Entzimatiko is a startup based in the Basque Country specializing in the enzymatic hydrolysis of waste plastics. Commercializing enzyme technology developed over two decades, Entzimatiko offers a unique, cost-effective solution to the circular economy of waste plastics.

With its enzyme R&D complete, the company is currently operationalizing the technology to develop commercial packages for its own plants and third-party facilities globally.

The Technology

The technology is both simple and revolutionary. Entzimatiko has domesticated specific fungal strains to produce a synergistic enzyme mix. By utilizing a unique micelle technology, this mix attaches to **all** plastic types, converting them into their fundamental building blocks (monomers and oligomers).

Crucially, the conversion process operates under mild, ambient conditions—requiring no heat, pressure, pH adjustment, or added solvents. This single-step continuous process enables a low-CAPEX plant design with low operating expenses (OPEX). While it is too early to finalize a Life Cycle Assessment (LCA), the carbon profile is projected to be best-in-class.

Strategic Focus

While the technology offers various commercial pathways, Entzimatiko is initially focusing on converting **polyolefins** into liquid building blocks. Polyolefins constitute the largest share of post-consumer waste plastics and are a major public concern. Current recycling methods fall short: mechanical recycling cannot handle films and leads to downcycling, while thermal conversion (like pyrolysis) is energy-intensive and low-yielding.

Entzimatiko's process features a residence time of under two hours, converting polyethylene and polypropylene into ethylene oxide and propylene oxide, respectively. This is achieved via a proprietary oxidation technology that utilizes water molecules rather than chemical additives. The process results in extremely low conversion costs, making recycled polyolefins cost-competitive with fossil equivalents.