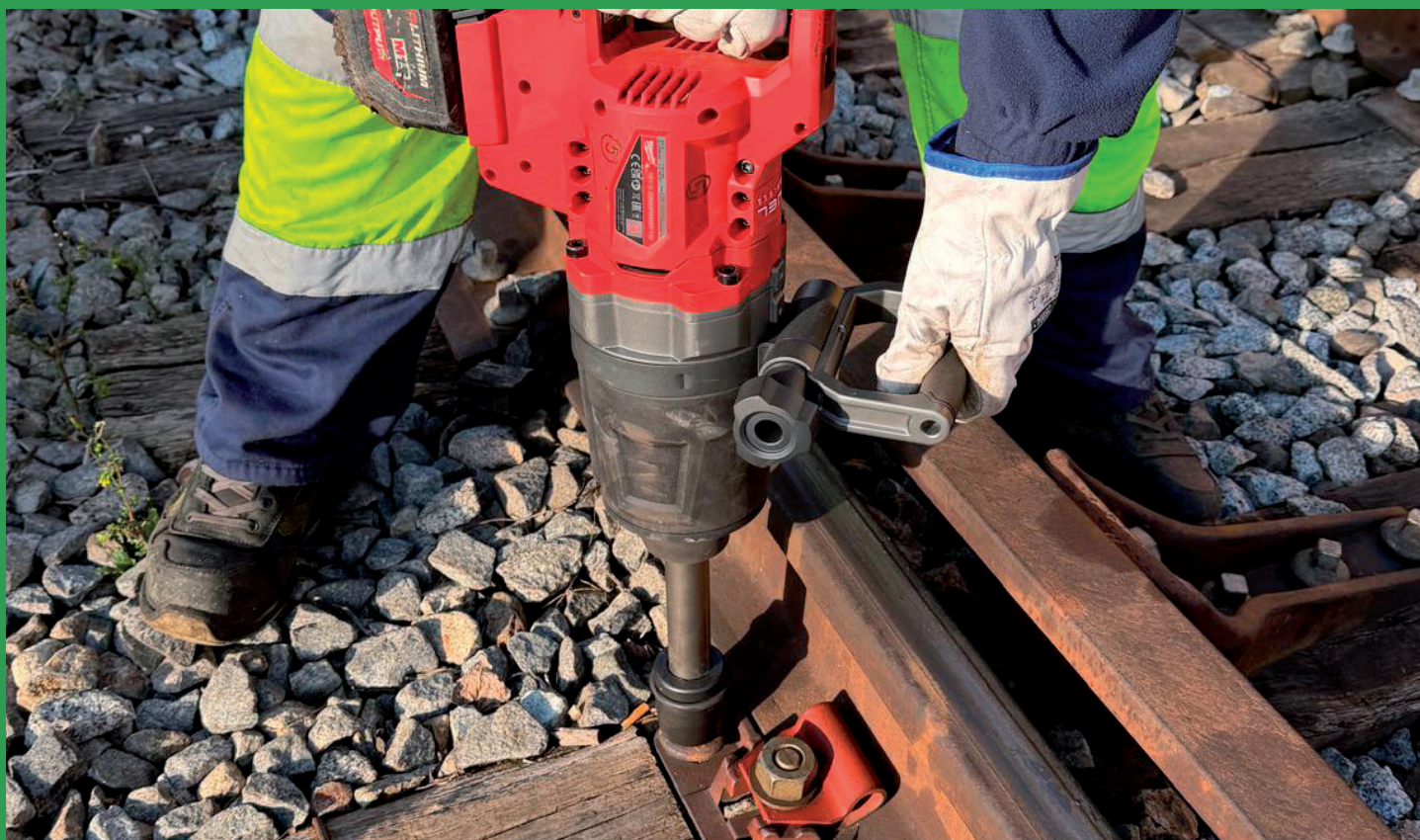


## Maintenance Metro Barcelona



# Common tasks in underground maintenance using electric impact nailers



Electric railway nailers are portable tools designed for the quick and precise fastening of track components, such as track bolts or fastening nails, offering **improved ergonomics** and reduced muscle fatigue compared to manual hammering. Their main advantages include high operating speed, single-person operation, **and low noise and vibration levels.**



As they are electric, **they reduce greenhouse gas emissions and oil pollution,** making them a **cleaner alternative to petrol-powered tools.**

## Upgrade of the PCI system on Line 9 of the Barcelona Metro



### Working at height in railway maintenance using railway-mounted aerial work platforms

Key benefits such as **zero emissions**, **quiet operation** and **greater operational efficiency** in railway environments.



**Environment:** As they do not emit combustion gases, they are ideal for maintaining air quality.



**Quiet operation:** The noise level is virtually zero, allowing work to be carried out at night without causing a disturbance in residential areas near the tracks.



**Safety and productivity:** They provide quick and safe access to heights, optimising working time.

## Infrastructure and east road maintenance. Lot 4



## Typical railroad maintenance work with electric impact nailers



Reduction of CO<sub>2</sub> emissions  
by using electricity instead of  
fossil fuels and synthetic oils



Ergonomic improvement for  
workers due to the lighter  
weight of the tool



Noise and vibration  
reduction

## Maintenance of Metro de Madrid



## Acquisition of low-emission machinery

**10** Tools battery-powered

**2** Battery-powered tractor units for crane and crate movements



Improved working environment by eliminating CO<sub>2</sub> emissions and lower noise levels



Tractors Lacertis 953  
Mini excavator Yanmar ViO82  
Shear Pandrol  
Tamping machine Robel Rotam Blight  
Nailer Robel Rompack B