

SHARP Intelligent Surgical Instrument Management (iSIM) project- GoldFinger

Overview of iSIM project



Integration of Bigbox within surgical instruments flow in OT

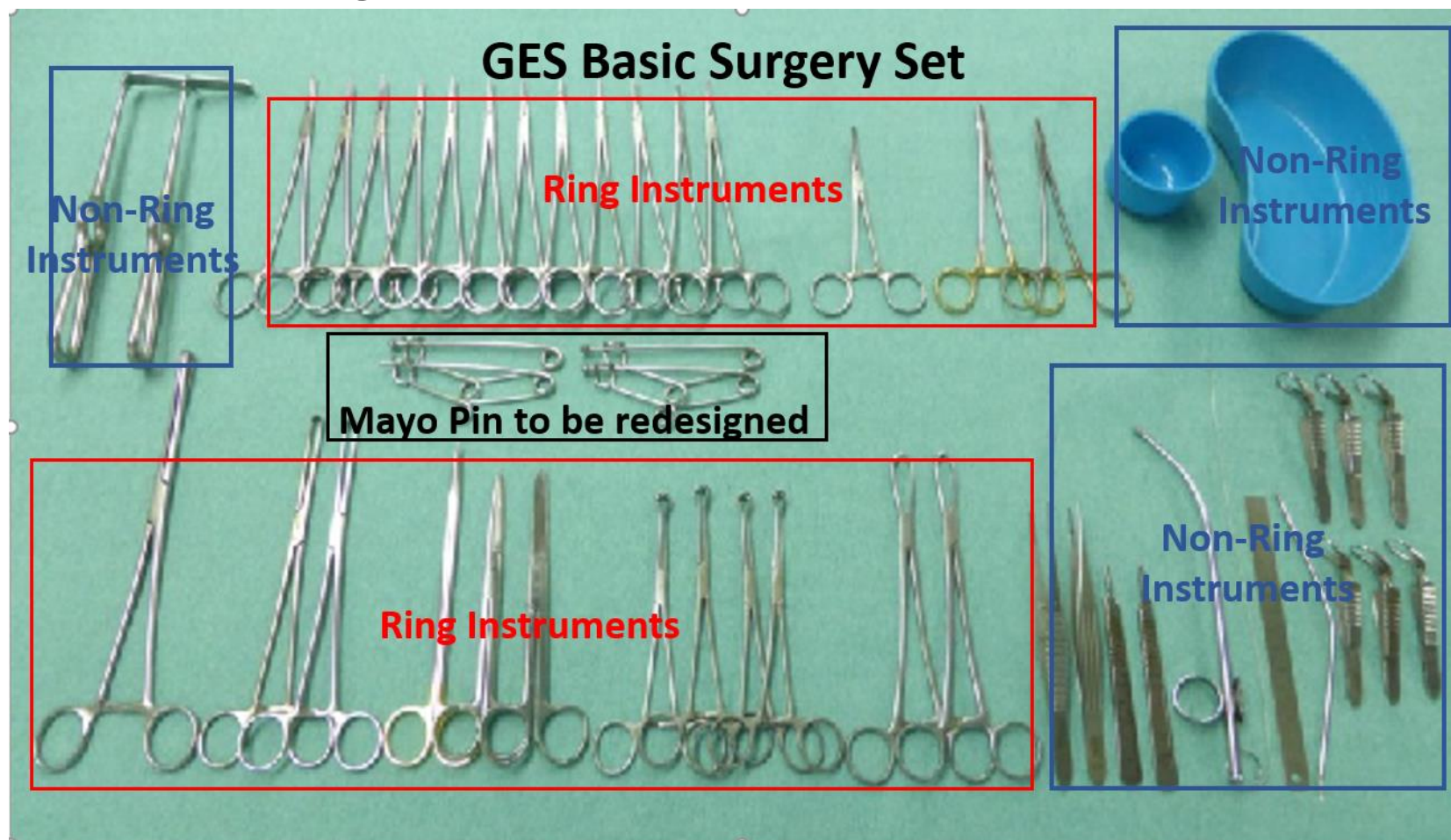


Challenges faced:

1. Manpower performing repetitive and low value adding tasks.
2. Staff are vulnerable to strain injuries as they pick and pack instruments throughout their entire shift.

Project scope- Goldfinger

1. Covers the basic surgical sets – about 50% of the total instrument volume



Restricted, Sensitive (Normal)

Project scope- Goldfinger

2. Robotic solution (Bigbox) will be able to:
 - a) Inspect and perform defect checks on the instruments for cleanliness, rust and dirt, non-aligned jaws and shaft, stiffness, functionality and completeness of parts
 - b) Flag for replacement if there are faulty or missing instruments
 - c) Envelope wrap selected instruments (e.g. forceps, handle bard parker, spear redivac, etc.) before placing into instrument tray
 - d) Line instrument tray with non-linting absorbent tray liner
 - e) Organise the instruments in a way that allows steam penetration
 - f) Include chemical integrator on the instrument tray

Expected outcomes- Goldfinger

1. Potential productivity savings

| Type of Activity | Current State | How solution can achieve productivity savings | Estimated total time saved (minutes) |
|---|--|--|--|
| Assembly and inspection of instruments | 1. Staff manually assembles and inspects instrument sets (15 min/set) | 1. Robotic arm to do quality control and assemble instruments into sets or as individual units | 1. 15mins per set |
| Wrapping of Sets and Pouches into linen/paper sets or instrument containers | 1. Staff folds and place into container (35sec/set) 2. Staff places lid on the outer container to seal the container system (10sec/set) | 1. Robot to fold instrument list and place it into the container. 2. Robotic arm will then place lid on top of container. | 1. 35 sec per set 2. 10 sec per set |

Restricted, Sensitive (Normal)

