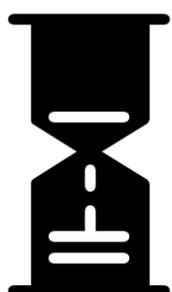


SUMMARY OF OPERATION:

ASTID®

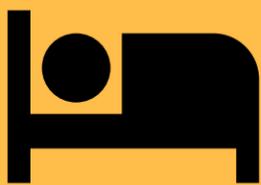
(i) Monotonous driving, and (ii) vehicle movement (steering) characteristics typifying fatigued driving. Information from (i) and (ii) is processed and fed into the knowledge based system. The assessment of these factors is then used to produce a Fatigue Index (fatigue score) which is outputted every minute. This Fatigue Index increases and decreases over the course of the shift following the peaks and dips of the circadian influence (human body clock). At some point, an early warning alert may be generated warning the driver to the fact they may be getting tired even before they themselves may be fully aware of it. In calculating the likely degree of driver tiredness, ASTiD takes into account the following four factors:

TIME OF DAY



Circadian rhythms analysis shows that there are regulated, daily peaks of alertness and tiredness throughout a 24-hour day. The main peaks of tiredness are the early hours of the morning and the middle of the afternoon. Overlaid on the 24-hour day is a 'time of day effect' sensitivity scale. The scale, which is based upon globally supported research on sleep related vehicle crash data is segmented into four "Fatigue Zones". The zones are Green (low risk), Yellow (moderate risk zone), Amber (significant risk zone) and Red (high risk zone). The high risk zones are centred on those main peaks of tiredness which is where you would expect to see high levels of fatigue.

SLEEP QUALITY OFF-SET



The driver has the ability to personalise the sensitivity of the system by using the Fatigue RADAR® Alertness application embedded into the system. The outcome of the test has the effect of raising or lowering the algorithms sensitivity to account for the driver's fatigue levels at the start of the shift.

LENGTH AND TYPE OF DRIVING



The system utilises inertial monitoring sensors and GPS positioning to determine the mode of driving. ASTiD® has 3 modes of operation – Task Mode, Monotonous Mode or Stop Mode. ASTiD® determines the length of driving time and whether the vehicle is being driven under monotonous conditions (Monotonous Mode) as this will accelerate the onset of fatigue. If you continue to drive without breaks you will accrue more drive time points which will accelerate you up the fatigue zones.

VEHICLE STEERING CORRECTIONS



Using advanced gyroscopic sensors and complex signal processing, ASTiD® monitors the vehicles steering movements to determine the rate of turn (Yaw) of the vehicle, looking for subtle lapses/changes and exaggerated corrective actions, indicative of increasing driver sleepiness. Each swerve detected will accrue additional drive time points and will remain registered on the system for a period of 15 minutes before being removed.