

# NIKOLAUS J ROMAN



## DESIGN PORTFOLIO

BOSTON UNIVERSITY – 2014

BS IN MECHANICAL ENGINEERING & MINOR IN GERMAN LANGUAGE AND LITERATURE

SIX SIGMA GREEN BELT CERTIFIED

FANUC ROBOTICS CERTIFIED: HANDLING TOOL, IR-VISION 2D, IR-PICK TOOL, PALLET TOOL/PRO

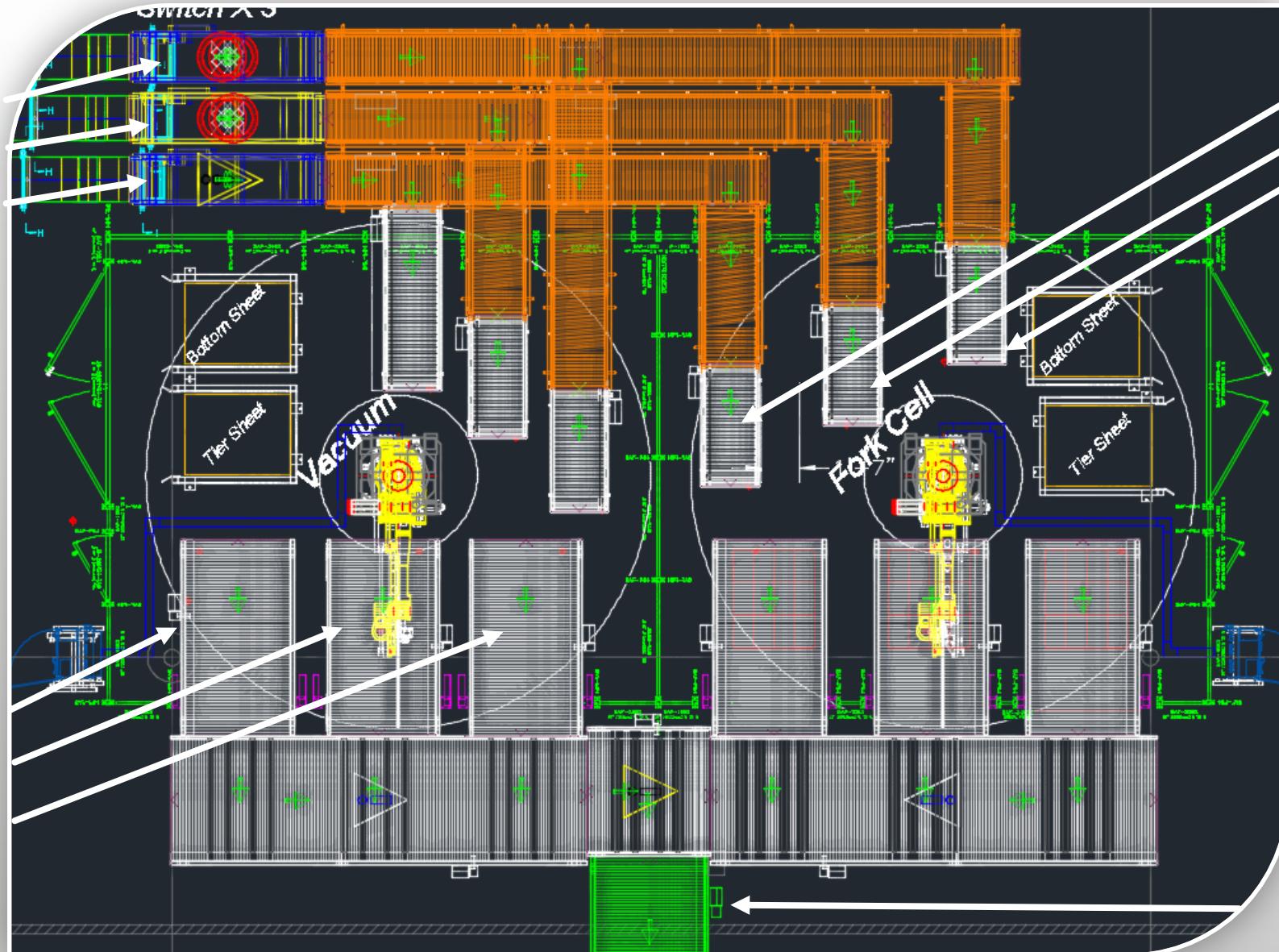
# DUAL ROBOT PALLETIZING SYSTEM: VACUUM AND FORK TREEHOUSE FOODS

3 vertical switch  
conveyors

3 case infeed  
conveyors

3 pallet  
outfeed  
conveyors

