in conjunction with a variable speed controller

Design Requirements:

- Allow for constant supply of coolant and air to be activated through manual switches
- Recycle the coolant using a filtration system and pump
- Move the parts through the system with a conveyor which will be custom designed and fabricated
- The slat depicted in the conveyor concept (see right) will be cut using a waterjet from a perforated sheet of steel
- The chain and sprockets will be purchased together to ensure fit

Conveyor System Concept

Perforated Sheet Metal (same material will be used on conveyor)

Removeable tray with fine mesh

In line filter will be added

Filtration System

Deliverables:

- Running and robust outfeed system
- Parts Guide with lists of parts used
- Schematic Diagrams
- Operating Instructions and Safety Documents