



Pallet Waste Reduction at Bosch Automotive Service Solutions

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Driven to DiscoverSM

Bosch Automotive Service Solutions

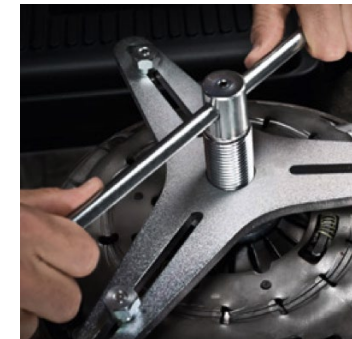


BOSCH

Invented for life

- **Company description**

- Bosch is a multinational engineering and electronics company headquartered in Gerlin, Germany
- Over 125 locations worldwide with 400,000+ employees
- Bosch Automotive Service Solutions in Owatonna, MN is a high variety-low quantity manufacturer producing over 100,000 unique tools required to service vehicles



Project Overview

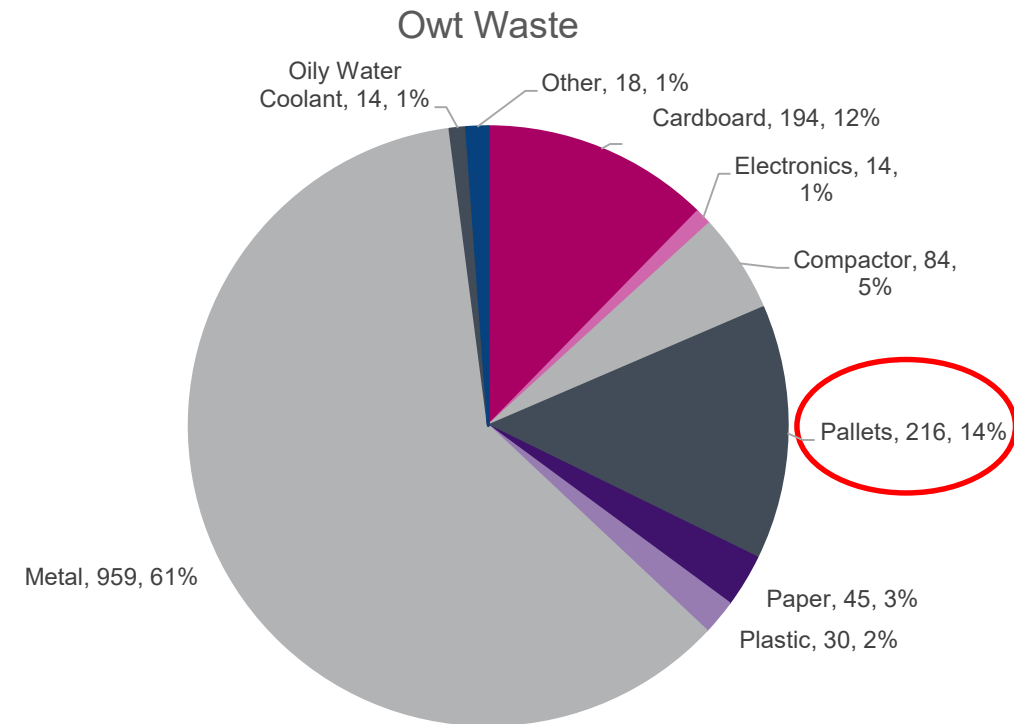
- **Why waste reduction?**
 - Overall waste has increased from 1519 tons in 2017 to 2354 tons in 2019
 - Bosch Corporate has set goal of maintaining waste regardless of yearly production increase



