

ESTABLISHMENT OF DRIVERS' COMFORT THROUGH AUTOMOTIVE ERGONOMICS

By Ir. Dr. Ahmad Rasdan Ismail

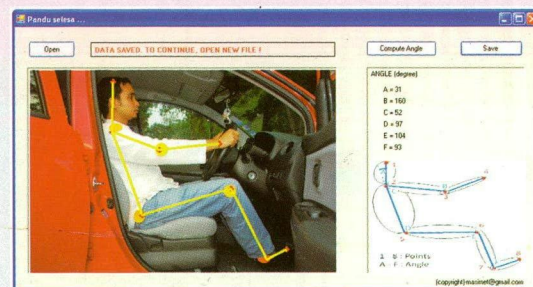
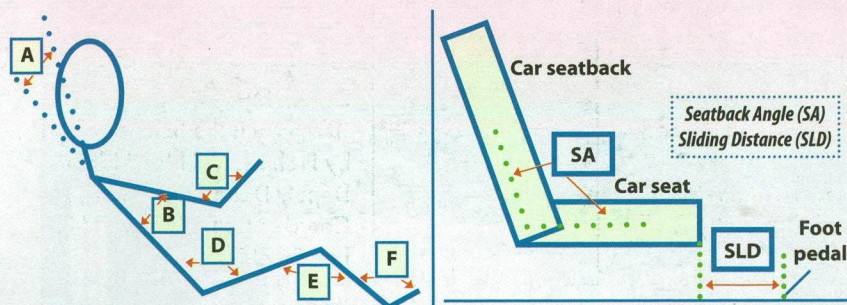
One of the most important contributions of ergonomics knowledge to the automobile design process is the characterization of physical size of driver and his/her preferred postures [9]. An experiment conducted by Costanzo et. al (1999) detected the different levels of muscular fatigue between correct and incorrect postures [2]. Awkward postures and high vibration exposure while in driving position might result in high risk condition for musculoskeletal disorders [4]. There have been many past research and experiments conducted in driver's car posture [1,3,4,5,6,7,8,10,11]

Due to this mismatch, automobile seats may be consuming valuable space in the vehicle interior; space that could, otherwise, is used for other features. The standard car seat is designed

has been divided into six different sections. These sections are divided into six parts. The six parts are (i) Entering the car, (ii) Seating posture, (iii) Seat belt & head rest, (iv) Pedal & steering, (v) Compartment I (right-hand control) and (vi) Compartment II (left-hand control). Seat design and also pressure distribution also will be discussed here.

Entering the Car

Design for the maximum (95th percentile). The position of the door handle was design to be at preferable height which is easy to be reach without stretching the arms too much. The car door could be open to degree angle of 75°, which provide enough space for the driver to enter the car comfortably.



to support thighs, the buttocks, lower and upper back and head support. The front driver and passenger seats of most vehicles have three main parts: the seat back (squab), seat base (cushion), and the headrest. When sitting in the car seat your posture is the most important factor when considering your comfort.

The positions that drivers assume depend on their anthropometric characteristics, the range and type of adjustments available in the seat package, and each driver's preferred driving position. Common available adjustments deal with concerns such as providing legroom, supplying back support, and giving head support. Available amenities include electric adjustments, choice in fabric covering, and temperature control. An integral dimension to any seat design is the aspect of safety.

For an easy analysis to compare of the anthropometric data with the test car, the car

Seating Posture

Design for adjustability. The car seat is place at 95°. The driver body is almost straight and the hands are bending. In this range of position can make the driver alert while driving. However this sitting is not comfort to the driver after driving for few hours. This could cause back pain to the driver. The car seat is place at 120°. The driver is in relaxed and comfort position. The driver body weight is support by the seat cushion, giving space for the back to lean and rest.

Seat Belt & Head Rest

Design for Adjustability. The position of the seat belt is a bit far backward, the driver needs to bend his hand backward and twist the wrist a bit to reach and pull the seat belt. However, the seat belt is easy to pull and wear. It gives good support of safety since the belt strap and holds the driver at the waist and chest to the seat fully. At first the head rest is place to lower; it gives partially support to the head. However, after