Single pallet  
conveyor exit

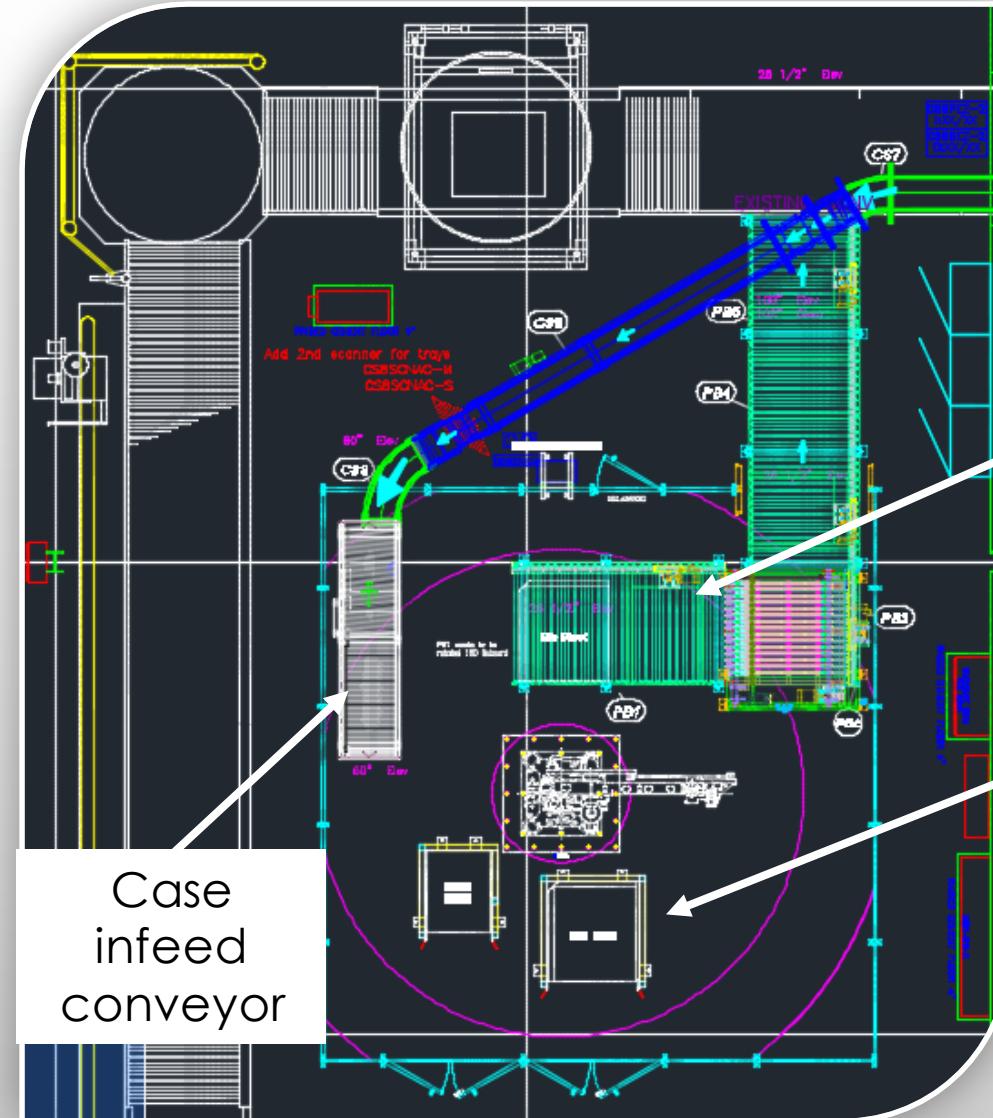


# END-OF-ARM TOOL REDESIGN

## TREEHOUSE FOODS



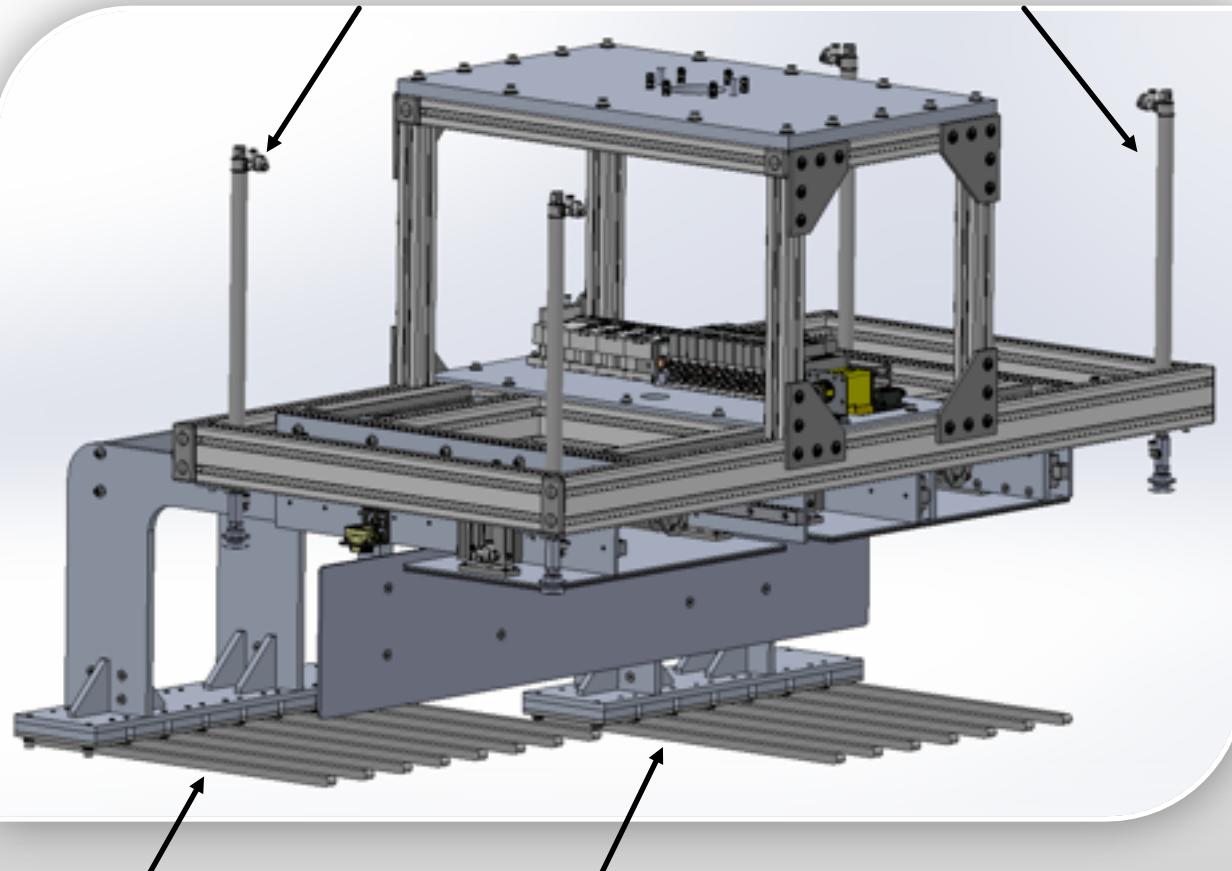
End-of-arm tool forks fit in between 3" roller centers to pick cases