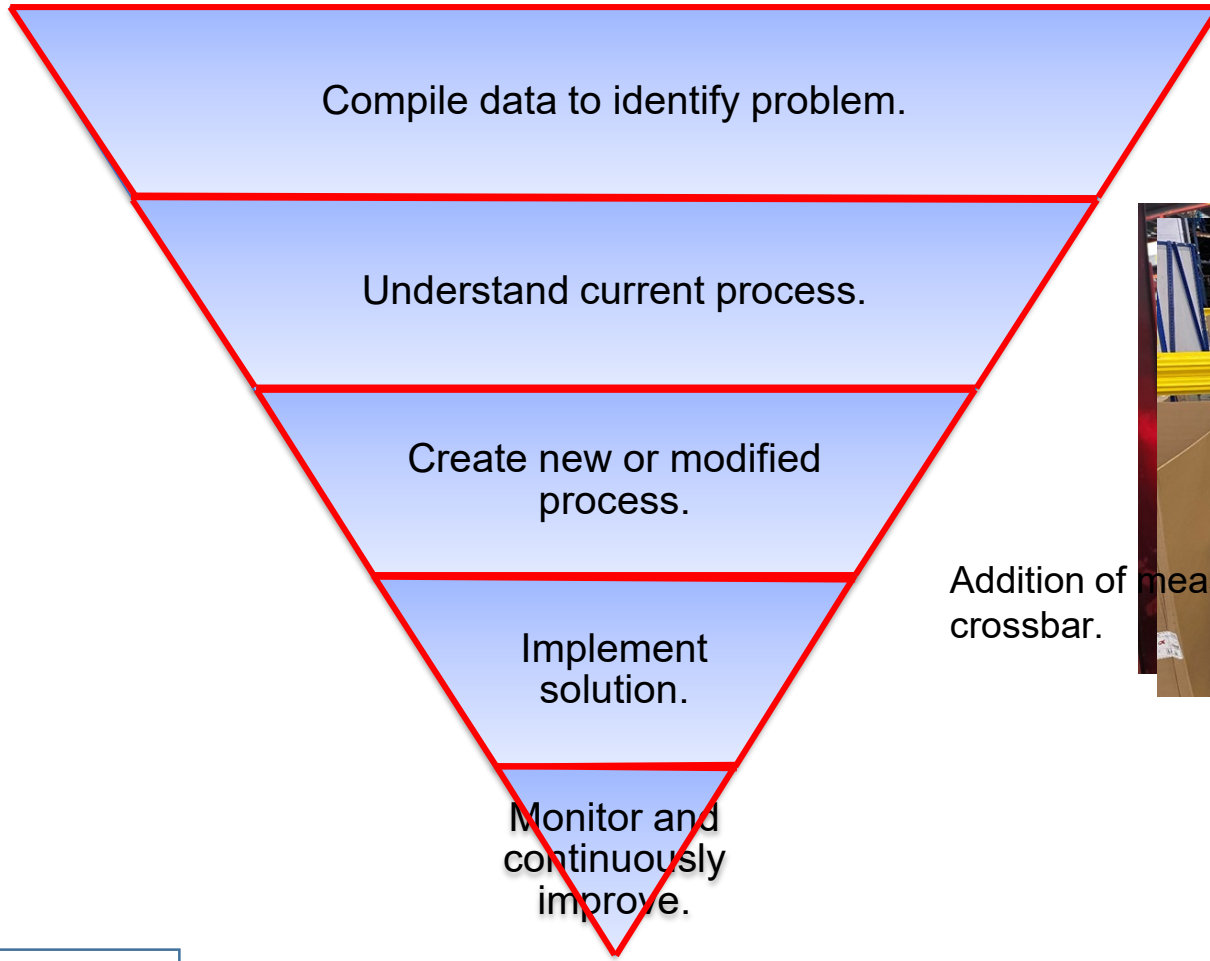
Project Overview Cont.

