

C as... Circularity

Doing good by people and by the planet with partnership, prosperity and peace. CEPI aims to produce sustainable technology that protects the environment and gives back to the people we work with.

Stefania Montalti is Communications and Content Manager as well as Sustainability Strategy Coordinator in CEPI. In her role managing communications, she has developed a cross-cutting expertise in messaging and the facilitation of dialogue, which she is currently channeling in the communication of key sustainability concepts such as circularity. Stefania is interested in promoting a clear and transparent understanding of both environmental and social aspects of sustainable development, with a general audience in mind as well as a specialized, industry one.

Bulk-handling: not just silos, but turn-key installations that are durable and circular

We say this a lot, but **bulk-handling isn't just about silos**. As important as they are, storage operations are only one part of systems we build. Our goal is to provide turn-key, **highly customized solutions** that manage the production line from storage to dosing. Turn-key is one crucial characteristic of our installations, and the other is organic: storage, dosing, transport and their automation must be regarded in their totality, and in the way they interact with each other. This is crucial to achieve effective customization, which in turn is what makes installations very **durable**.

We take a **long-term view** when we design a bulk-handling system, to create the most flexible solution for each food manufacturer, one which does not preclude any new path they may take in the future. The design is based on a **close analysis of the user's process**, based on information that goes well beyond the purely technical. **Our method involves all departments** from warehouse, to production, technical, purchasing and marketing, to include projection of future productions. This is what makes our installations very easy to adapt to future developments.

One of our strengths is the ability to **bring new life** to installations that would otherwise be decommissioned. This activity, known as **revamping**, makes it possible to extend the useful life of the plants indefinitely: systems that we built **30 years ago** are still functioning efficiently.

The choice of basing our working model around being turn-key has been strategic. It **makes users independent** and **meets their specific needs**, and very importantly, it ensures that their process is **efficient and sustainable**, providing them with a durable installation that fits with the circular economy model.

CEPI's product is circular: what it means and why it is important

To gather more detailed information about the circularity of our product, we have commissioned a study from an agency that applies the method identified by **the Ellen Mac Arthur Foundation**, one of the most authoritative international organizations in the field of the circular economy.

The **circular economy model** is rapidly establishing itself both in international policies and in consumption models, as an essential element of the transition towards sustainable development. It aims to **enhance the recycling and reuse** of raw materials and products, to reduce the consumption of primary resources. The Ellen Mac Arthur Foundation has developed an indicator that aims to **measure the level of circularity of a product**, evaluating information about the origin of materials, information about the characteristics of the product and its use, and information about the end of life of the product.

CEPI has been the first company in Italy to commission the evaluation of a bulk-handling system (as opposed to a single application). Our **circularity indicator** for the average system right now is **0,7 on a scale between 0 and 1**, which is considered a very good result.



Category		Value
Unit: 1 bulk-handling system		14.141 Kg
Materials	Steel	85%
	Aluminium	9%
	Cast iron	6%
	Other	<1%
Virgin		60%
From recycling		40%
Suitable for reuse		83%
Suitable for recycling		15%
Recycling efficiency		84%
Average durability		30 years
Use intensity		132 h

The materials are rated this way: suitable for reuse 83%, suitable for recycling 15%, disposal 2% and recycling efficiency 84%. This highlights a **high quantity of reusable materials** and materials sent for **recycling**.

All in all we are quite satisfied, especially as the final indicator was penalized by sector wide factors, in particular this past year's materials crisis, which has made it much harder to procure recycled steel. We expect that once we return to our usual supply chain the indicator will automatically go higher, and we have made its increase one of our strategic goals.

What makes us particularly proud is that the **durability of our installations is 30 years** on average, which we attribute both to our high recycling efficiency and our design method. It makes it clear how strategic a turn-key approach that **aims for flexibility** is, and how much efficiency, durability and sustainability overlap.