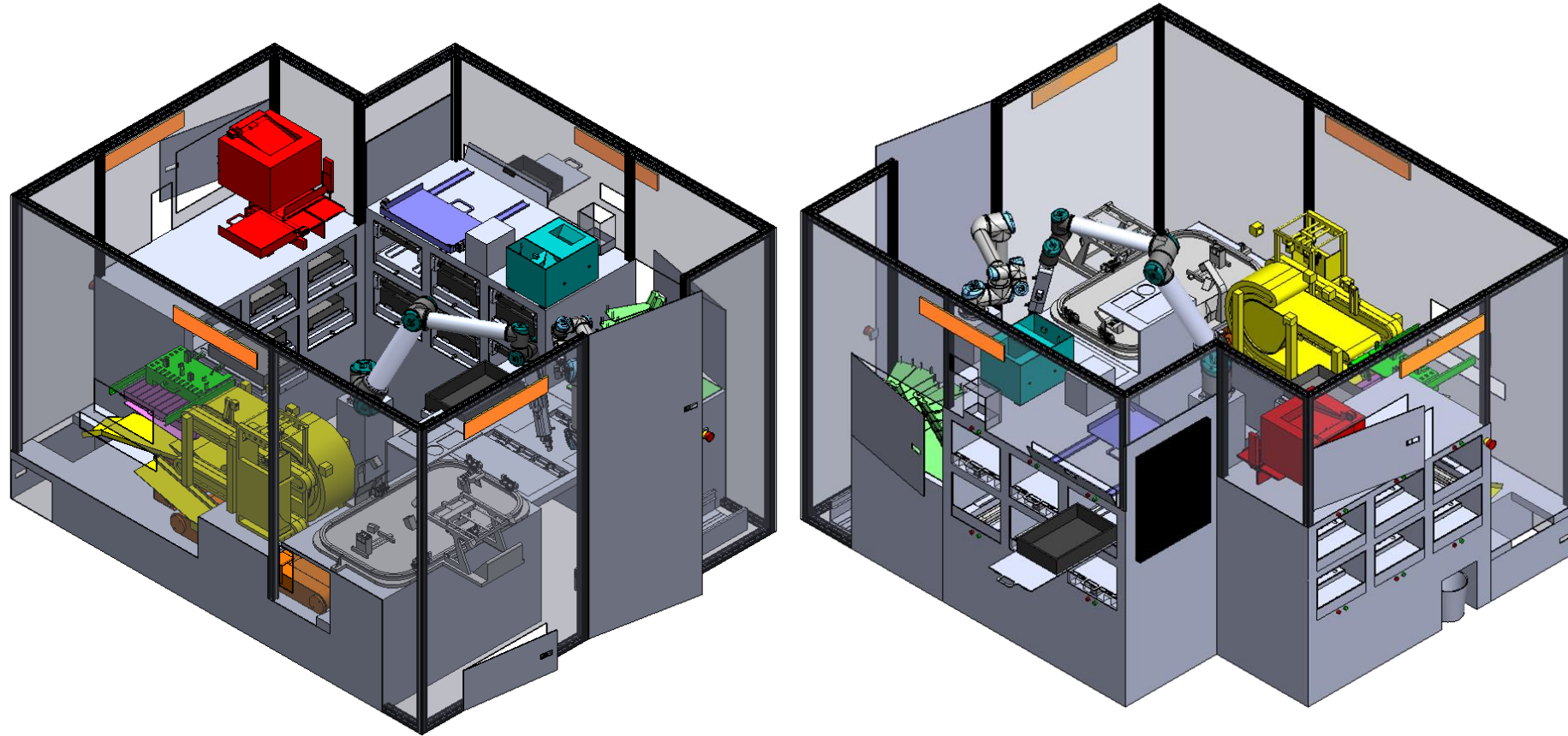
Expected outcomes- Goldfinger

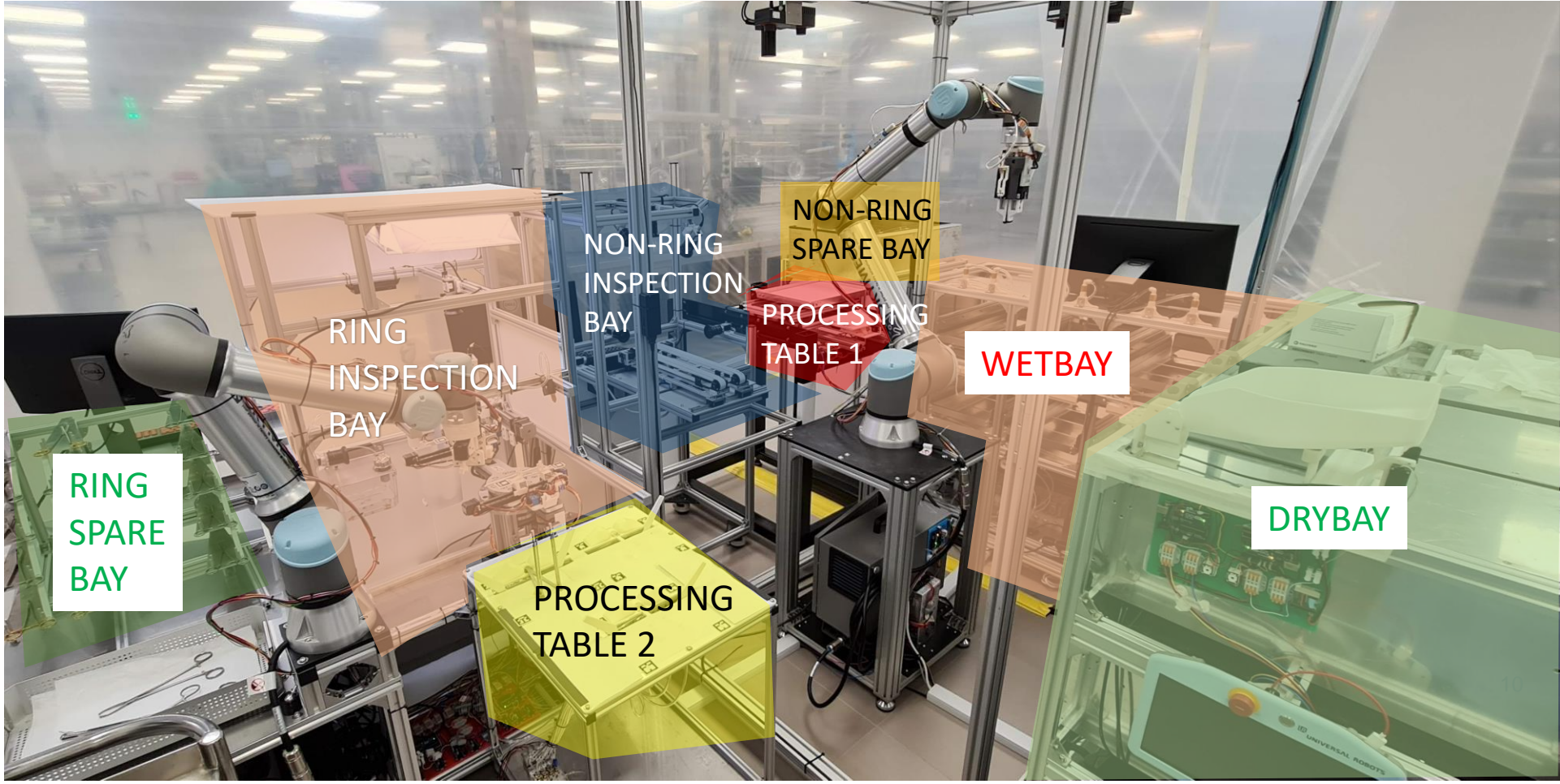
2. Reduced risk of injury at work

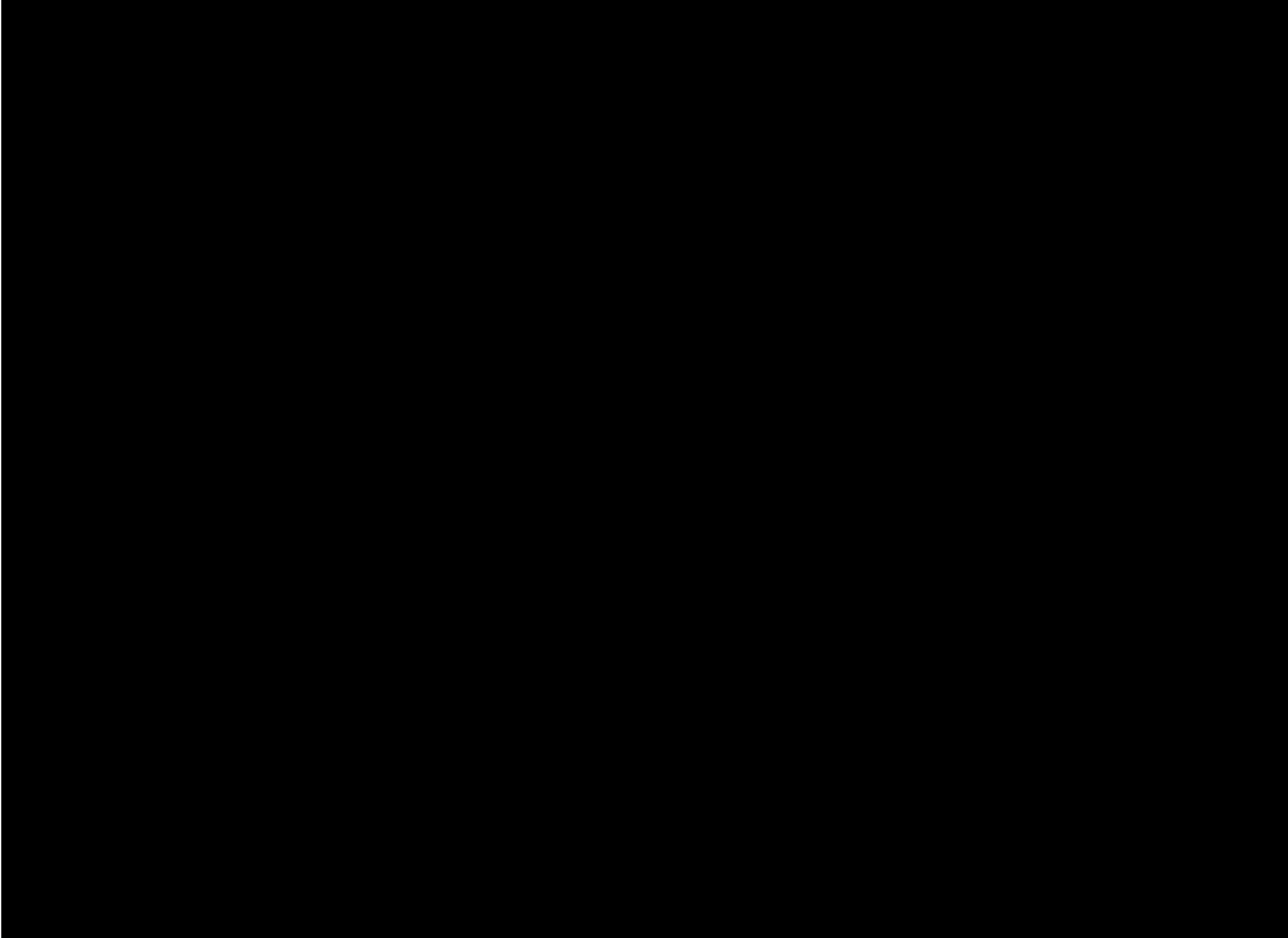
- a) Staff are vulnerable to repetitive strain injury movements as they pick and pack the instruments through their entire shift.

