# THE PROBLEM:

Right Angle Transfers are a combination of 2 lifts and two conveyors to move pallets around corners.

RATs are a critical path asset in most plants. When this asset fails, the entire line stops. RATs tend to be found in Final Assembly shops, which have the highest downtime repercussions. RATs are large and complex. Swapping components can be a tricky process and removing them entirely takes huge lifts and a lot of clearances.
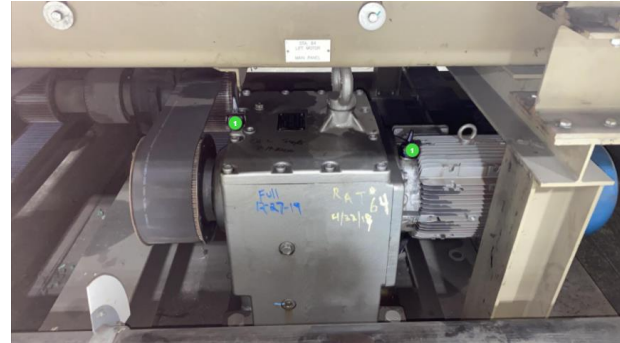
COST OF ASSET FAILURES

$775,000/hour
Downtime Cost

8-12 hours
Downtime

Other
ex: safety,

INDUSTRY SAVINGS POTENTIAL

Total Number of Ford **RATs** Currently **112**

$250,000 for parts alone

$134 Million *per site in Downtime Savings*

ASSET BLIND SPOTS:

There are several inherent challenges related to monitoring RATs.

**Challenge #1:** Vibration data can be very complex with many components closely connected.

Challenge #2: Extremely intermittent asset. With the typical V3 sensor we mostly catch off data or large impacts.

Challenge #3: RATs are a critical path asset so it can be tough to get PMs done on them without stopping the line for a longer period.

A NEW APPROACH TO Right Angle Transfer
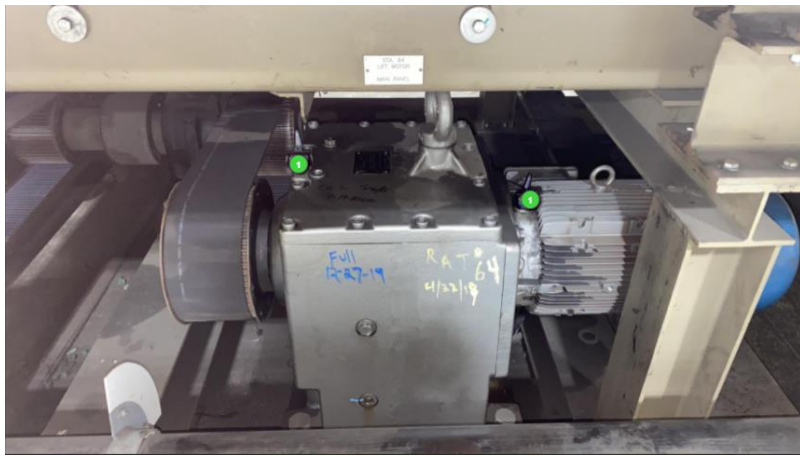
Above: Describe image

Typically, the monitoring solution for RATs involves internal sensors inside the machine that would only relay information during fault conditions. RATs are in remote parts of the plants and PMs are not often done due to the location and criticality of the asset.

By using the HUB monitoring system, we will be able to capture 100% running vibration data to understand the health of the asset. With phase readings, we will have more tools for diagnosing fault conditions and component specific problems within the RAT.

HARDWARE

- 7 sensors per HUB would be used to monitor the Power Roll Bed and lift mechanism, 2 sensors per asset. The other sensors would be used for monitoring current and voltage data
- The HUB and 7 sensors would allow for one experimental sensor input which could include oil quality to better monitor particles in the oil form gears of other metal components.

SOFTWARE

- Threshold Settings
- Indicators
- Sensor Configurations
- Dashboards
- Reporting
- Analytics
- PM schedule optimization
- Banded Alarms

REAL-TIME DATA

- PM Schedule
- Failure Findings
- Engineering Schematics
- Gearbox ratios
- Bearing Numbers

TRAINING

- Sentry
  - Site visits: Once a quarter
  - In-person training
- Academy
- Customer training/handbooks
- Asset playbook
- Best Practices across Ford

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