A scalable automation that optimizes all processes

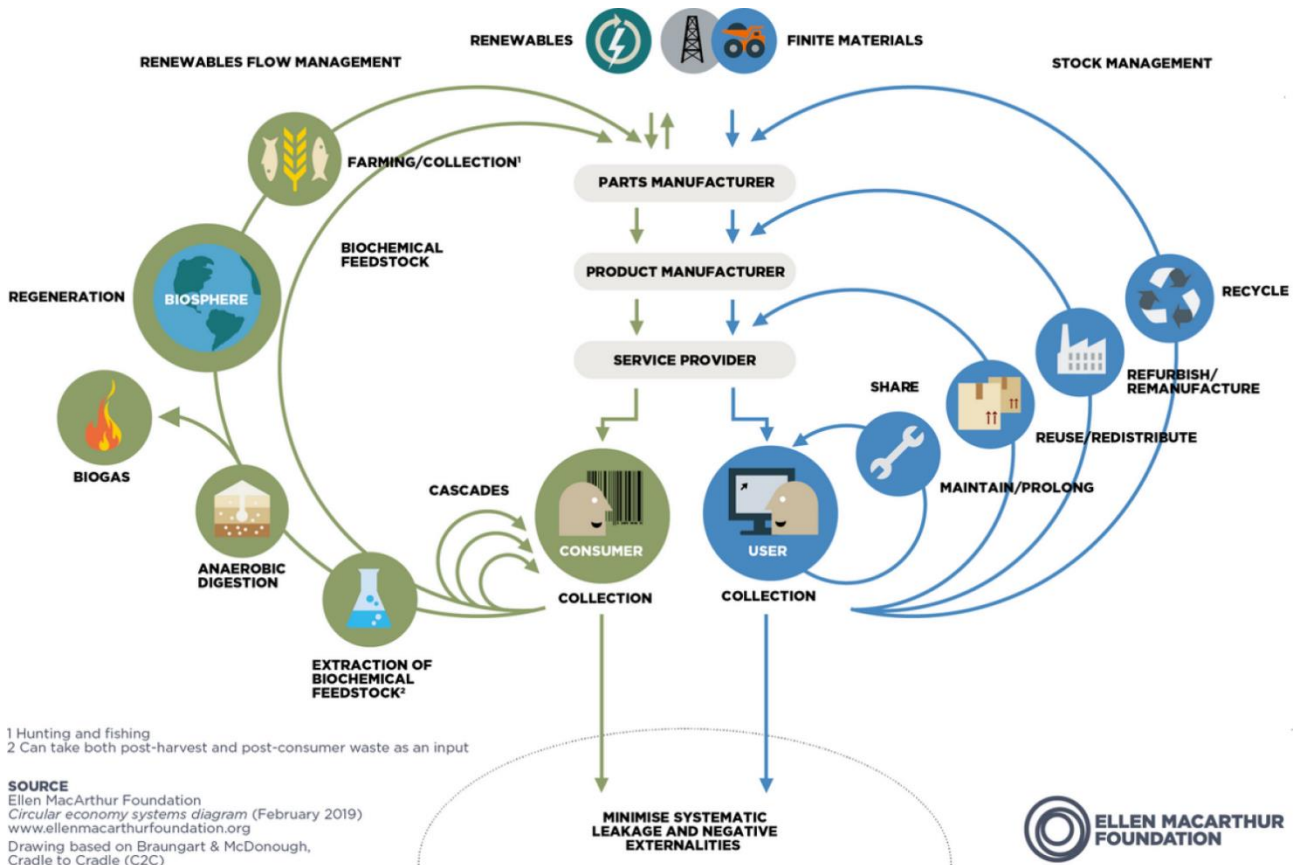
Our systems come with **integrated automation of all operations**, including **multiple PLC solutions with HMI** for the complete management of production and **Tracking System software** providing process control, warehouse management and full traceability. **Hardware and software design** is done completely **in-house**, and the **automation governs all operations** from the loading of storing stations to transport and dosing, including all complementary processes such as fermentation and flour cooling. The **recipe** is managed exactly in the way indicated by the user: in line with our general vision, we do not overturn their product or their process. We do not offer pre-ready packages as it is our firm belief that food manufacturers shouldn't adapt to our solutions but rather the opposite.

