

A. JARDON, S. MARTINEZ, J.G. VITORES, M. MARTI, C. BALAGUER. **Extended range guidance system for micro-tunnelling machine.** *Gerontechnology* 2012;11(2):326; doi:10.4017/gt.2012. 11.02.386.00

**Purpose** The goal is to improve the performance of micro-tunneling machines by increasing the target guidance distance up to 400m without having to displace the reference stations. **Method** In order to successfully carry out the teleoperated micro-tunnelling machine drilling with minimal deviations and without incurring cost overruns, the improvement of the guidance system is crucial<sup>1,2</sup>. Traditional guidance systems are based on several modules working over a laser-generated reference. However, dusty tunnel conditions are a limiting factor for the maximum range of the guidance system, hindering laser beam impact on the photo-electronic sensible panel of the front side on the target. The developed system is based on the new target modules with a high resolution image processing unit and uses estimation algorithms. Another key advantage is a new communications architecture that allows fast and secure data transition. **Results & Discussion** The proposed system has been implemented and tested in a real tunnel environment. The 400-meter target was reached and tested, working in parallel with previous commercial units for comparison. The developed man-machine interface shows the evolution of the drilling process (Figure 1).

**References**

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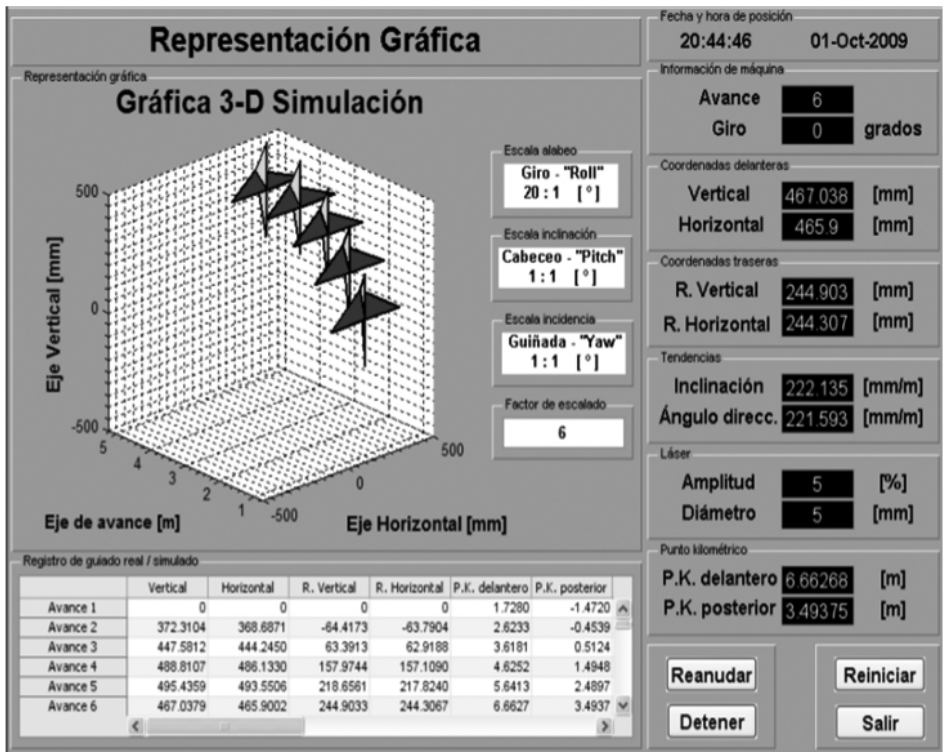


Figure 1. Man-machine interface of the drilling process using a developed extended range guid-