

Work Name Improving efficiency of Fr suspension in house sequence process

Work Outline In-house development powerless device
The muda of operation could be eliminated by realizing the full box and empty box exchange of Fr suspension order in house sequence parts and dust covers.

Before Kaizen

CURRENT: SPS workers shown in the engine Fr sus in house sequence work allocatin diagram. Provide in house sequence parts in the working position of the engine springs. The work steps are as follows:

Step1: TM1 picks in the SPS area according to production instructions and manually connects the SPS dolly (Figure 1) to the engine spring allocatin dolly. Manually turn on the switch, place the in house sequence parts on the spring allocatin dolly, take the empty trays by hand, and return them to the SPS dolly. Prepare the left and right dust covers and place them on their respective shelves.

Step2: TM2 takes out the Fr suspension in house sequence parts and manually places the empty trays on the collection shooter., remove the dust cover by hand and return the empty tray to the collection shooter.

Engine front suspension post layout before kaizen

Problems: 1. There is muda of movement.

NO	muda of movement	Number of times	Time (sec)	Number of units	Seconds/unit
1	Walking	2	21	6	3.5
2	Switch it on	2	3	6	0.5
3	Take the empty	3	22	6	3.6
total					7.6

2. It can lead to safety risks due to contact with vehicles.

Risk Score	Risk Level	Risk Contents	Risk Signs
11 mins	B	Moderate risk	Bb

Before Kaizen full box and empty box exchange of trays and in house sequence utilizing the principle of gravity eliminates operational muda.

Power source Gravity and Human Power

Power transfer mechanism Lever/Link/Roller Spillings/Wheel

After Kaizen

Countermeasure: Change the layout of the entire engine Fr suspension in house sequence post (layout diagram after kaizen). A new non-powered device has been added (see Figure 4): **Step 1:** Using the non-powered device (Fig. 4), combine the dust cover assembly stand and the front suspension assembly parts stand. When TM2 takes out the parts in order, it uses the principle of gravity to replace the full box and empty box exchange, muda unnecessary movement (including the unnecessary walking of TM1).

Step 2: Combine the left and right dust cover dolly into one and turn it into a dust cover in house sequence dolly (Fig. 4).

Step 3: The SPS dolly is pulled by an AGV, and the trays and the assembled parts are exchanged for empty and filled parts.

Engine front suspension post layout After kaizen

After kaizen: 1. muda unnecessary movements.

NO	muda of movement	Number of times	Time (sec)	Number of units	Seconds/unit
1	Walking	0	0	12	0
2	Switch it on	0	0	12	0
3	Take the empty	0	0	12	0
total					0

2. Eliminate the risk of contact between people and vehicles.

Principle: Multiple operations can be performed with one power source, reducing energy consumption.

Step 1: Manually move weight 1 up to store force.

Step 2: When the TM2 operation is completed, press the switch and the empty tray of the Fr suspension will be replaced with a full box and empty box exchange. At the same time, the dust cover in house sequence bogie also synchronously performs full box and empty box exchange

Step 3: Connect the SPS dolly to the Front suspension assembly dolly by hand. Front suspension assembly parts and dust cover assembly parts automatically full box and empty box exchange

After Kaizen

1. Process time reduction: Realization of manual operation and elimination of muda operations, reducing labor hours by 7.6 seconds per unit.

2. Safety: Eliminates the risk of contact between people and vehicles.