- **Why pallets?**

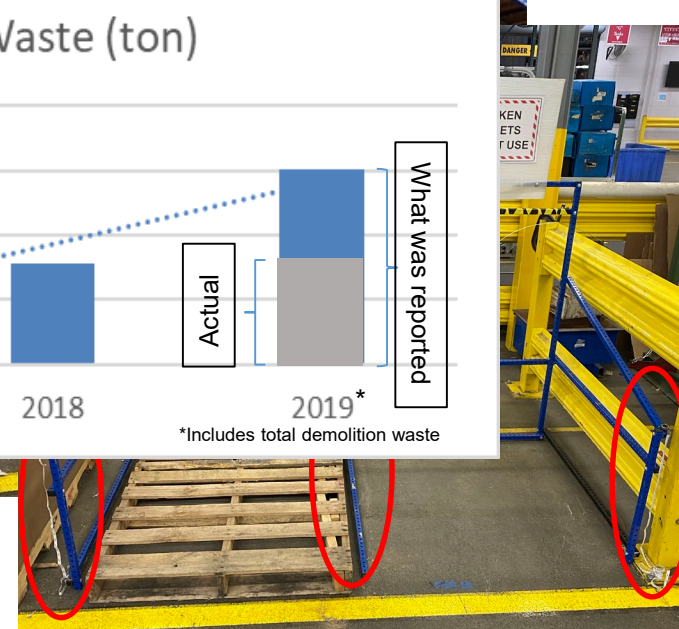
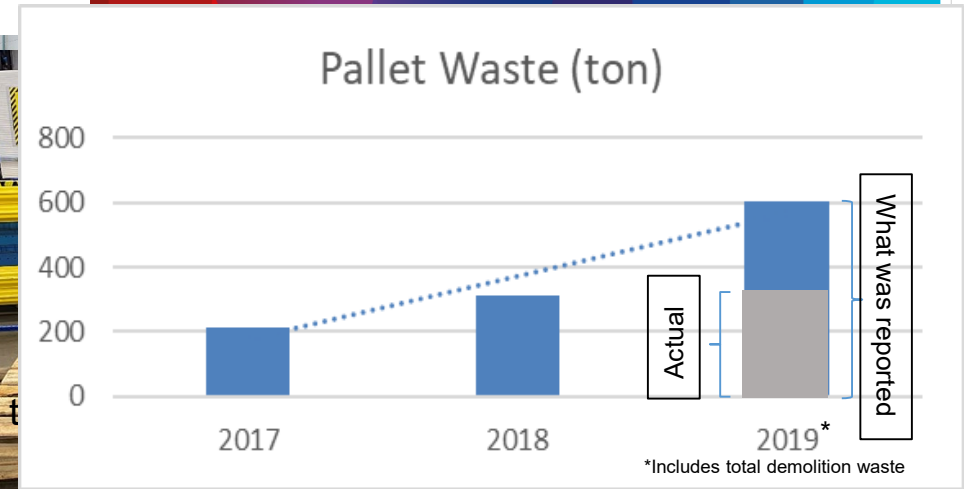
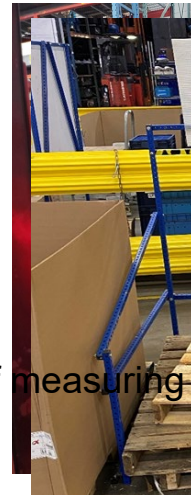
- In 2018, 13,200+ pallets were purchased at ~\$5.50/pallet, while over 20,000 mixed pallets from receiving & purchasing were recycled into mulch at no cost to Bosch
- Metal waste was investigated and required significant capital, which Bosch Corporate has placed on hold due to COVID-19
- Small enough project to implement within 12 week timeframe, required no capital



