

## MOBIE. A 3-WHEEL MOBILE ROBOT

Investigator: Kittisak S., Chatchai P., Chainarong P.

Mobie is a 3-wheel mobile robot using "Omnidirectional Wheels", which can move to any direction. Mobile robots are always categorized into two groups: wheeled robots and legged robots. Mobie is in wheeled robot group that was designed for moving on smooth factory floors. It can avoid obstacles on production floors with high mobility. Mobie can effectively be used for investigating or maintaining dangerous areas such as combustion power plant.

Each wheel of Mobie has small rollers aligning in  $90^\circ$  with respect to shaft axis. Angle between shaft axis is  $120^\circ$ .

Mobie has three independent drive systems. Velocity of each wheel is

controlled by a microprocessor MCS-51 interfacing to HCTL-1100. When Mobie moves on, the main processor will compute velocity of each wheel and will be subsequently transferred to each HCTL-1100.

Depicted in figure (1) Mobie moves forward or backward, when wheel no. 2 and no. 3 rotate in opposite directions. It moves left-diagonal when wheel no. 1 and no. 2 rotate in opposite directions. It moves right-diagonal when wheel no. 1 and no. 3 rotate in opposite directions. Finally, when wheel no. 1, no. 2 and no. 3 rotate in same direction, Mobie rotates about its center.

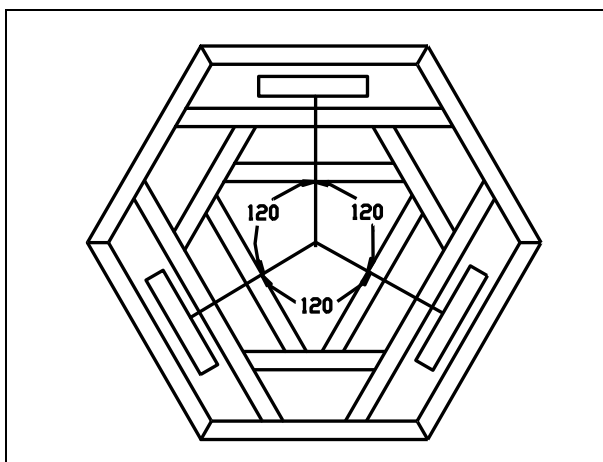


Figure 2 Mobie

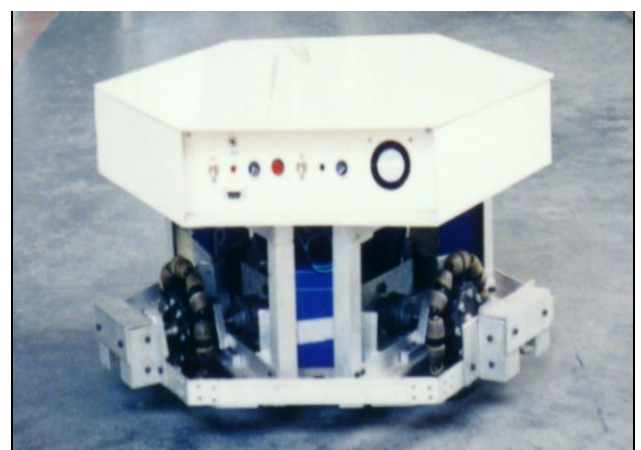


Figure 1 Wheel location with respect to body