WORKSHOP WHEEL TYRE CHANGE

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BACKGROUND OF THE PROBLEM:

➢ Manual and laborious

➢ Facing difficulty in recruiting technicians for the job

➢ Requires the use of 7 different tools/equipment, with regular calibrations required for the torque wrench

WHAT WE WANT TO ACHIEVE:

➢ Fully automated from start to finish, at reasonable costs

➢ Accurate and precise to specifications

➢ Reduction of 50% downtime to current process
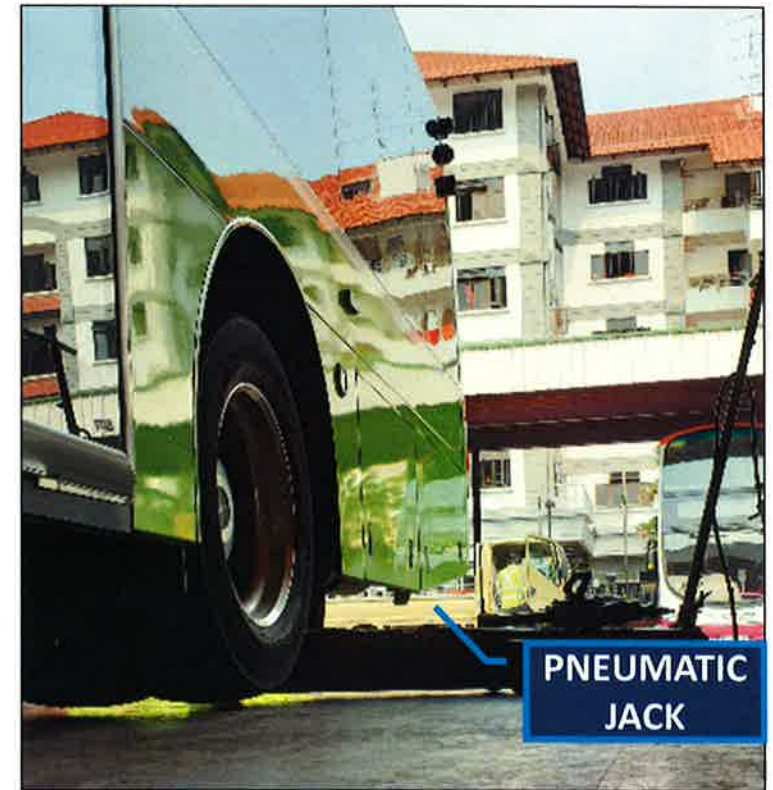
WHEEL REMOVAL

STEP 1

Place wheel chocks on both wheels of the non wheel tyre change axle.

STEP 2

To raise the bus, position pneumatic jack at recommended jacking points.

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STEP 3

Remove the wheel nut retainers by hand.

RESTRAINER

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STEP 4

A impact wrench with socket attached to remove the wheel nuts.

SOCKET

IMPACT WRENCH

TYPES OF SOCKETS

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STEP 5

A crow bar or wheel dolly to remove the wheel tyre from the wheel hub.

CROW BAR

OR

WHEEL Dolly

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WHEEL INSTALLATION

STEP 1

A crow bar or wheel dolly to align & fit the wheel tyre to the wheel hub.

CROW BAR

OR

WHEEL Dolly

STEP 2

Tighten all wheel nuts by hand, then use an impact wrench with torque socket attached to tighten all wheel nuts to specified torque as per wheel tightening sequence.
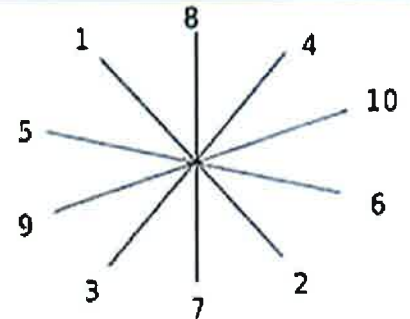

TYPES OF SOCKETS

SOCKET

IMPACT WRENCH

Wheel Tightening Sequence

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STEP 3
Lower the bus.

PNEUMATIC JACK

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STEP 4

Final check the tightening torque with a torque wrench.