Because of this, our automation is very **scalable and customizable**, specific down to the single utility, which results in a **general optimization** of all processes. We automate through a **recipe matrix** that includes every technological step of production, including all dosing and mixing phases, their order and where they should happen. This kind of automation provides a recipe that is adaptable to each production and can be written in the way that is most suitable to its technological and logistic requirements.

Sustainability as a design principle for all applications

As the overlap of environmental and economic sustainability becomes clear, our customers are increasingly asking for installations with **high energy efficiency**, in transport operations as well as during the preparation of ingredients. As stated, our vision is already a guarantee in term of **circularity, durability and optimization**. On top of this, we develop all our applications with the minimization of consumptions and waste in mind.

Just to make a few examples, our **blending station** is designed to optimize mixing and production times, whereas our sugar invert technology aims to facilitate and reduce process times. Our flour cooling system provides a gradual cooling that runs by batch on fluidized bed, which reduces energy consumptions dramatically compared to rapid cooling processes. One of our latest innovations is **heat treatment for silos**, a method for sanitization and total disinfestation which has zero environmental impact, and is **completely eco-sustainable** as it doesn't employ chemical products or toxic gases.



Modularity and systematic thinking: pillars of the circular economy and of CEPI's design method

I was tasked a few years ago, before I became the Sustainability Strategy Coordinator, with writing an article that broke down our design method, explaining its advantages. As we were introduced to the concept of circularity, I was able to instantly recognize many of our key-concepts as **key-concepts for circularity**. It confirmed to me that not only we were on the right path, but also the underrepresented notion that a **healthy business model** should and will be able to **develop sustainably**, as the advantage of that isn't just environmental but also economic.

I already mentioned the main factors that contribute to our high circularity indicator: our systems being first and foremost designed to be turn-key, something achieved by looking at things **organically** with a **long-term perspective**.

But the circular economy can be envisioned through different approaches. According to **Stahel** (2010), it should be considered **as a framework**, as it draws on several more specific approaches that gravitate around a set of basic principles.

A critical perspective on the circular economy **builds resilience through diversity**. What does this mean? Products should be modular, versatile, and adaptable: a system that operates through products that are

developed for upgrading, aging, and repairing, with different materials and many connections and sizes is far more resistant in the face of external shocks.

Modularity, versatility and adaptability are words that in I have been using constantly to describe our equipment. As a rule, we modularity in engineering whenever possible, both mechanical and electrical. And all our singular technologies are **designed for a high degree of customizations**: they are **adaptable** to very diverse needs.



Think in systems is another crucial requirement to achieve a circular economy. Systems thinking is the ability to **understand how parts influence one another within a whole**, and the interrelationship of the whole on the parts. According to **Donella Meadows**, “a system is an interconnected set of elements that is coherently organized in a way that achieves something” and systems thinking is a “way of thinking that gives us the freedom to **identify root causes of problems and see new opportunities**”. When you **think systematically**, you consider elements in relationship with their infrastructure, their environment and their social, and what does systematic mean if not organic? Isn’t that exactly what I described when I talked about the nature of our design? Not only do we consider the bulk-handling system **as a whole product**, but we also consider the operations of their users **in their totality and interrelation**.

Finally, another governing principle of the circular economy is the **need to think local**. If we look at nature to understand systems and the solutions they need, like **Benyus** proposes, then it goes by itself that a business is like an **ecosystem**, and to be sustainable it must behave in the same way. Circular business **makes use of the resources at hand**, including **participating in their development and taking advantage of underused ones**. This is something that CEPI has been doing since inception: not only do we mostly make use of **local suppliers**, but we have developed many relationships with schools, universities, independent training institutions and non-profit organizations aimed at vulnerable groups, in order to **support local education and create work opportunities**. And let’s not forget our **employees**, and the commitment we have to their welfare and growth: an ecosystem within and ecosystem.

Think local is another way of looking at give back, one of the principles that have guided our work since inception. *Give back* means that the people and communities we work with should benefit from what we

do, and is a pillar of our [Ethics Code](#), where People are the first of 5 Ps that represent our values, inextricably connected to our Planet and the materials we take care of.

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