Current capabilities- Goldfinger

Approved Design

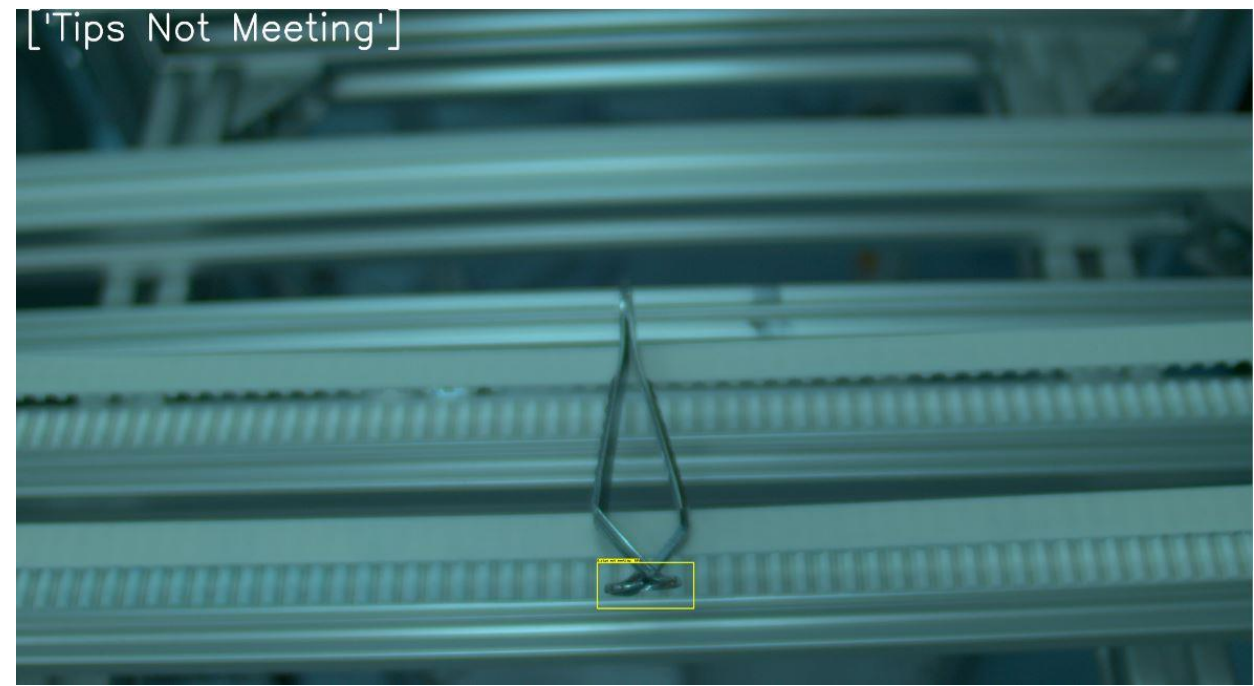
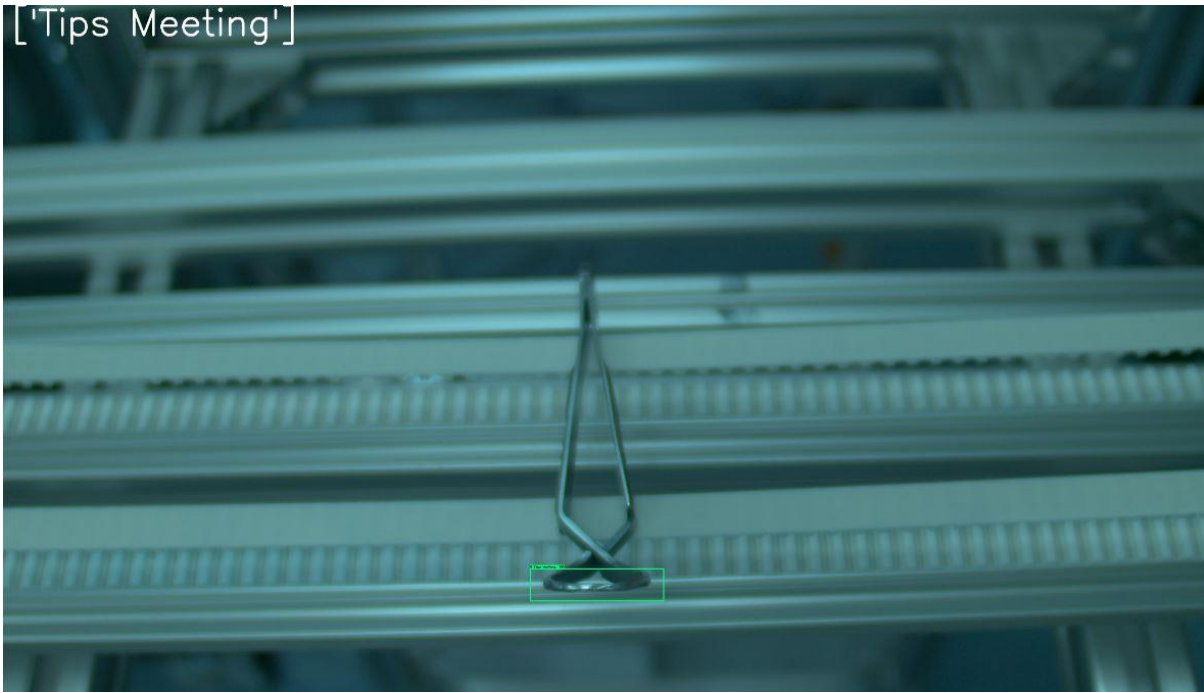




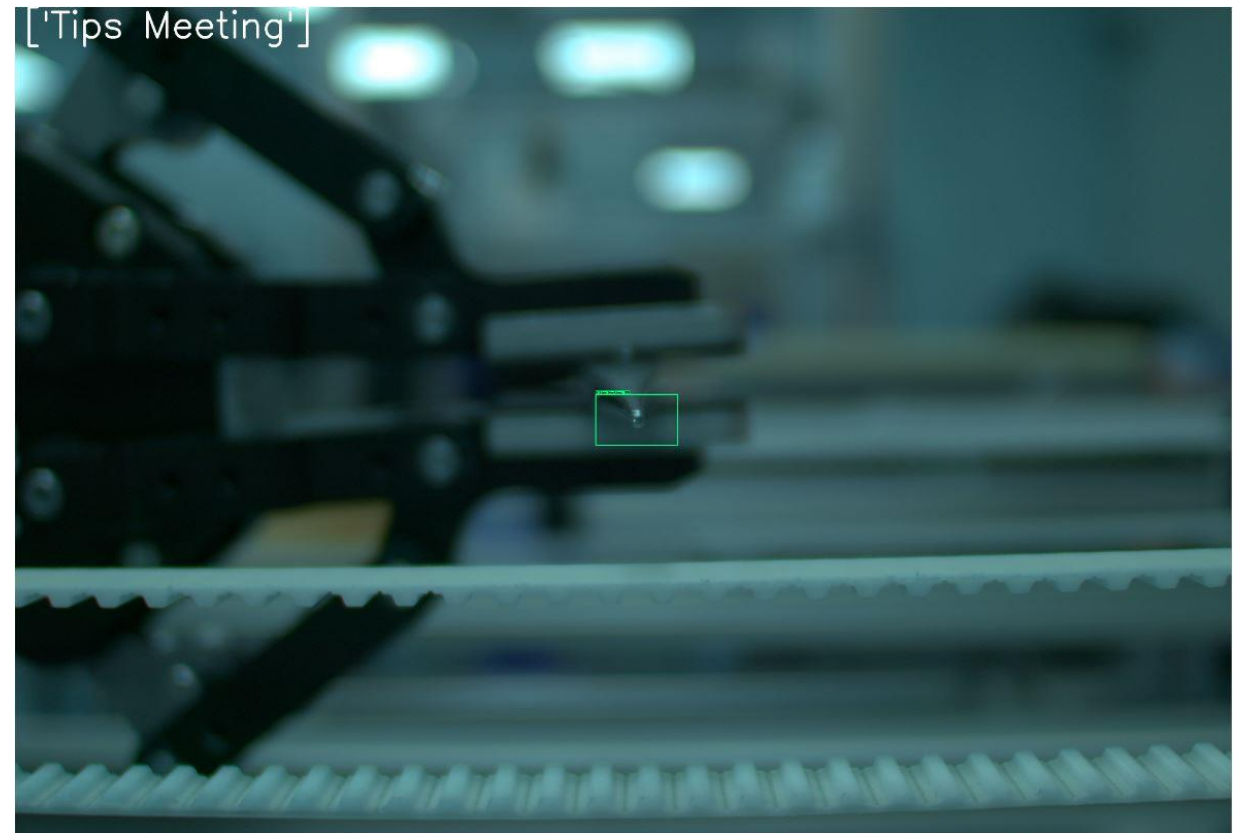
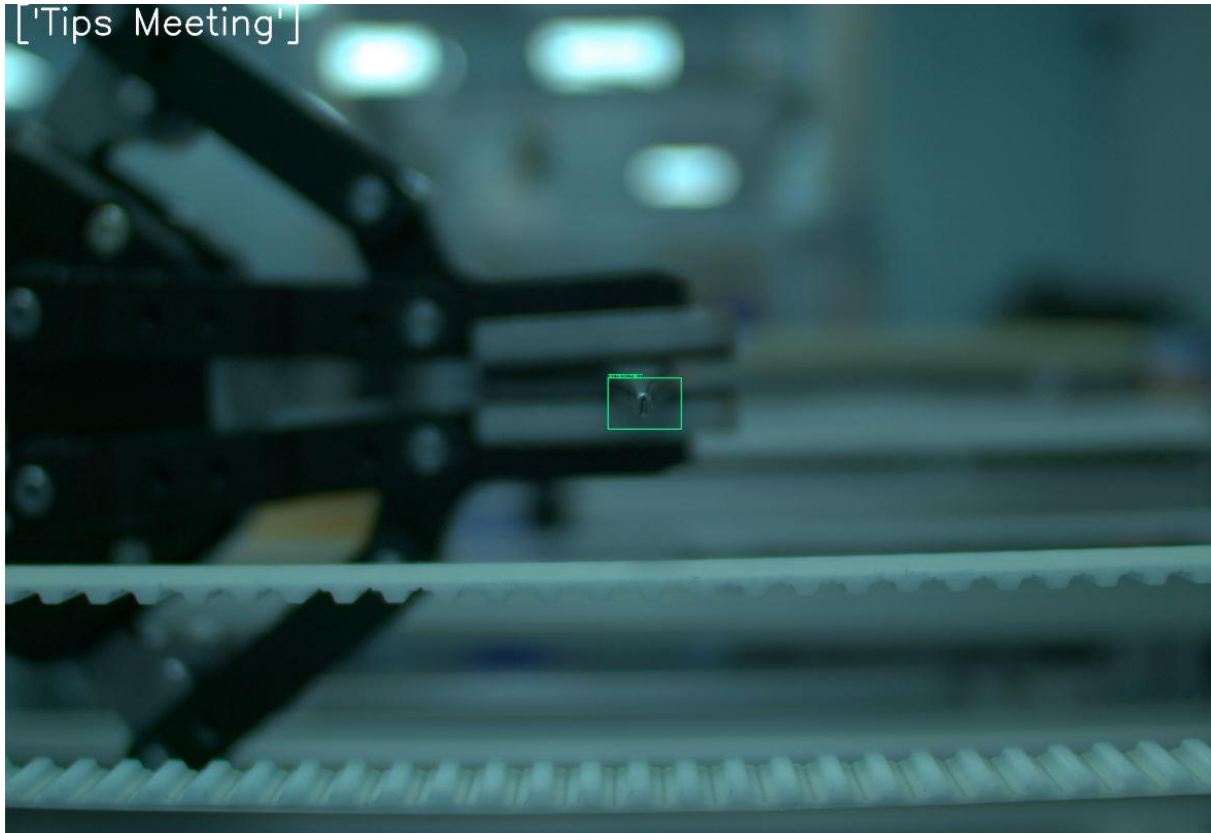


