

6. Recommendations

The system is associated with a certain level of vibration due to the rotation of the motor and also other components like the gears and links. Therefore the system can be equipped with rubbers in the linkages since the rubbers absorb some of the vibration energy. This also reduces the noise associated with such kind of a system. A remote control system can also be incorporated to improve the compatibility of the system by limiting the amount of cabling needed for the motorized jack electrical components. Also this enhances safety of the jack and ease of use. The device can also be designed to operate using android application. An alternative power source should also be availed as part of the motorized jack kit, to avoid problems when say, the car battery is flat. This prompts future scope to also involve the development of an alternative power source to the jack. A solar and battery system can be incorporated into the device so that it can function in such a way that the solar panel is used to charge a 12V battery. A scope can be considered to look beyond a maximum of a 2-ton vehicle, and develop the jack for it to be applicable even to be used for heavy duty vehicles.

7. Conclusion

The principle of the existing car jack was modified by making adjustments and using a prime mover which is the electric motor to control the lifting operation of the jack. The car battery (12V) is used to supply power source to the motor. Human effort was eliminated in raising the jack by the use of the torque generated by the motor as it rotates. The use of long cabling to control the motorized operation meant the jack would be safe to use as the operator can use the jack in a comfortable position and as far away from the vehicle as possible. The torque supplied to the system is more than enough to lift a vehicle weighing around 2000 kg (2 ton). This design of the motorized carjack can be considered to be a huge benefit in the lifting and lowering of 2 ton vehicles.

References

- Asonye., Design and Fabrication of a remote controlled system for a hydraulic jack. 02(07), p. 3, 2015.
- Balkeshwar Singh, A. K. M., Analysis and Fabrication of Remote Control Lifting Jack. *International Journal of Scientific Engineering and Applied Science (IJSEAS)*, 1(3), 2015.
- Balkeshwar Singh, A. K. M., Analysis and Fabrication of Remote Control Lifting Jack. *International Journal of Scientific Engineering and Applied Science*, 1(3), 2015.
- Jackson, C., Radial and thrust bearing practices. *United States: Monsanto Press*, 2009.
- Kamalakkannan.A., International Journal of Scientific & Engineering Research. *Automatic Motorized Scerw Jack To Redused Man Power*, 7(5), 2016.
- Kulkarni, A., Design And Fabrication Of Automated Motorized Mechanical Jack. *International Research Journal of Engineering and Technology (IRJET)*, 4(9), 2017.
- Kulkarni, A., Design And Fabrication Of Automated Motorized Mechanical Jack. *International Research Journal of Engineering and Technology (IRJET)*, 4(9), 2017.
- Mokoro Albert, N. J., Computer Aided Machine Design: Case Study On The Design Of A Screw Jack, *Nairobi: S.N.*, 2016.
- Muchnik, J., History of Hydraulic Jacks. *New York: Ezine*, 2007.
- Shaikh, V. A., 2015. Design of Toggle Jack. *International Journal of Science, Technology & Management*, 4(1), 2015.
- Singh, B., Analysis and Fabrication of Remote Control Lifting Jack. 1(3), 2015.
- Wale., History of lifting devices. *Cambridge: Harvard University pres*, 2002.
- Zhigiang, S., Variations of hydraulic Jack. *s.l.:Shanghai Publications*, 2013.

Biography

Ignatio Madanhire graduated with a PhD in Engineering Management at the University of Johannesburg, South Africa, he is also a Senior Research Associate. He is also a lecturer with the Department of Mechanical Engineering at the University of Zimbabwe. He has research interests in engineering management and has published works on cleaner production in renowned journals.

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