SUEZ Regene Atlantique is a French plant owned by the SUEZ group which specializes in the recovery and recycling of PET (Polyethylene Terephthalate) bottles. During 2013, the company received a sizable strategic investment which was specifically earmarked to modernize and improve its optical sorting process for bottle recycling. This planned upgrade was to be accomplished via the purchase of new equipment offering the latest advanced sorting technologies.

In accordance with this brief, SUEZ Regene Atlantique then took delivery of four of TOMRA Sorting´s [AUTOSORT machines](https://www.tomra.com/en/solutions-and-products/sorting-solutions/recycling/products/autosort) and one [AUTOSORT FLAKE](https://www.tomra.com/en/solutions-and-products/sorting-solutions/recycling/products/autosort-flake) unit together with a dedicated automated monitoring system. As a direct result of this new upgraded installation, SUEZ Regene Atlantique achieved a number of overall improvements, the most significant and valuable of which was undoubtedly the much-enhanced quality of their final product. More than 50 tonnes of flakes are produced every day.

**Target to achieve highest possible purity**
TOMRA Sorting and Regene Atlantique jointly agreed that, in order to achieve an output of PET flakes of the highest possible purity, this project would need to secure the following three target outcomes:
• a high throughput of raw material;
• a high product consistency; and
• a high product yield.

**Newly designed process**
In detail, the newly designed system now operates as follows:
The PET bottles are packed in bales and transported from sorting centers located throughout southwestern France. These bales are then brought to the de-baling station, where their metal straps are cut manually before the bottles are then loaded onto a feeding belt. This carries the de-baled material through to the shredder, where the bottles are individually separated before then passing on through to an AUTOSORT. Regene Atlantique decided upon a positive sorting technology for its first-phase optical sorting. With a positive sorting approach, a sorting machine can select PET bottles as required and then ensure that any contaminants which may be present are caused to quickly drop away via gravitational force. After this first sorting step, two other AUTOSORT units are then deployed to eliminate all remaining contaminants still present in the main flow of PET material.

Following these three optical sorting stages, all rejected material is collected by a fourth AUTOSORT. This will return any bottles that were removed in error by the previous machine processing and also recover a new category of colored PET bottles, which can now include /or not all kind of opaque bottles. After optical sorting has been completed, the bottles then undergo a manual inspection. Once this has taken place, the bottles are then shredded and thus emerge in their final product form: flakes.
These flakes then pass through a sink/float tank in which any material which consists of polypropylene (PP) or polyethylene (PE) will float on the surface. These artifacts can then be simply removed, whilst the residual PET product sinks and advances further in the recycling process. Once the PE and PP materials have been separated, the PET flakes are then washed at a temperature of 93°C to dissolve any glues present and to remove all attached product labels. After this wash process is finished, another sink/float operation is necessary to remove the labels detached by the operation.

Now it is time to eliminate any moisture content present in the flakes as a result of their processing up to this point. Once clean and thoroughly dry, the flakes are then sifted to separate out the finest particles. All remaining oversized flakes will be crushed again to achieve the desired particle size distribution. These calibrated flakes are then sent on to a magnetic drum and an eddy current processing device. This combination of sensors ensures the removal of any remaining metal pollutants from the flake material. The first roller captures magnetic material, whilst the second one eliminates non-magnetic metals such as aluminum.

As a final step, the processed material is sent through to the AUTOSORT FLAKE. This machine removes any last remaining traces of contaminants. Here, the material flow is divided into three tracks for the first sort. Then, the ejected material is run through again via the recovery channel for a second check. Finally, operators then pack the flakes into large bags, each weighing approximately one tonne. After packing, these bags are placed in a temporary storage zone to await quality control: Every large bag must pass a unit test during which the various contaminants are measured and analyzed. Screening covers a range of contaminants which includes PVC and metal – and when producing crystal clear (light-blue) flakes – opaque and colored PET flakes are screened out too. After these quality control measures have been completed, the large bags can then be dispatched.

**One of the best flake qualities available in today's European market**
As a direct result of this new processing arrangement, output quality has improved dramatically, essential maintenance time has been significantly reduced, and the plant’s annual waste volume has decreased by 300 tonnes.

This upgraded facility now enables SUEZ to produce one of the best flake qualities available in today's European market. Industrial customers use the flakes SUEZ produce to make food-grade packaging – mainly for sheet applications; and they are also used in textile fibers for use in polar fleece, or automotive carpeting. In addition, the flake output is also used to manufacture bottles, thus truly bringing the recycle process full circle. Transforming waste products into valuable resources contributes one important solution to the pressing global issues of our time – depletion of natural resources and environmental protection.

**Considerably higher revenues**
Detailing the process advantages from a customer perspective, David Bourge, Plant Manager of SUEZ, Regene Atlantique, said: “Thanks to our partnership with TOMRA, we´ve been able to optimize our PET recycling operations. By combining the AUTOSORT (bottle sorter) with the AUTOSORT FLAKE (flake sorter), we´ve multiplied our high-quality product yield by a factor of two, resulting in considerably higher revenues. Via the system's Central Control Computer (CCC) we can now monitor, control, and greatly improve our production almost instantly on a real-time basis. At every stage, this investment decision has resulted in a swift payback!”