AI-Based Inspection

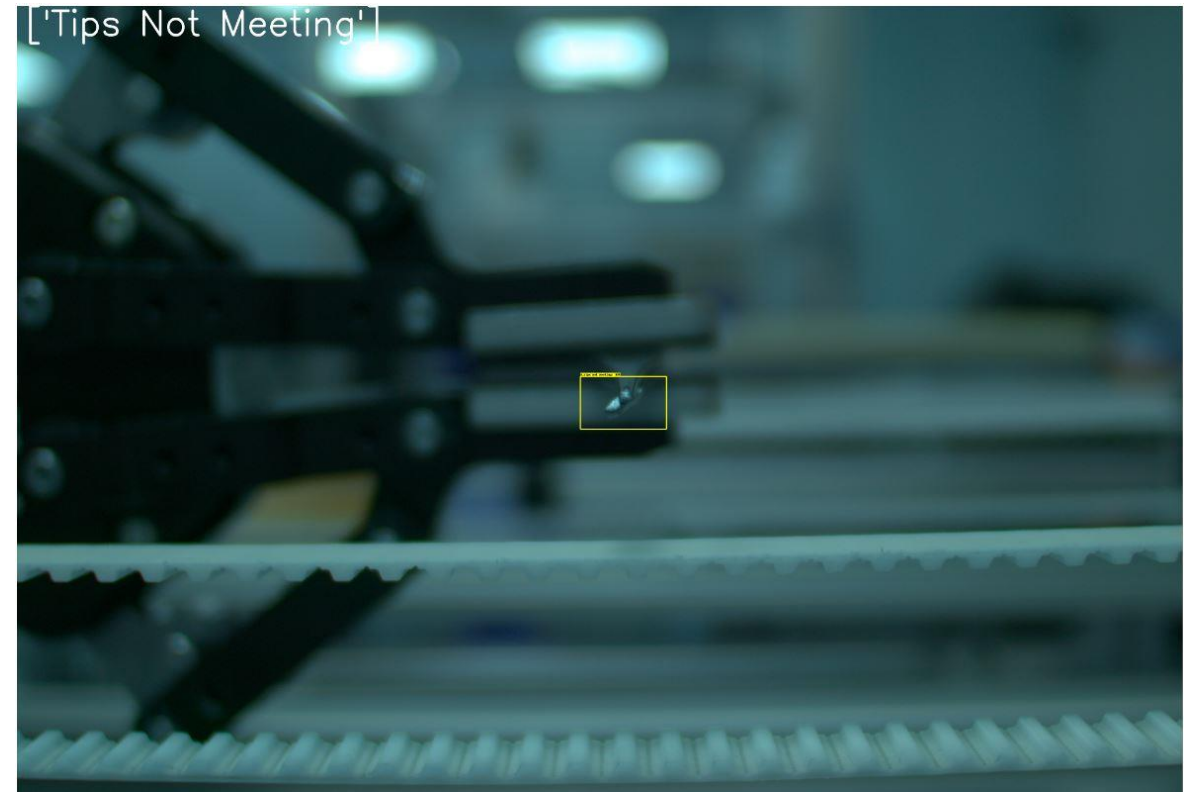
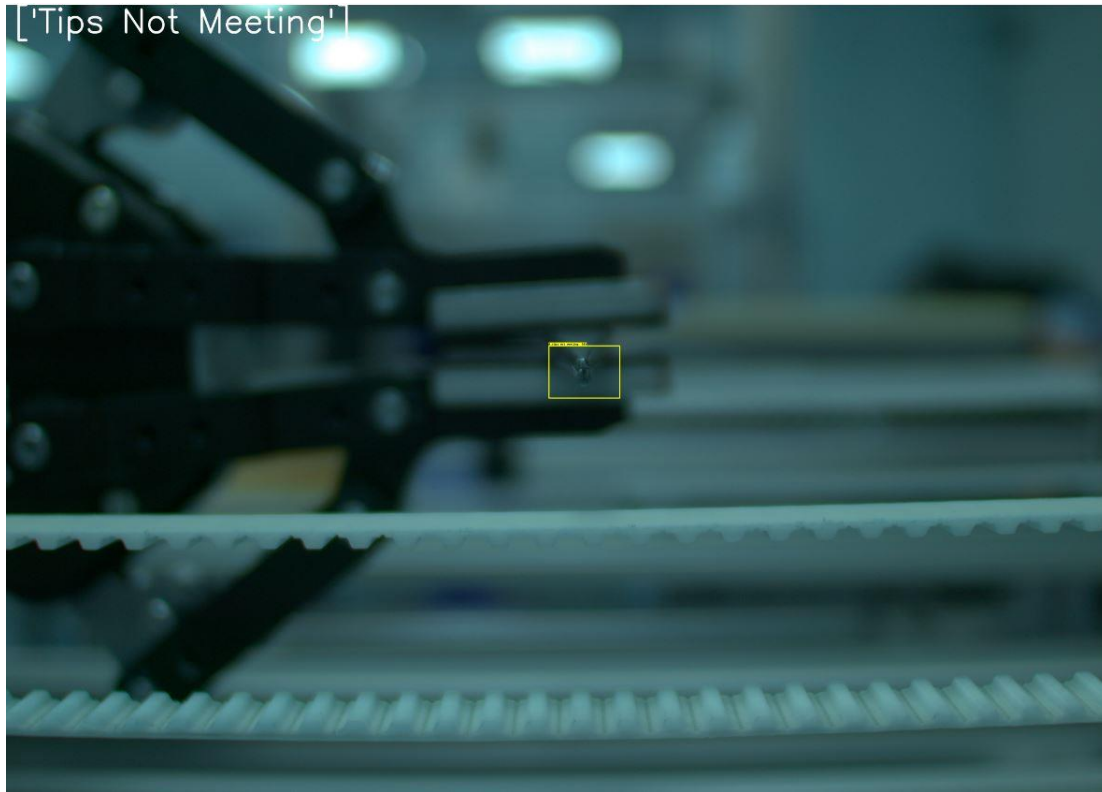
Tips not meeting (Clip towel jones)



