

# European builders frontrunners in robotics

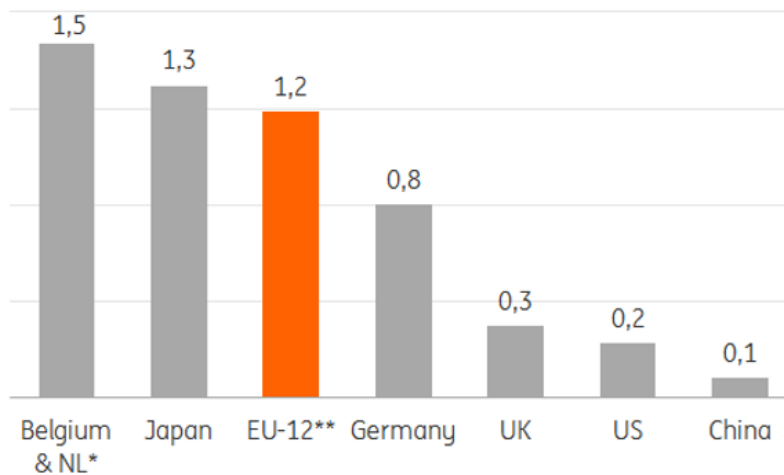
The global construction sector is not known for innovation. But in Europe, that's changing



For all the talk of a robot revolution, change has been slow to come to the global construction sector. With high investment costs and variable work locations, innovation has proven challenging and automation has lagged behind other industries, such as manufacturing. But as new technologies threaten to disrupt the industry and push traditional businesses out of the supply chain, many firms are taking action- and Europe has been leading the way.

### EU-12 has relatively high number of robots in construction

Number of robots per 10,000 workers, 2017



Source: World Robotics, National Bureau of Statistics of China, Oxford Economics. \*Data for Netherlands, Belgium only available for two together. \*\*Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain

## The EU-12 is doing well relative to other regions

European construction companies may still have a long way to go. But relative to their peers in the US and China, they're significantly more advanced in the area of robotics. Builders in the EU-12 have, on average, 1.2 robots per 10,000 workers compared to 0.2 in the US and 0.1 in China.

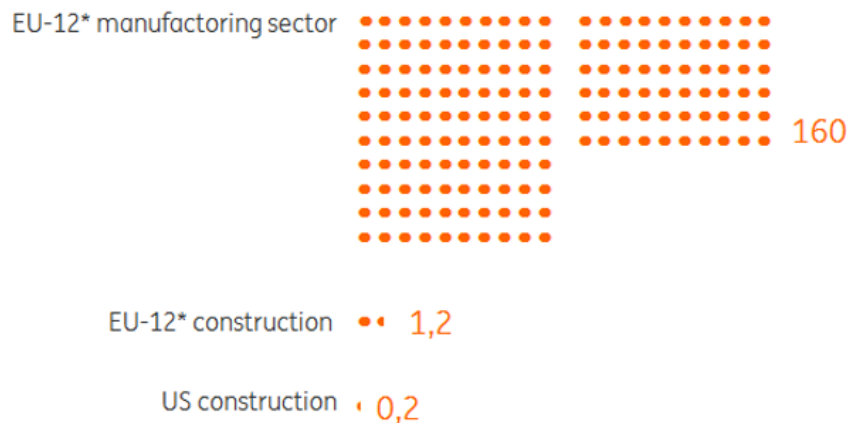
Within Europe, however, there are sizeable differences:

- The German sector has 0.8 robots per 10,000 workers
- The UK has 0.3 robots per 10,000 workers
- The Netherlands and Belgium have 1.5 robots per 10,000 workers

The high score in the Netherlands and Belgium is perhaps not too surprising given the relatively high wage costs there, which make robotics more financially attractive. For the Netherlands specifically, the relatively high percentage of series-based construction (such as terraced houses) ensures that work can also be robotised relatively more easily. In addition, building production has grown faster there in recent years than in most other countries, suggesting more room for new investment (in new robots, for instance).

### Robots in the EU-12 construction sector: fewer than in manufacturing, more than in the US

Number of robots per 10,000 employees (2017)



Source: World Robotics, National Bureau of Statistics of China & Oxford Economics, processed by the ING Economics Department. \*Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.

## Construction lags behind in industrialisation

In Europe, each employee in the construction sector has access to almost €10,000 worth of machinery. While that might sound like a lot, it's less than a fifth of the amount available to those working in manufacturing.

Construction companies require a very high degree of flexibility, which industrialisation does not offer. Builders have to build something different each time at a different location, and expensive machinery is not easy to move from place to place. Construction companies are also dealing with a volatile market, with periods of peak activity alternating with periods of no activity – conditions that demand quick scaling up and down. This is not a good combination for a business with high capital intensity.