Approach

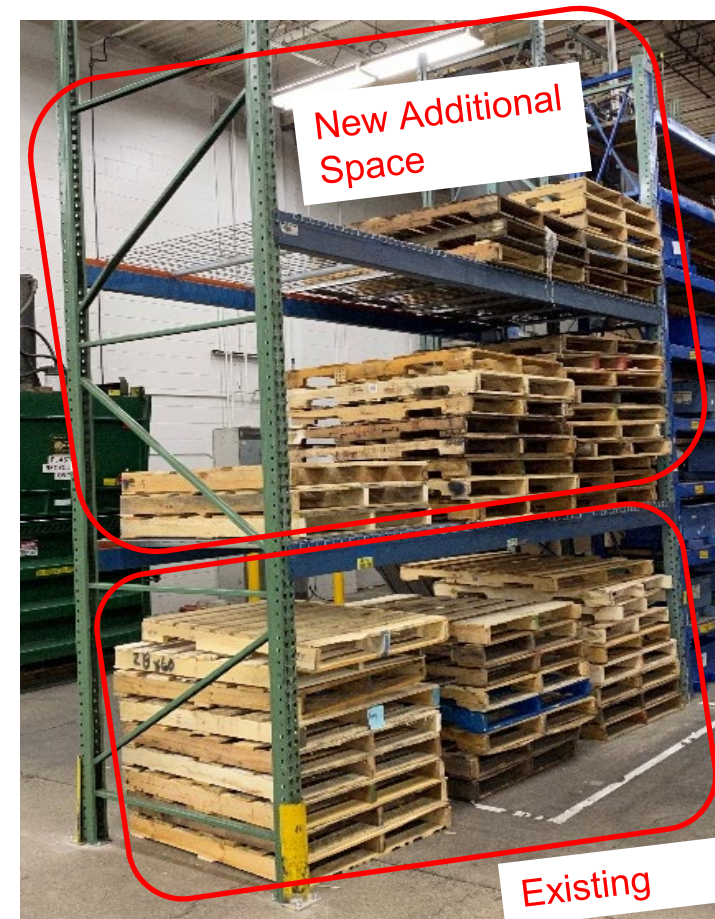


Addition of measuring t
crossbar.



Implemented Recommendation: Improve Pallet Storage

- **Installed pallet storage shelving & enclosure**
 - Increased pallet storage by 3x
 - Used existing racking at no cost
- **Case Study**
 - Programs had a job requiring 40+ pallets in one day
 - Programs used pallets from the storage rack
 - Programs did NOT use any newly purchased pallets



Implemented Recommendation: Establish Sorting Process & Train Associates

Example Sign

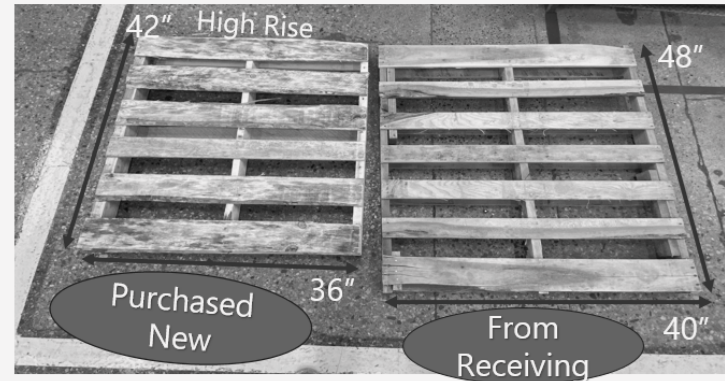
Example Training Slide

Difference between two common pallet sizes

- ▶ 36" x 42" pallets are used primarily in High Rise and Assembly due to shelving restrictions



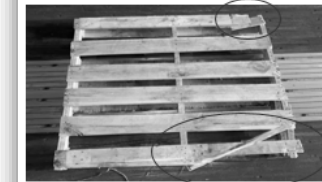
Can fit 3 pallets in High Rise instead of just 2!



- Anything going into high rise
- Assembly area
- Picking materials out of high rise
- Outbound shipping
- Internal use
- Anything to warehouses



What constitutes a broken or bad pallet?



If there is **more than one** broken, missing, or cracked (more than half of length) boards



If **ANY** of the bottom stringer boards are missing or damaged



If the pallet simply **does not have** bottom stringer boards present



The pallet is **odd sized** (very large, very small, very long)



If pallet is made from **cork/plywood/flimsy material**

Solutions Overview

Recommendation	Annual reduction	Total cost	Annual savings	Payback period	Status
Create & train on pallet sorting process using new pallet storage shelving	50,000 lbs of Wood	\$0	\$9,166	-	Implemented 7/1
Repair waste pallets through pallet refurbishing vendor	570,000 lbs of Wood	\$0	\$26,444	-	Recommended
Optimize fan timer settings	50,833kWh	\$600	\$5,498	1.5 months	Recommended

Impact of Using Refurbishing Vendor



 = 185 pallets

Closing Remarks

- Asking the right questions will lead you in the right direction
- Reach out to your network when you're stuck
- It is crucial to include the right people when implementing



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