Tips not meeting (Forceps)



Tips not meeting (Forceps)



Misalignment

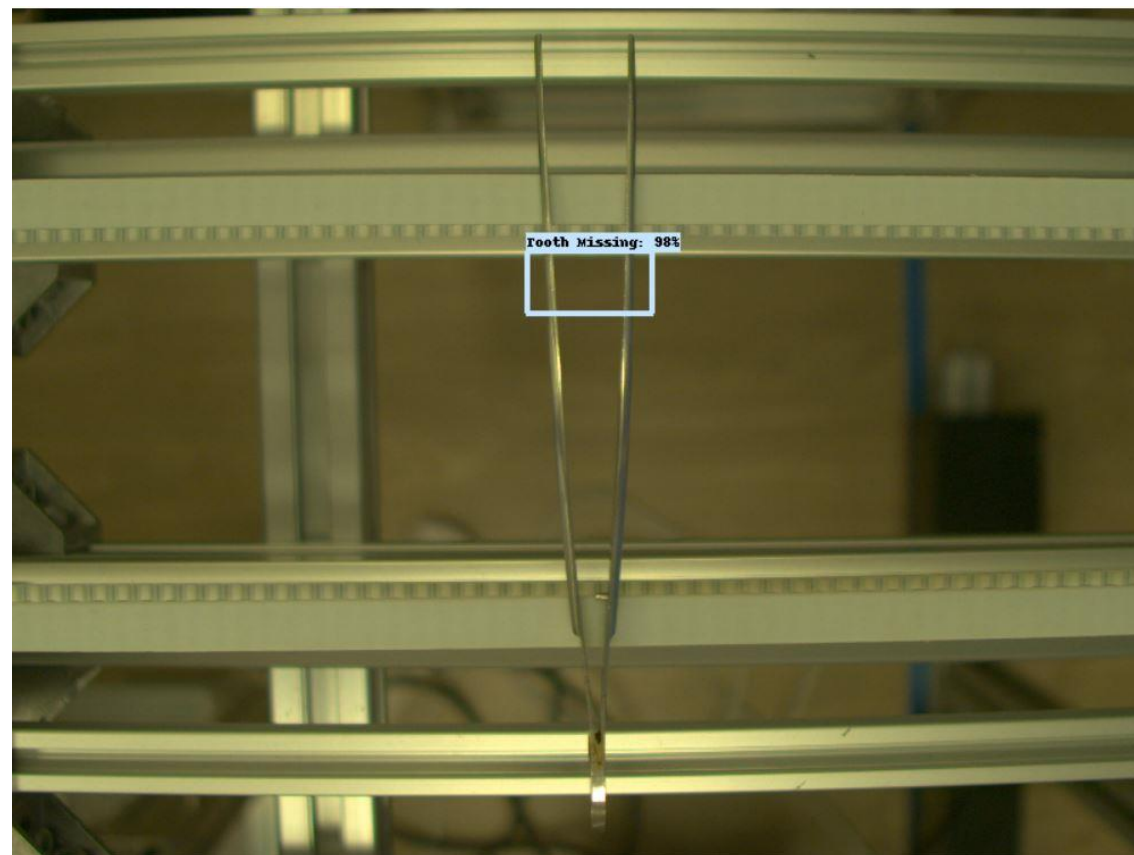
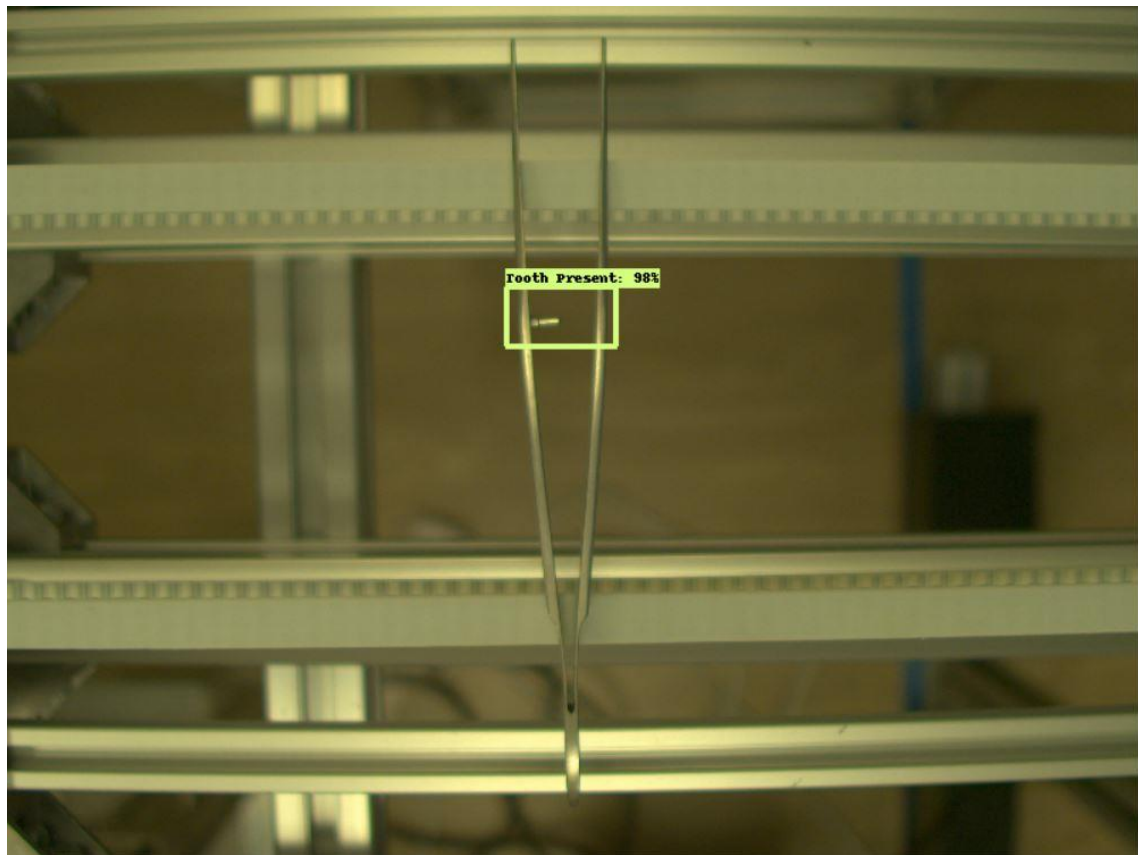
['Good']



['Defect']



