'Slingshot' Roulette Wheel Uses SmartDrive's DSP Stepper Technology

Europe's leading manufacturer of roulette wheels for casinos is using DSP-based stepper drive technology from Cambridgeshire-based SmartDrive as the basis of a new 'slingshot' technique for automating the operation of the wheel.

SmartDrive has worked closely with Cammegh Ltd. of Ashford, Kent, on all aspects of the project, from initial design through to manufacture. The result is a total mechatronic solution embracing areas as diverse as motor and gearbox selection, the wiring of sensors and software programming in addition to supplying the Taranis DSP combined controller/drive.

The need for automating roulette wheels is driven by a number of factors. The expansion of the gaming industry throughout the UK and Europe has resulted in a shortage of reliable croupiers who are prepared to work unsociable hours. There is also a trend to larger-scale casinos where multiple gaming consoles equipped with plasma screens and credit-card slots relay an image from a camera placed over a centrally located roulette wheel, opening the way for real-time online internet participation.

The situation is further complicated by legislation, which varies from country to country but can include limits on the maximum number of games per hour. With the SmartDrive solution, such parameters can be set via a communications protocol which is embedded into each controller and is available to each casino to address via a host device.

Cammegh developed the 'slingshot' approach because existing solutions for automating roulette wheels had limitations in performance, reliability and market acceptance. In particular, they wanted a system where the roulette ball was always in view - something that gamblers prefer – unlike earlier systems which involved the ball being loaded below the main wheel prior to emerging from a hole onto the rotating wheel

The logical approach was the slingshot technique, in which the ball, initially at rest in the centre of the wheel, is thrown to the edge by the wheel via a stepper-motor controlled acceleration. At the point when contact is made with the outer rim, it encounters a puff of air which accelerates the ball further. The duration of this puff of air is determined by a random number generator in the Taranis unit, and emulates the random effect that occurs when a traditional croupier slides the ball into the rotating wheel.

SmartDrive designed and developed not only the stepper drive system to control the wheel's rotation but also all the associated proprietary interfaces and the software, including the serial protocols that link the wheel controls to the consoles and the host computer. The SmartDrive Taranis stepper unit not only provides enough power to drive the system reliably: its digital ultra-microstepping capability means that the resultant motion is smooth and quiet - something that is compatible with Cammegh's reputation for quality and traditional craftsmanship.

'This is a classic example of how sophisticated mechatronics technology can be applied to a traditional industry', comments Dennis Murphy, Managing Director of SmartDrive: 'It is particularly pleasing that two British manufacturers have been able to collaborate on a project like this, which has resulted in considerable export success.'

The end result is, according to Cammegh's own promotional material, 'the most accurate and reliable automatic roulette wheel platform on the market, combining a simple and elegant design with the build quality that is synonymous with Cammegh'.