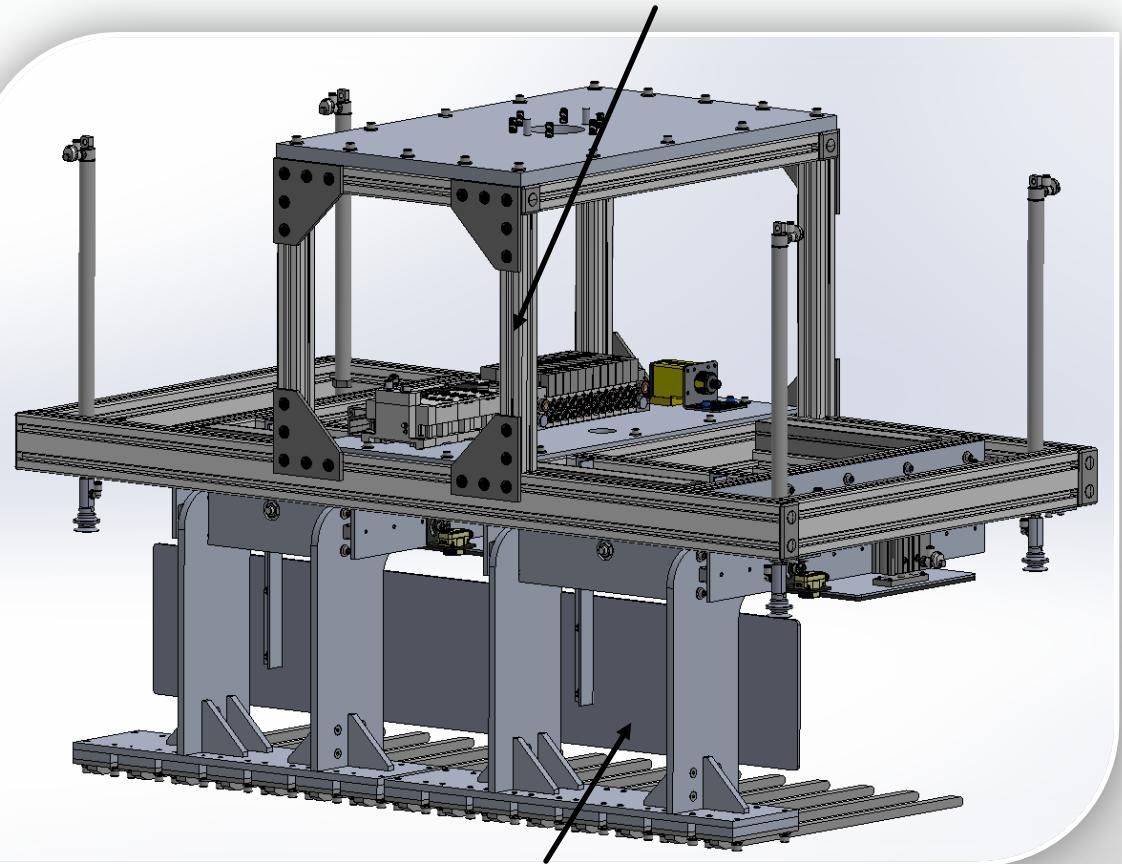
# FORK STYLE END-OF-ARM TOOL REDESIGN

## TREEHOUSE FOODS

Pneumatic cylinders for picking up pallet  
and tier sheets



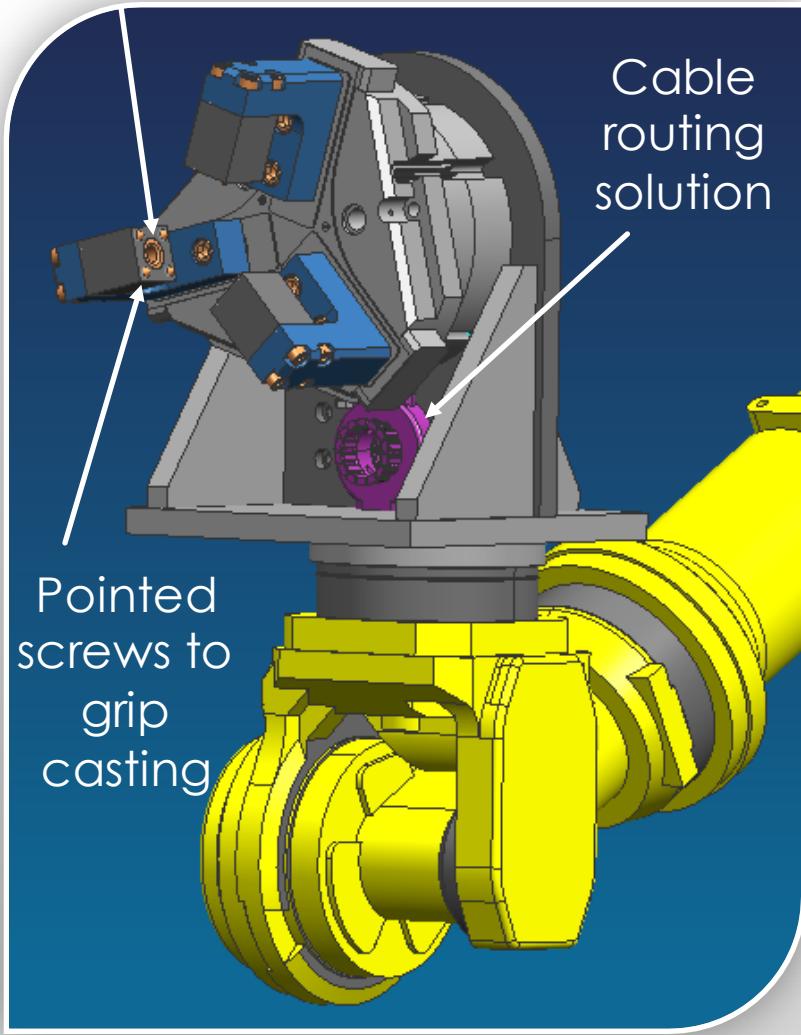
Pneumatic and electrical components



