



IDENTIS WEEE Project

Identification determination traceability integrated system for WEEE



waste management

Waste sorting

WEEE

recovery of waste

PROJECT DESCRIPTION

It is estimated that today in Europe only 33% of electrical and electronic devices are separated from municipal solid waste and disposed of correctly, while the remaining part is not differentiated thus leading to the dispersion of hazardous waste presenting risks both for human health and for the environment.

The volume of WEEE increases three times faster than solid urban waste, due to the growing purchase and use of electronic equipment (EEE), such as refrigerators, air conditioning equipment, washing machines, monitors, computers, smartphones, small household appliances, electronic tools and toys, lighting equipment. The 2013 Report of the WEEE Coordination Center estimates that the total collection in Italy is about 225.931 tons (on an indicative total production of 30 million tons). The collections by groups amount for each macro-groups (G) to: G1 Refrigeration and heating (62.158 tons), G2 Large white domestic appliances (56.156 tons), G3 TVs and monitors (68.879 tons), G4 Small domestic appliances (37.620 tons), G5 Light sources (1.115 tons).

In this context, the **Identis WEEE** project, coordinated by the Hera Group, in collaboration with the *Consorzio ECOLIGHT*, the *Fundación ECOLUM* of Madrid, and the Romanian *ENVIRON Voluntarii Bucharest Association*, has developed a **new high-tech collection model to improve the WEEE collection standard** and to implement monitoring and traceability tools for their recovery or correct disposal. In order to increase the collection of WEEE, in particular of the small household appliances, the necessity to use innovative systems capable of involving citizens has been demonstrated, guaranteeing the efficiency of collection and the traceability of waste.



OBJECTIVES

The principal objective was to demonstrate the possible increase in the collection of electronic materials that contain precious materials (such as, for example, iron, aluminum, glass, tungsten, palladium, etc.) that can be recovered and reused, making the waste itself traceable and check the correct processing of WEEE, in particular of small WEEE (G4) which otherwise would be mistakenly treated as unsorted waste.

PROJECT PHASES

The initiative that involved entire districts of the Municipalities of Bologna, Castenaso, Ravenna and Lugo, aimed to increase the collection of materials such as cell phones, light bulbs, electronic toys, TVs, domestic appliances, through an **innovative integrated system for the identification, collection and tracking of WEEE** which envisages different **container prototypes** equipped with a digital user interface that enable the system to recognize the user through a health card and identify the WEEE



(via bar code).

The new generation containers for the collection of electrical and electronic equipment have been placed on streets and squares. For the collection of small WEEE, such as small household appliances, batteries and low-consumption lamps, burgundy red containers (**WEEE Point**) have been designed (in compliance with and in advance of the European Standard on the colors of the bins dedicated to waste collection - EN 16403 Waste Management Waste visual elements).

Two other types of innovative containers have been designed and destined for large-scale distribution: the largest (**WEEE Parking**) can collect small appliances, TVs, monitors, vacuum cleaners, neon lights; the other, smaller type (**WEEE Shop**) was designed to be located outside some stores and to collect small WEEE such as radios, razors, blenders, watches, smartphones, drills, PC keyboards. Finally, the container called **WEEE Mobile**, is a large mobile collection center, operated by Hera personnel, which cruises the most frequented streets and squares of the Region becoming a fixed appointment (every Thursday) for the citizens of Bologna.

To date, major shopping centers and some large IKEA, Leroy Merlin and Mediaworld stores distributed in the provinces of Bologna, Ferrara, Ravenna and Rimini have already joined the project. The testing of the prototypes took place also in the involved countries, Zaragoza (Spain) and Bucharest (Romania), to evaluate their functioning. The various prototype containers, which acquire all necessary data on the user and the waste, in addition to identifying the waste via bar code, can photograph and weigh it and send the information to a data processing center (DPC), connected via modem to each prototype.