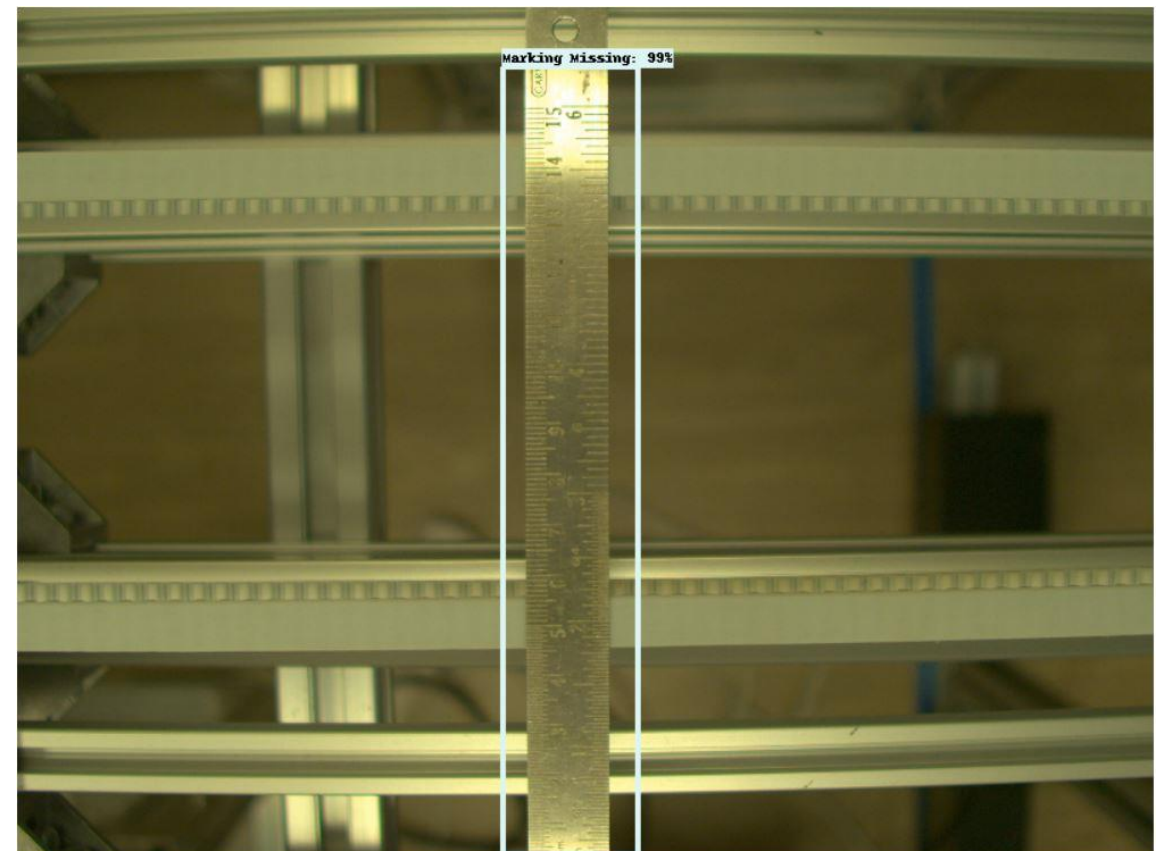
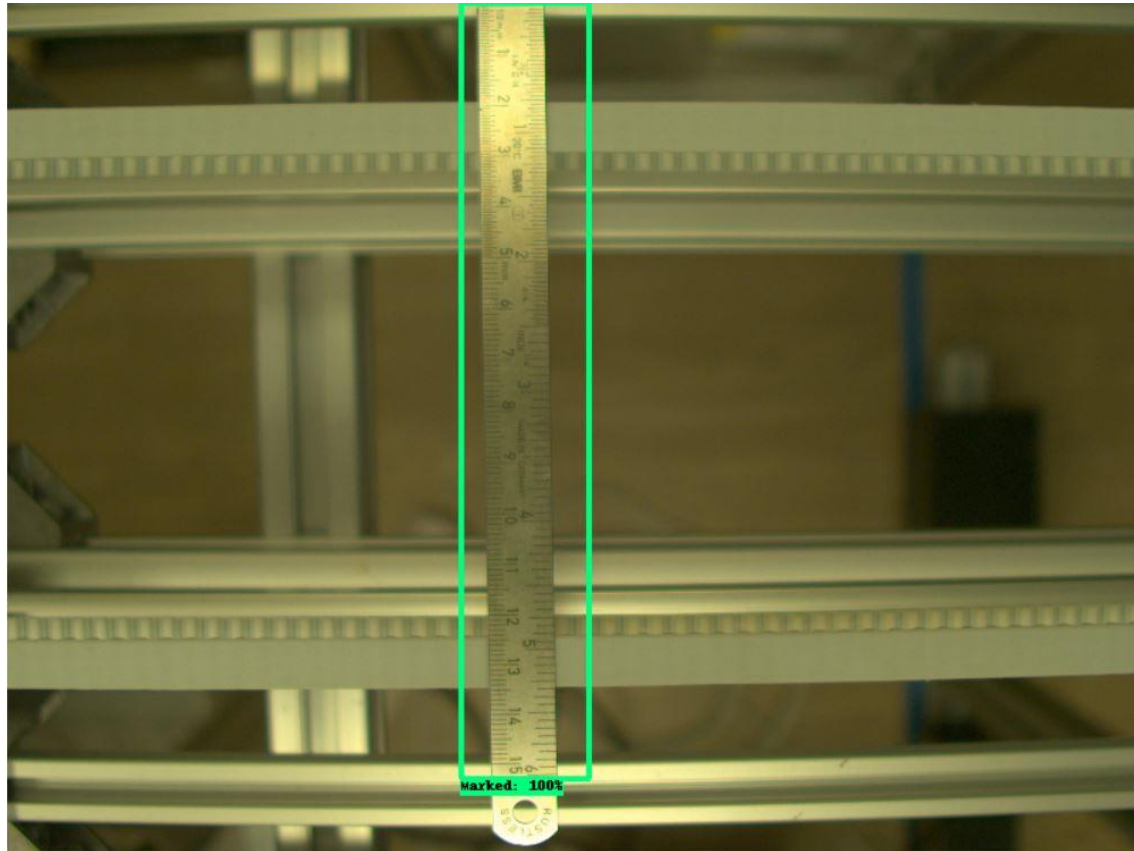
Metal tip missing



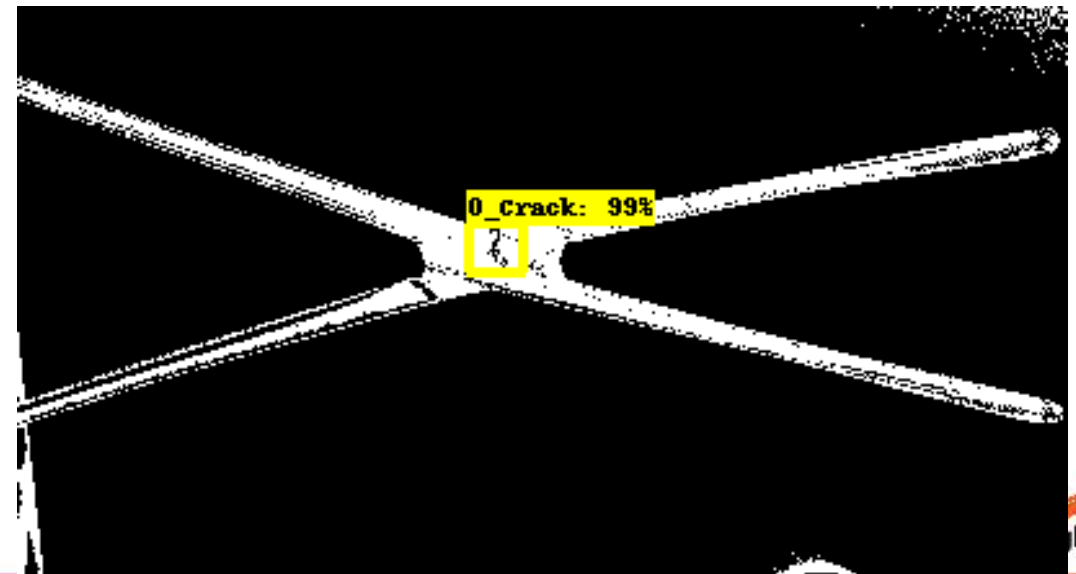
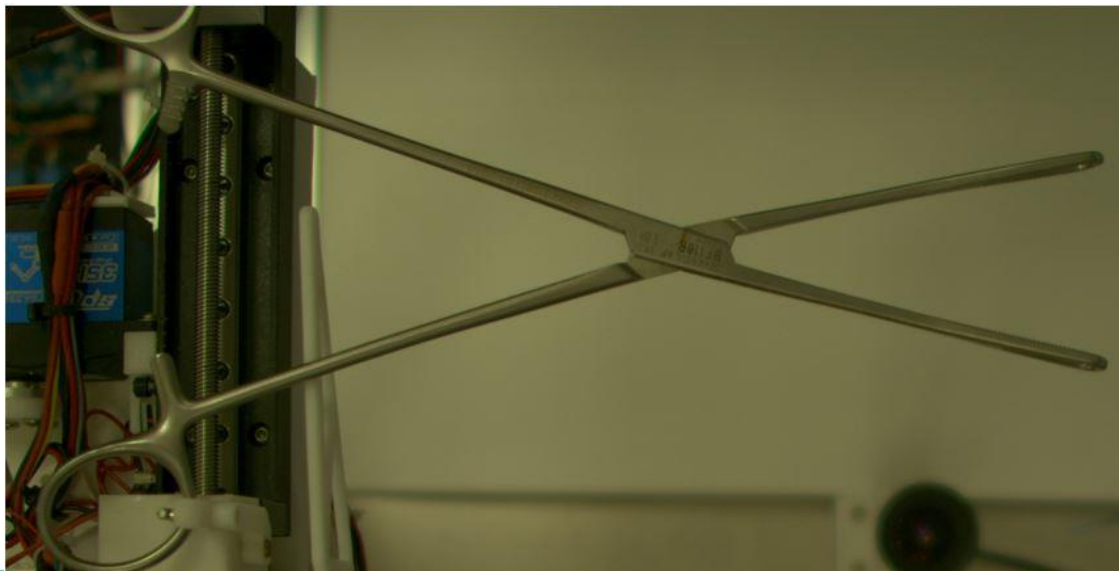
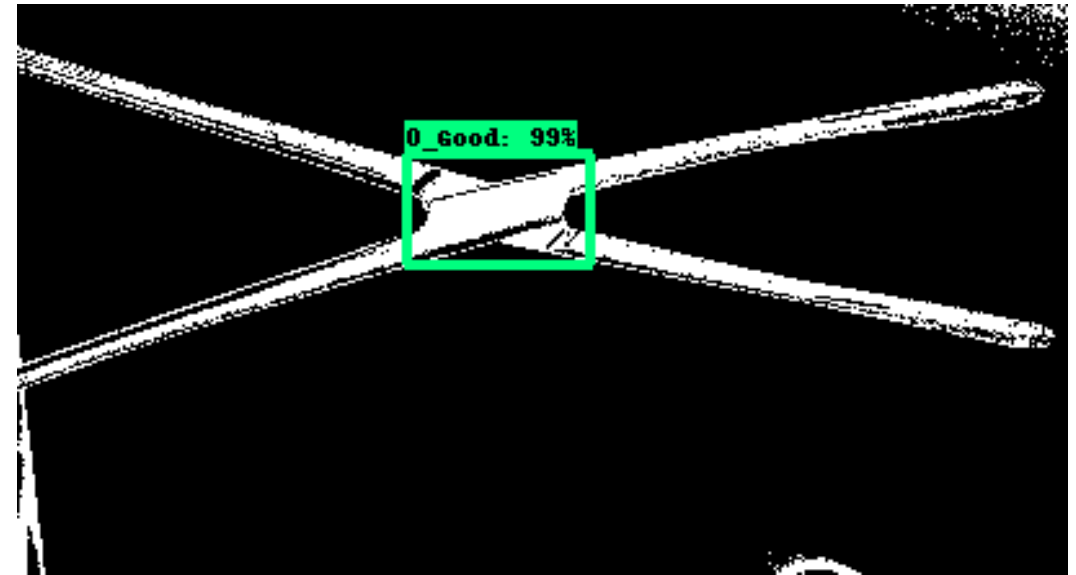
Blunt (Spear Redivac)