Dual zone, pneumatically actuated forks

Back plate to justify cases

Press-fit bushing to grip part catch trays

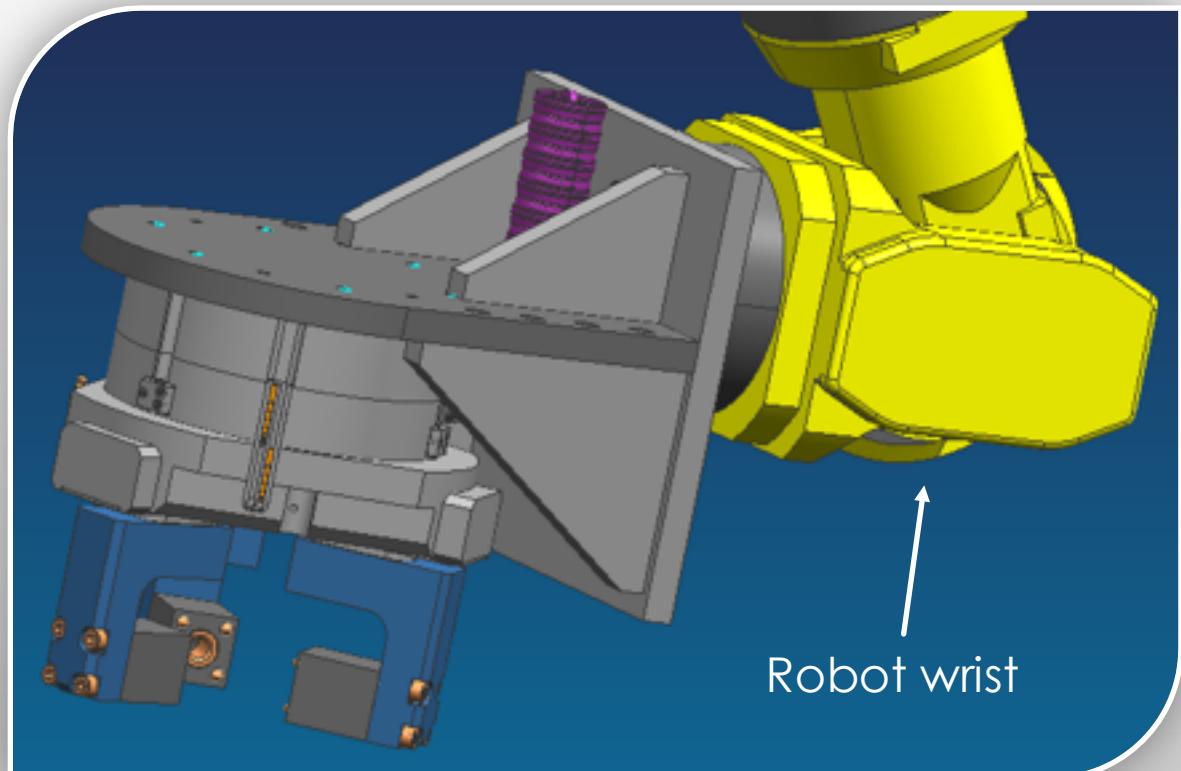


# THREE FINGER CONCENTRIC GRIPPER

## TESLA MOTORS

