



EXPERIENCE AND NEW TECHNOLOGIES TO FACE CHALLENGING APPLICATIONS

Bolt correct functioning is vital in the construction industry. **Growermetal's** productive model and washers lines are aimed at opening new possibilities for the sector.



At Growermetal's HQ, departments in close proximity create a flow where the production process meets quality controls, ending with packaging and storage. This system is the core of the Italian company located in Calco, 40km from Milan.

Through investments, flexibility, innovation and wide ranging services, Growermetal can establish long-lasting relationships, with its customers, personnel, trusted partners and suppliers.

Starting with spring washers manufactured for the railway sector, the washer portfolio has grown to include applications in automotive, aerospace, transport technologies, industry machines, agricultural and earth moving machines, oil & gas, power generation, electromechanical and construction.

In challenging and demanding applications, such as in infrastructure and construction, there are key criteria when selecting suitable materials, treatments and geometries: "Maximum precision, strength and resistance to stress are essential," says Paolo Cattaneo, CEO of Growermetal. "Whenever the market demands accuracy, Growermetal's products come into play: our knowledge and ability to provide different coatings, treatments and designs in short times make the service competitive."

Quality is key; Monitoring parts throughout the process is combined with optical and mechanical checks: "The synergy between cross-checking, research, design development and testing allows us to improve the performance of the parts, with a focus on their uses in specific contexts."

Washers are important in ensuring safe bolting in critical applications in combina-

tion with bolts and nuts. Easy, flawless assembly and a lasting performance even under high vibrations or stress are essential in construction. For these challenges, Growermetal offers three different solutions: a wide range of standardised washers, personalised parts according to customer drawings and a branded line with exclusive designs, inaugurated with the launch of Grower TenKeep® in 2019.

Giovanni Griggi, Technical Office Manager, says: "We were looking for a safety washer which could offer the maximum performance against loosening of the bolted joints: we found the perfect combination after repeated laboratory tests on hundreds of different geometries."

Grower TenKeep® is the result: a safety washer with two different surfaces. Side A is the part of the washer in direct contact with the head of the screw or nut, characterised by an advanced serration geometry that prevents the loosening of the bolted joint connection, and side B remains solid to the bearing surface thanks to its knurling.

Giovanni Griggi adds: "The design of Grower TenKeep® responds to the requirements of structures subjected to dynamic loads or high vibrations, like bridges, tunnels or other infrastructures. With an untightening torque significantly higher than the tightening torque, the performance is durable and the washer doesn't damage the bearing surface."

There's new building application safety concepts too, using digital technology to monitor infrastructure. Giovanni Griggi explains the latest design of Grower Detecto®: "We are working in partnership with the Politecnico of Milan to further test,

research and verify the potential of this new solution. Basically, we have integrated a smart sensor into the washer, enabling real-time detection of bolted joints preload. The embedded sensor sends signals through an Electrical Mechanical Impedance method, so engineers can remotely monitor that everything is working correctly."

Using this technology, the Grower Detecto® washer will report parameters to an Artificial Neural Network, with the objective of preventing failures and checking bolted connections or structural deterioration. While similar products require periodic on-site and manual inspections, Growermetal's solution is aimed at eliminating this need, maximising the effectiveness of operations with minimal downtimes and maintenance costs.

Paolo Cattaneo concludes: "Bolted connections are among the most widely used parts in mechanical applications and construction engineering, fields where safety is paramount and efficiency essential. Solutions like Grower Detecto® will simplify complex and time-consuming operations, whilst ensuring reliable performance in applications subject to tridimensional loading conditions."

"We are still in a phase of experimentation and testing, in order to improve Grower Detecto® characteristics and check future market opportunities related to this type of technologies: Of course this is only the beginning of implementation, anyway the results are encouraging and perfectly meet our goal of increasing safety through innovative solutions."