Marking missing



Crack defect



Blunt Defect



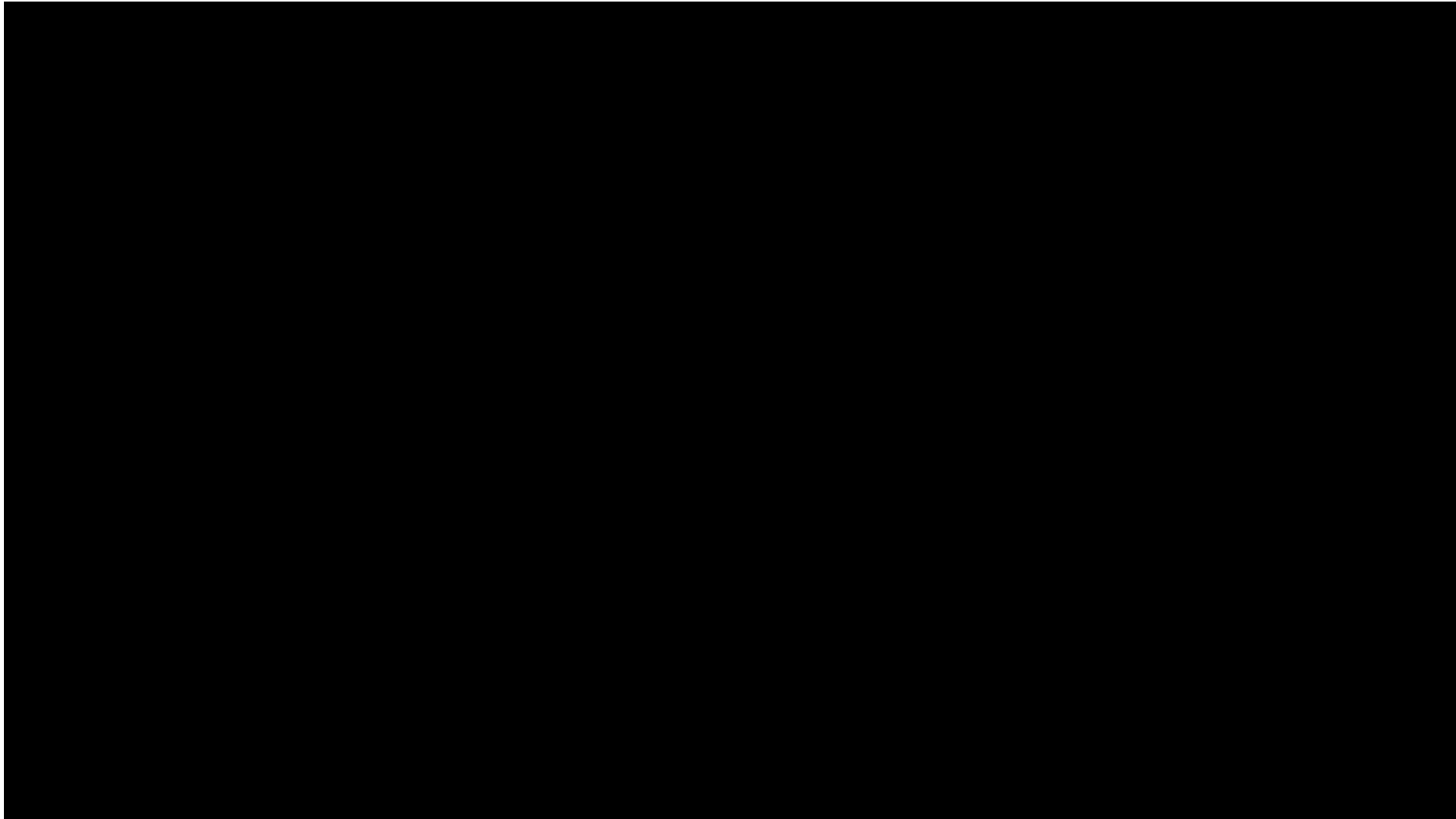
Good sample – successful cut



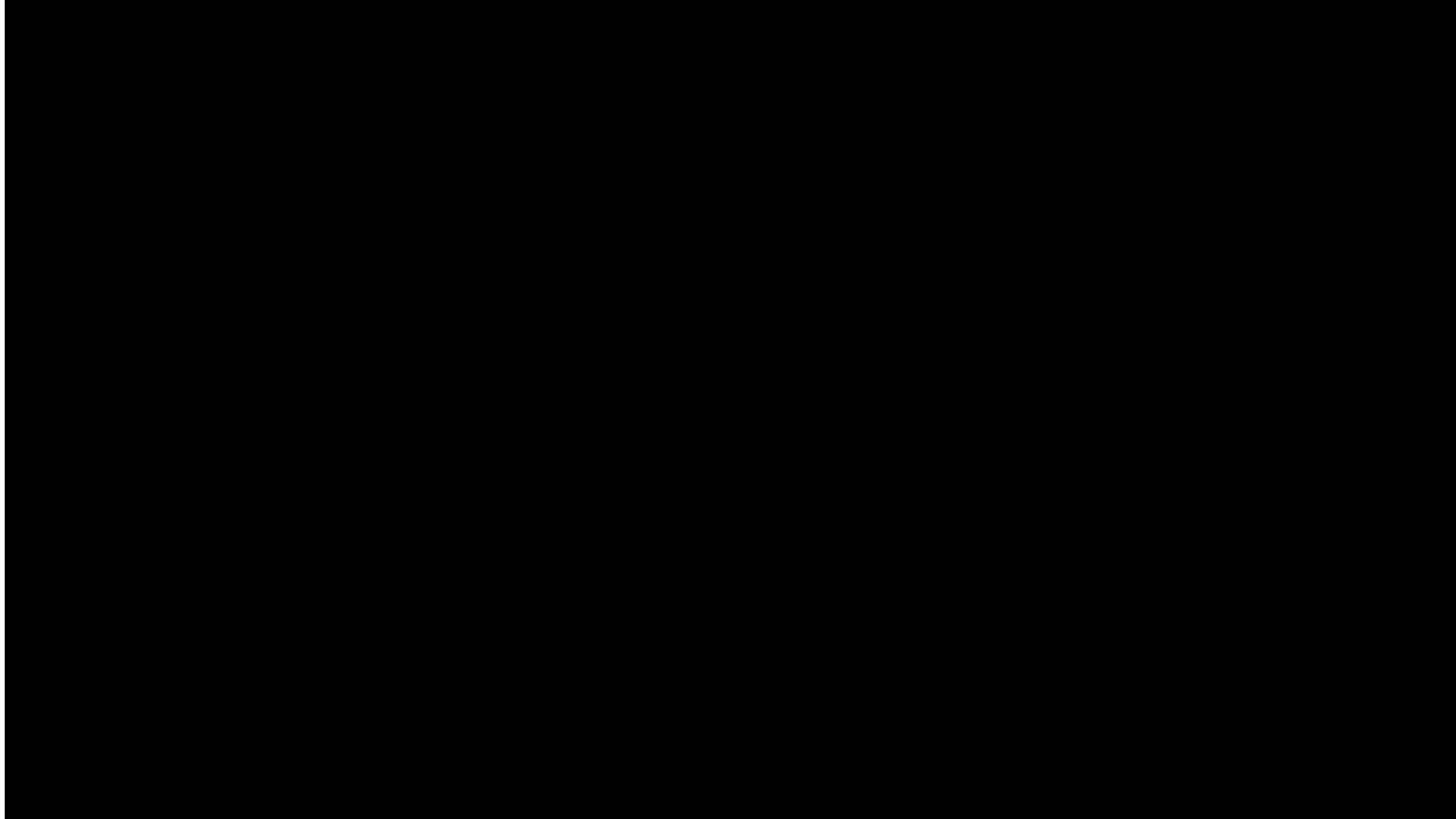
Defective sample – unsuccessful cut

Machine Build-Up Progress