In this way the collection system is fully automated. These containers, thanks to an inside ultrasonic sensor, monitor the filling level and notify the operator about the proper time for emptying, thus optimizing the collection service.

The data processing center (DPC), which represented the node for collecting all the information from the prototypes via dedicated data connections in GSM / GPRS mode, receives different types of data concerning **users** (user code or tax code), **waste delivery** (container prototype name; delivery date and time; GPS position; type and quantity or volume of material), **logistics** (loading/ unloading operations with PDA support, diagnostic warnings, malfunctions, break-ins). The DPC is based on a commercial server processor and has a special management software that allows to query the database in different ways or to export the data for subsequent processing. The availability of data also made it possible to analyze the trends of the collection over time for evaluating the performance of the initiative in the various areas or in the sales points involved in rotation. A marketing action was also carried out rewarding the users registering the biggest number of deliveries in the prototypes dedicated to the large-scale distribution.

PROJECT RESULTS

The results of the project in Italy were very encouraging in terms of amount of the collected WEEE, participation of citizens, use of the latest generation containers and involvement of large-scale distribution centers, which recorded around 30.000 deliveries, made by over 11.500 users, for a total of:

- 20.600 kg of WEEE collected and recovered through territorial containers (36 WEEE Point prototypes);
- 14.500 kg of WEEE collected and recovered through the containers placed at the large-scale distribution centers (1 WEEE Parking prototype and 3 WEEE Shop prototypes);
- 18.000 kg of WEEE collected and recovered through the WEEE Mobile system;
- over 10.000 people involved in the nearby of the shopping centers with the prototypes installed.

The disposal and recovery processes of WEEE through the developed latest generation containers have led to a significant decrease in the energy requirement as well as the GHG and other polluting emissions. The recycling of PCs and laptops has saved about 89 Giga Joules (GJ) of energy per ton of WEEE delivered, while the recycling of PC peripherals has allowed the saving of 69 GJ per ton.

The **Identis weee** project has strongly contributed to the large-scale application of an innovative collection system that puts into practice the principle of "one against zero" implemented in Italy by the [Legislative Decree 49/2014](#) which originates from the [European Directive 2012/19/UE](#). This directive has imposed new methods and objectives of waste collection and treatment, functional to increase the recovery of waste containing materials such as iron, aluminum, glass, tungsten, palladium which, if not disposed of correctly, constitute a serious threat to the environment.

The project has influenced a more precise definition of small size WEEE, opening the way to the [Decree no.121 of 2016](#) relating to small electrical and electronic waste which, in accordance with the provisions of article 11, paragraph 4, of the [Legislative Decree 49/2014](#), regulates the simplified procedures for the free retrieval, by distributors, of the very small electrical and



electronic equipment category waste (G4), coming from households and delivered by end users, that not imply the obligation to purchase equipment of equivalent type (hereinafter EEE). This constitutes the “one against zero” principle.

The IDENTIS WEEE envisaged a rewarding mechanism for citizens who, during the project, correctly delivered the largest number of WEEE in the appropriate RAEE SHOP, RAEE PARKING, RAEE MOBILE containers, using the personal card dedicated to the initiative, the Hera card / barcode (TIA 2012 bill or ecological station card) or the health card. The rewards consisted in benefits in gift cards for food products or electrical/ electronic equipment, issued and usable by the bearer in the main shopping centers of the area.

In conclusion of the test phases on the containers carried out within the Identis WEEE project, the Hera Group developed a new type of "Shop-EVO" container to be used in the main shopping centers in the Emilia Romagna region. The new Shop-EVO integrates the improvements stemming from the testing phases within the Identis WEEE project and related technical, economic and impact feedbacks from stakeholders and users.



Acronym
 IDENTIS WEEE

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[LIFE](#)

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 1.553.388,00

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 2010

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Beneficiary headquarters

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Region
 Emilia-Romagna

Description

Emilia Romagna