### European construction worker has little machinery

Value of machinery per worker



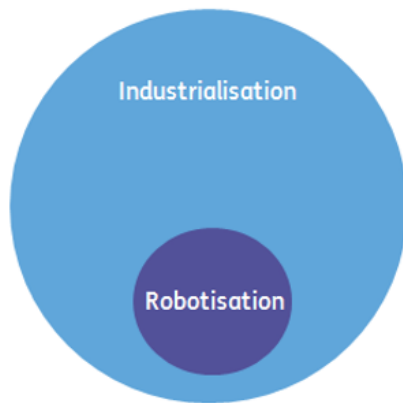
Source: Eurostat & ING Economics Department

## Robots suitable for parts of the construction process

To some extent, new robotics technology, along with prefabs, provide a solution for further industrialisation. After all, robots do offer more flexibility than 'traditional' machinery that can often only do one thing. There are various activities in the construction sector (such as bricklaying) that lend themselves to robotisation. Unlike a machine, a robot can also perform various programmable tasks, which is very important in construction, where every project can be different.

The rise of prefabs provides a boost because it's easier to have robots operating in a factory than outside at the construction site, where weather conditions can be changeable.

### Robotisation is a part of industrialisation



**Industrialisation:** One aspect of industrialisation is the mechanisation of production processes, as part of which manual actions are performed by machines.

**Robotisation** involves having actions performed by advanced machines (robots) that:

- are reprogrammable;
- are operated automatically;
- have three or more axes;
- can be either fixed at one spot or mobile; and
- offer flexibility because they can be used for multiple purposes.

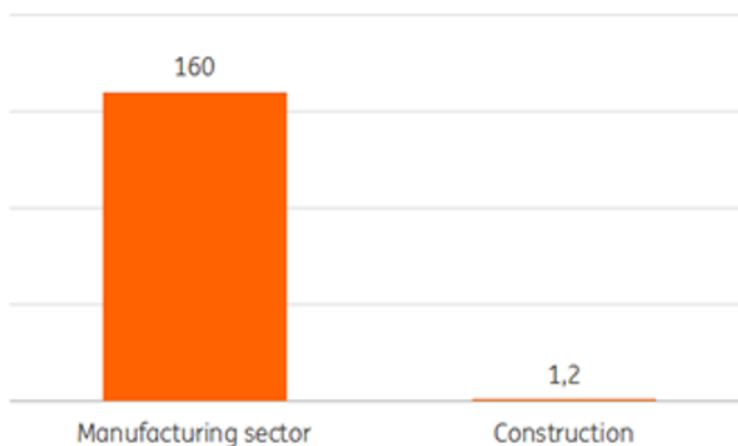
Source: ING Economics Department

## Construction lags manufacturing

Compared with the European manufacturing sector, there is still a significant difference in terms of the use of robots. As mentioned above, there are 1.2 robots per 10,000 workers in the construction sector, compared with approximately 160 (per 10,000 workers) in the European manufacturing sector. Robots may be able to perform various activities in construction but the high investment costs are often a problem for companies because they don't know whether they will be able to recoup the investment if the economy turns down. In addition, not all construction activities can be carried out in a factory, which means that the transportation of robots from one construction site to another, along with possible adverse weather conditions, remains an issue.

### Very few robots in construction compared with manufacturing sector

Number of robots per 10,000 workers in EU-12\*, 2017



Source: World Robotics, Eurostat & Oxford Economics & ING Economics Department. \*Austria, Belgium, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain

## Author

### Maurice van Sante

Senior Economist Construction & Team Lead Sectors

[maurice.van.sante@ing.com](mailto:maurice.van.sante@ing.com)

## Disclaimer

This publication has been prepared by the Economic and Financial Analysis Division of ING Bank N.V. ("ING") solely for information purposes without regard to any particular user's investment objectives, financial situation, or means. *ING forms part of ING Group (being for this purpose ING Group N.V. and its subsidiary and affiliated companies)*. The information in the publication is not an investment recommendation and it is not investment, legal or tax advice or an offer or solicitation to purchase or sell any financial instrument. Reasonable care has been taken to ensure that this publication is not untrue or misleading when published, but ING does not represent that it is accurate or complete. ING does not accept any liability for any direct, indirect or consequential loss arising from any use of this publication. Unless otherwise stated, any views, forecasts, or estimates are solely those of the author(s), as of the date of the publication and are subject to change without notice.

The distribution of this publication may be restricted by law or regulation in different jurisdictions and persons into whose possession this publication comes should inform themselves about, and observe, such restrictions.

Copyright and database rights protection exists in this report and it may not be reproduced, distributed or published by any person for any purpose without the prior express consent of ING. All rights are reserved. ING Bank N.V. is authorised by the Dutch Central Bank and supervised by the European Central Bank (ECB), the Dutch Central Bank (DNB) and the Dutch Authority for the Financial Markets (AFM). ING Bank N.V. is incorporated in the Netherlands (Trade Register no. 33031431 Amsterdam). In the United Kingdom this information is approved and/or communicated by ING Bank N.V., London Branch. ING Bank N.V., London Branch is authorised by the Prudential Regulation Authority and is subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. ING Bank N.V., London branch is registered in England (Registration number BR000341) at 8-10 Moorgate, London EC2 6DA. For US Investors: Any person wishing to discuss this report or effect transactions in any security discussed herein should contact ING Financial Markets LLC, which is a member of the NYSE, FINRA and SIPC and part of ING, and which has accepted responsibility for the distribution of this report in the United States under applicable requirements.

Additional information is available on request. For more information about ING Group, please visit <http://www.ing.com>.