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DESIGN &MODIFICATIONS OF AN ENGINE TRANSFER SYSTEM

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Abstract:
The aim of this paper describes to design and fabricate an engine transfer system. With this system we can easily tilt and transfer the 6 cylinder engine. The engine transfer system is done by means of crane and the clamping device. The main component of device is clamping and pneumatic system.Two electric motor is used one is used for raising or lowering and another one for moving the crane. The capacity of the crane is 1000 Kg. The weight of the 6 cylinder engine is 600 Kg. The engine transfer system is used for easy handling, safety of the user and reduction of time.

Keywords: V6 cylinder, clamping device, pneumatic system.

1. INTRODUCTION

The origin of Ashok Leyland can be traced to the urge for self-reliance, felt by independent India. Panduit Jawaharlal Nehru, India's first Prime Minister persuaded. Mr. Raghunandan Saran, an industrialist, to enter automotive manufacture. In 1948, Ashok Motors was set up in what was then Madras, for the assembly of Austin Cars. The Company's destiny and name changed soon with equity participation by British Leyland and Ashok Leyland commenced manufacture of commercial vehicles in 1955. Since then Ashok Leyland has been a major presence in India's commercial vehicle industry with a tradition of technological leadership, achieved through tie-ups with international technology leaders and through vigorous in-house R&D. Access to international technology enabled the Company to set a tradition to be first with technology. Be it full air brakes, power steering or rear engine busses, Ashok Leyland pioneered all these concepts. Responding to the operating conditions and practices in the country, the Company made. Its vehicles strong, over-engineering them with extra metallic muscles. "Designing durable products that make economic sense to the consumer using appropriate technology", became the design philosophy of the Company which in turn has molded consumer attitudes and the brand personality. Ashok Leyland vehicles have built a reputation for reliability and raggedness. The 5,00,000 vehicles we have put on the roads have considerably eased the additional pressure placed on road transportation in independent India. In the populous Indian metros, four out of the five State Transport Undertaking (STU) buses come from Ashok Leyland. Some of them like the double-decker and vestibule buses are unique models from Ashok Leyland, tailor-made for high-density routes. In 1987, the overseas holding by Land Rover Leyland International Holdings Limited (LRLIH) was taken over by a joint venture between the Hinduja Group, the Non-Resident Indian transnational group and IVECO. (Since July 2006, the Hinduja Group is 100% holder of LRLIH). The blueprint prepared for the future reflected the global ambitions of the company, captured in four words: Global Standards, Global Markets. This was at a time when liberalization and globalization were not yet in the air. Ashok Leyland embarked on a major product and process up gradation to match world-class standards of technology. In the journey towards global standards of quality, Ashok Leyland reached a major milestone in 1993 when it became

the first in India's automobile history to win the ISO 9002 certification. The more comprehensive ISO 9001 certification came in 1994, QS 9000 in 1998 and ISO 14001 certification for all vehicle manufacturing units in 2002. It has also become the first Indian auto company to receive the latest ISO/TS 16949 Corporate Certification (in July 2006) which is specific to the auto industry Ashok Leyland now has six manufacturing plants the mother unit at Ennore near Chennai, two plants at Hosur (Hosur I and state of the art facility at Hosur 2). The assembly plants at Alwar, Bhandard and the casting plants at Hyderabad. Ennore total covered space at these seven plants exceeds well over 450000 sq.m. and together employees close to 12000 people.

2. PLANT SHOPS IN COMPANY

Chassis assembly is another divisional operating processing here. For this, some parts are required. These parts are coming from other shops-frame front axle and rear axle, engine, propeller and steering boxes are coming from other shops. The parts such as spring, exhaust pipes, fuel tanks radiators, tires cabs are come from outside of the company. After assembly all the parts the fuel tanks in the chassis is fuel. And some of the joints are get oiled and greased according to their requirement. In this front axle assembly the finished parts are assembled here. That part is worked for required Ashok Leyland standards. They follow the European norms for protecting our environment. Here axle arms are made and also axle beams are machined. After that machining all the parts are assembled here and this is one of the divisions in this shop. After this all the chassis are sent to PDI department (pre delivery inspection department). The power is transmitted through the rear axles to the driving wheels. On modern American passenger vehicles almost all rear axles are "live" axles. It includes revolving shafts for driving the wheels. In ordinary vehicles, the "live" axle will be at the front and the rear axle will be "dead" which simply remains stationary.

3. STAGES OF 6 CYLINDER ENGINE ASSEMBLY

In this stage the cylinder block tilted because it is uses to assemble and easy to attach the gear in the engine and bolts and nuts are tightened. In this stage the tapper setting and timing is fitted and then move to the next stage. Here the tapper and rocker rod are fitted after this engine block is moved the next operation. In this stage the injector leak off pipe is fitted and the cylinder block is moved to the next stage. In between the bays the engine is tilted and transfer is done by means of two cranes using "L" shape clamp.

A. Problems faced in engine transfer system

In "Ashok Leyland" in shop 2 in six cylinder engine assembly they use two cranes to tilt and transfer the six cylinder engine by using "L" shaped clamp.

Fig.1.Engine transfer system

Time taken for the sequence of operation in tilting and transfer of engine from bay-1 to bay-2 is "128sec In "Ashok Leyland" in shop 2 in six cylinder engine assembly they use two cranes to lift, tilt and transfer the

six cylinder engine by using "L" shaped clamp with manual locking. In between the bays the engine is lifted, tilted and transfer is done by means of two cranes using "L" shape clamp.

B. Solution of problems faced

For making it to be used by a single crane. This shape clamp is used, so that the tilting will be done automatically. The clamping will be done by a pocket type clamp. In this clamping device one side is fixed and other side is hinged with a pin. In "Ashok Leyland" in shop 2 in six cylinder engine assembly they use

Fig.2

two cranes to lift, tilt and transfer the six cylinder engine by using "L" shaped clamp with manual locking. In between the bays the engine is lifted, tilted and transfer is done by means of two cranes using "L" shape clamp.

CONCLUSON

Thus the project "Design modification of engine transfer system" is designed and fabricated at Ashok Leyland premises. In the engine assembly section for engine transfer and tilting they use two cranes. We suggested that they can use one crane for this purpose. As they accepted the suggestion and they agree to implement in future. So we modified the clamp into channel shaped component.

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