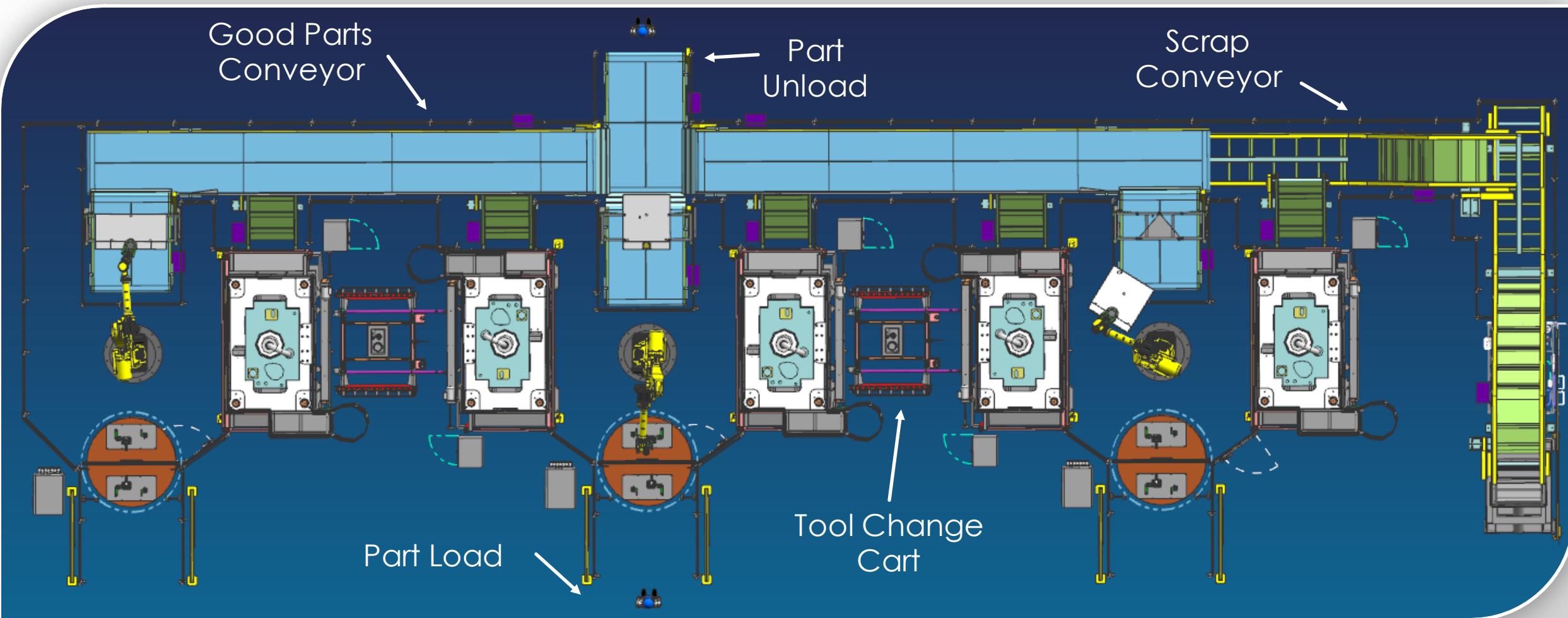
### DESIGN REQUIREMENTS

- Pick up 3 separate casted aluminum parts
- Pick up 3 separate part catch trays
- Weight must not exceed robot limit
- Accommodate pneumatic/electric cable routing