TORQUE WRENCH

SOCKET

TYPES OF SOCKETS

Wheel Tightening Sequence
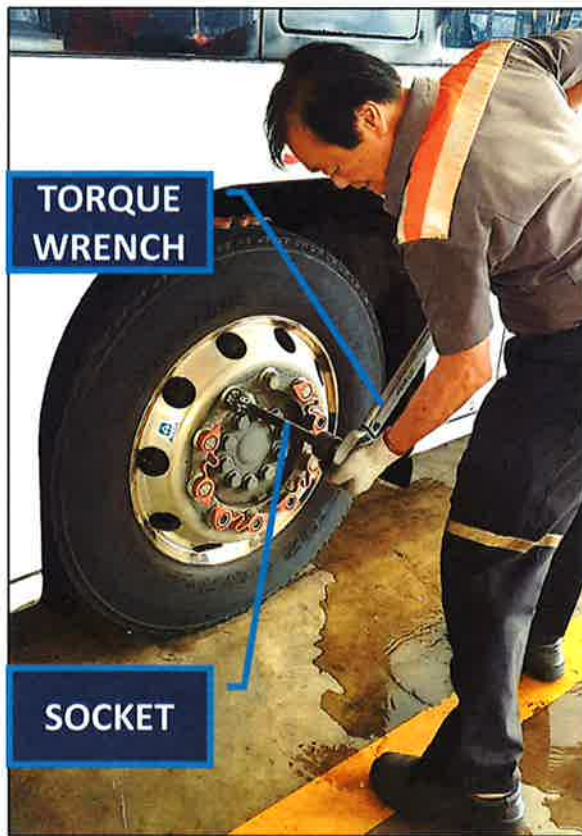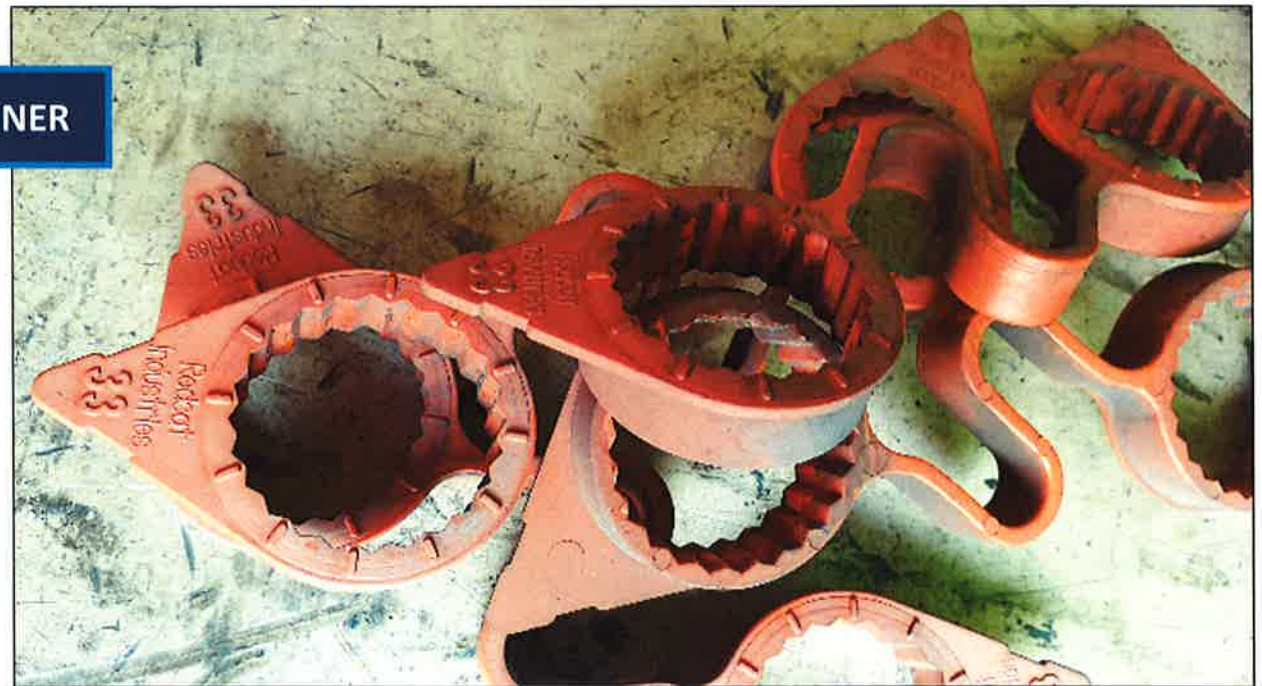
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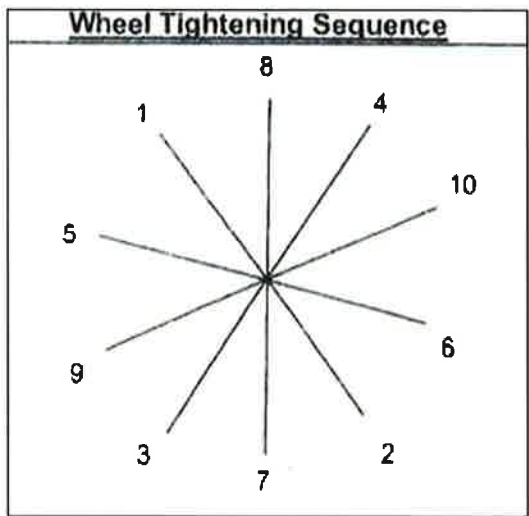
STEP 5

Install the wheel nut retainers. The pointers of the retainer must oppositely align with one another.

RESTRAINER

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WHAT ARE THE CHALLENGES TO THE AUTOMATION

CHALLENGES TO NOTE FOR TYRE REMOVAL & INSTALLATION:

- ❑ WHEEL NUT SIZES
- ❑ WHEEL RIM SIZES
- ❑ Tyre Size
- ❑ WHEEL NUT TIGHTENING TORQUES
- ❑ WHEEL NUT TIGHTENING SEQUENCE
- ❑ DETECTING WORN/DAMAGED WHEEL STUDS & NUTS
- ❑ Confined Working Bay Area

THANK YOU

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Evaluation Criterion	Weightage (%)
1. Technical feasibility of solution	30
2. Innovation	20
3. Economic Feasibility and Commercialization Potential (Include development cost and final product cost)	30
4. Capacity and Expertise to Execute Project	20
Total Score	100