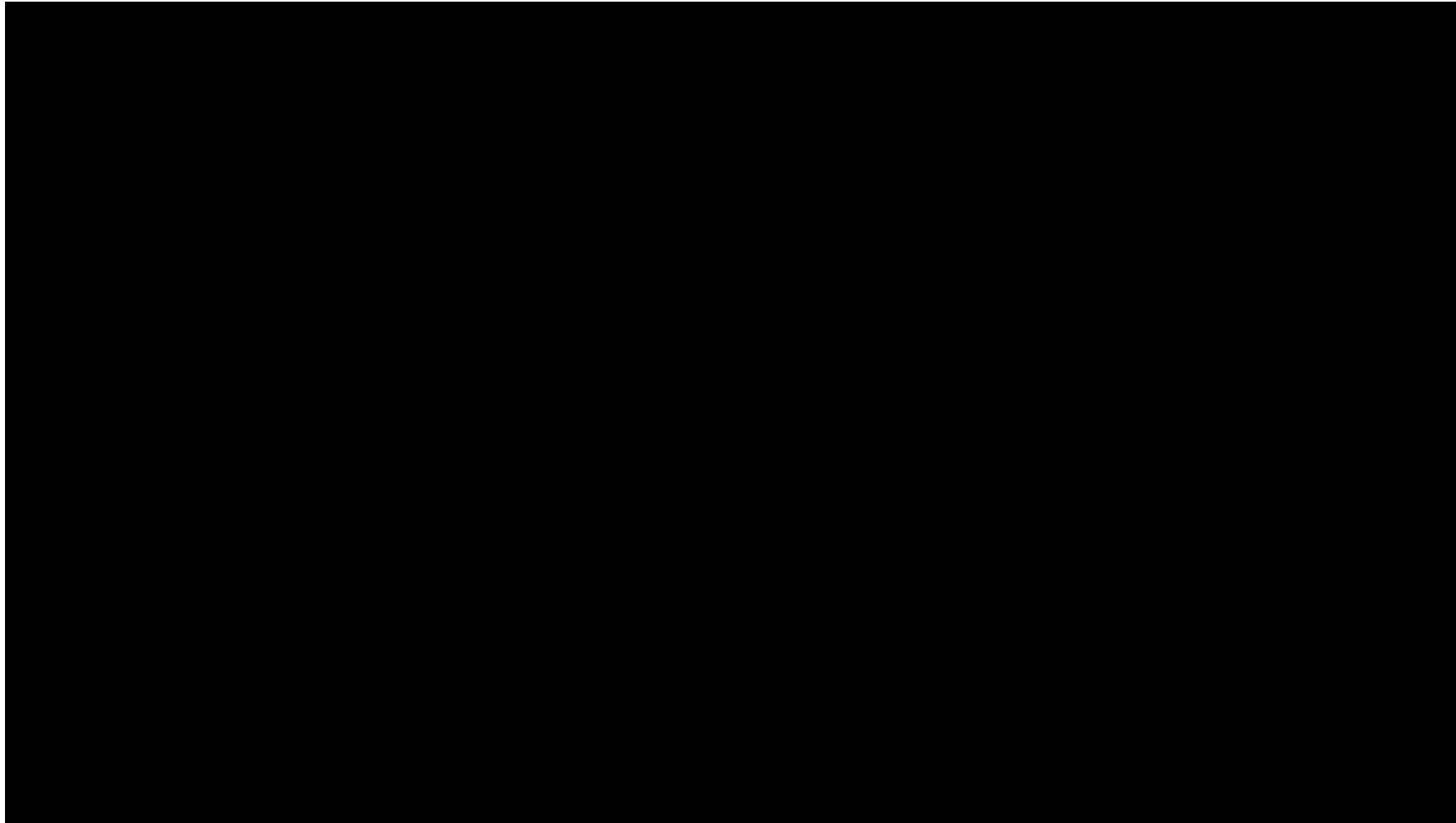
Wet Bay Loading



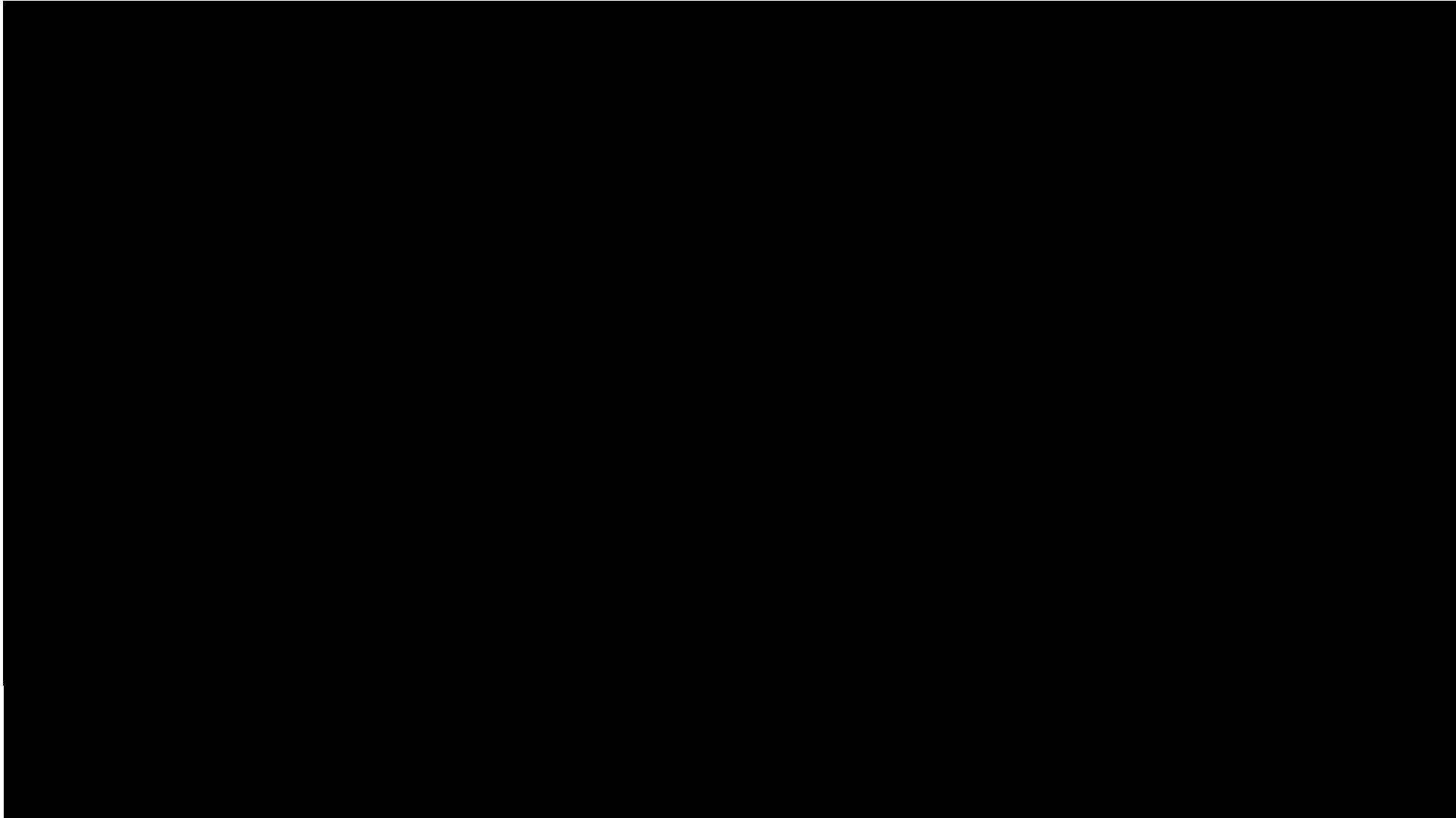
Wet Bay Picking



Processing Table (Non-Ring)



Dry Bay Placing



Thank you



Restricted, Sensitive (Normal)