# ALUMINUM DIE CASTING TRIMMING LINE

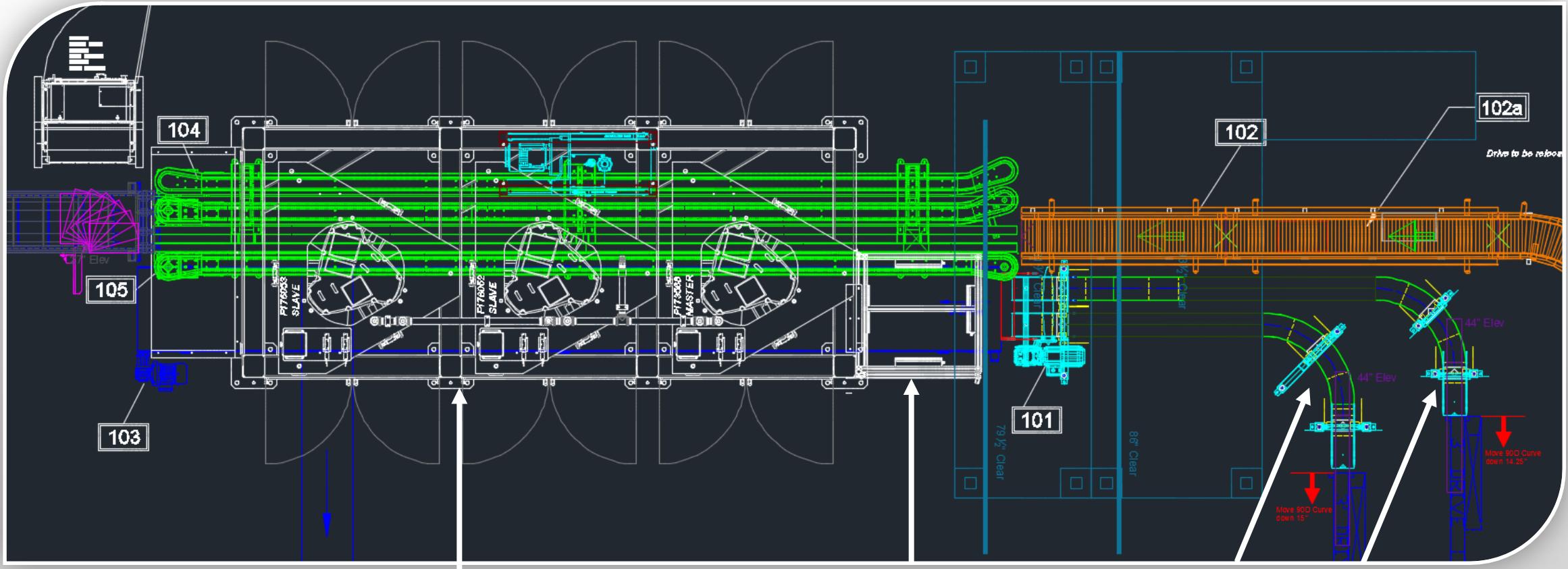
## TESLA MOTORS



# VISION ASSISTED HIGH SPEED PICK AND PACK CELL

## CONAGRA FOODS

Carton Conveyor  
(Outfeed)



Fanuc M-2iA robot  
structure

Vision Enclosure

Product Conveyor  
(Infeed)

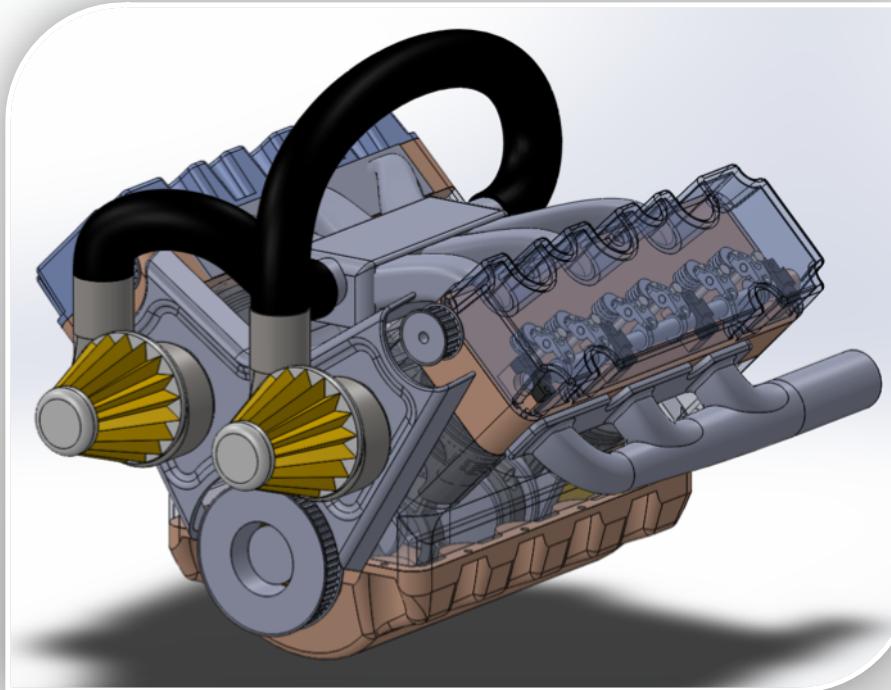
# JUST FOR FUN RENDERINGS



'03 BMW M5 Rim



Computer Mouse



V6 Engine Assembly



Piston



Air Filter

# SKETCHES

