

ECONWARD TECH

▼ **OBJECTIVE REASONS TO TRUST IN THE
MECHANICAL RELIABILITY OF THE BIOMAK®**



01. We are accredited

ECONWARD TECH is certified in compliance with ISO 9001, ISO 14001 and ISO 45001 standards, and verified in the achievement of the UN Sustainable Development Goals.

02. Long-term commitment

13 years of expertise in developing equipment and processes. A fourth manufactured, tested and certified version of the BIOMAK® is currently available.

03. Financial Solvency

More than €35MM invested in R&D and Innovation for the last five years.

04. Verified Parameters

Process consumption, production and yields certified by an external body, Bureau Veritas.



05. Intellectual Property

Unique, **patented technology**. Manufacturing engineering 100% defined and owned by **ECONWARD**.

06. Detail Engineering

More than **10,000 models**, **55,000 hours** of engineering designing, and **1,200** associated technical documents.

07. Designing and manufacturing

Entirely made in the **European Union** and the **United States**.

- ▾ **Engineering developments** technically validated by the leading companies in the metal-mechanic industry.
- ▾ **Pressure vessels** calculated and manufactured under the ASME (American Society of Mechanical Engineers) code. Verification through FEM (Finite Element Analysis) of all the elements subject to tensions and weariness.
- ▾ **Manufacturing** made with high quality base materials with ASME and EN certifications, mainly in austenitic and martensitic stainless steels.
- ▾ **Appliance** of innovative welding techniques specifically accredited to ensure mechanical precision adjustment.
- ▾ **Mechanized** and precision adjustments following the highest standards such as those from the military industry
- ▾ **Appliance of surface treatments** (coatings through cladding, thermal projection etc.) applying accredited prescriptions with the sole purpose of ensuring resistance to corrosion and abrasion of all the elements subject to wear.

08. Comprehensive studies and tests

Carried out in **leading technology centres** for the selection of the best base materials and superficial treatments.

- ▾ **Test of corrosion** for the selection of stainless steel and superficial treatments.
- ▾ **Test** of abrasion to select the best coatings for pieces subject to high physical wear from abrasion, erosion and impact.
- ▾ **Test** and studies for sealing materials to ensure adequate mechanical properties and chemical compatibility.
- ▾ **Test** of coatings for parts in contact metal to metal subject to friction without lubrication.

09. Fully automated equipment

Through the use of **Rockwell software** with in-house programming, suitable to customer needs.

10. We are fully operational

Industrial plant set up and operated in Rivas Vaciamadrid (Madrid) which receives and processes various waste streams (separated collection and rejected material from treatment plants) provided by Municipalities and Companies.

The resulting termohydrolysed material (a substrate with high organic content) is supplied to different institutions, companies and other organisations, to jointly conduct case studies at both laboratory and industrial scales.

11. Quality Assurance

There are a number of given difficulties when trying to fully automate a thermal hydrolysis system for municipal solid waste:

- ▼ **Wear of the materials** subject to abrupt changes in temperature and pressure.
- ▼ **Wear of mechanical** parts due to the high frequency of movements (openings and closing valves or start and stop of engines).
- ▼ **Chemical harm** to materials due to the corrosive atmosphere generated by the steam in direct contact with the solid waste.
- ▼ **Physical wear** of the materials that are in direct contact with complex and abrasive waste streams that can contain glass, sands etc.

In light of this, **ECONWARD** has developed a singularly robust technology:

- ▼ **Designs and calculations** endorsed by well-known and formally recognized codes.
- ▼ **Usage of innovative** manufacturing techniques endorsed by technological centers and certification entities.
- ▼ **Exhaustive** quality controls throughout the whole manufacturing chain by notified organizations.
- ▼ **Industrial scale plant** operating in Rivas Vaciamadrid (Madrid).

All of which to be able to guarantee security, reliability, and useful life of the BIOMAK®.