

พิมพ์ต้นฉบับบทความวิทยานิพนธ์ภายในกรอบสีเขียวนี้เพียงแผ่นเดียว

C 616513 : MAJOR INDUSTRIAL ENGINEERING

KEY WORD: SPOT WELDING GUN

DETHARAT SUMRIT : PREDICTIVE MAINTENANCE PLANNING
IN A BODY ASSEMBLY LINE OF COMMERCIAL VEHICLES.

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This research applies predictive maintenance planning to an assembly line of bodies of commercial vehicles. The objective of the research is to predict suitable life and work load of spot welding guns which are one of the most important machines in the body assembly process. The prediction is applied in maintenance planning and in establishing a replacement policy of welding parts. The plan and the policy will reduce line stoppages and improve weld qualities in terms of strength and surface. This research studies tip electrodes and Kickless cables of spot welding guns.

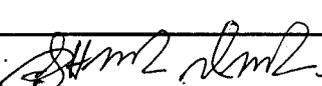
A relation between the number of spot weld points done by a tip electrode and their shear strength is determined by statistical method. It can be concluded that the number of spot weld points and their shear strength has a linear relation. An equation is determined for predicting the life and the suitable work load of spot welding guns. The prediction has been used for maintenance planning months. The results show significant improvements. Line stoppage due to defects of tip electrodes decreases from 569 minutes/month to 190 minutes/month. The number of white body defects due to inadequate shear strength is decreased from 130 units/month to 51 units/month. The number of white body defects due to surface quality problem is decreased from 312 units/month to 126 units/month. The total costs of tip electrode replacements is decreased by 23.95% or 234,310 bath/month.

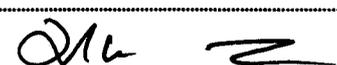
In the study on kickless cables experiments has been carried on all the types of kickless cables to study their behavior. It can be concluded that electrical resistance affects deterioration of the cables. Experiments to determine relationships between the number of welds done and the change in electrical resistance indicate that the resistance change can be used to predict the suitable number of spot welding points effectively. The suitable number of welds before replacement of each kind of cable is determined in the study.

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