



ANALYSIS OF SEMIVOLATILE ORGANIC COMPOUNDS IN WASTE VIA A RUGGED AND RELIABLE SAMPLE PREPARATION



| CUSTOMER



Iren Ambiente are highly specialized laboratories

with 80 technicians performing chemical, microbiological and hydrobiological analyzes, eco-toxicological tests and environmental consultancy related to water resources, environmental matrices, waste and energy for a total of over 1,200,000 tests and 100,000 samples per year.

| CHALLENGE

The main reason why they decided to adopt the microwave solvent extraction technique was the need to overcome problems occurring with Pressurized Liquid Extraction technique when dealing with difficult matrices and the requirement to improve their productivity capacity.

| SOLUTION

ETHOS X with the fastEX-24 rotor could increase their productivity and enabled to process even waste with high plastic content expanding their application range possibilities, with a significant increase in their lab's workflow efficiency.

| BACKGROUND

The laboratories of the Iren Ambiente are able to offer environmental analysis and consultancy services concerning water, soil, waste and compost.

Iren Ambiente can count on a complete system of waste, treatment and disposal plants located in Northern Italy, guaranteeing a significant synergy with industrial and commercial activities. The three waste-to-energy plants are flanked by several plants for the storage, treatment and recovery of urban, special and hazardous waste, plastic and paper packaging.

Iren Ambiente laboratory is equipped for organic pollutant testing with the latest instrumentation for Gas Chromatography /Mass spec (GC-MS) and with microwave instrumentation technologies for sample digestion.

Their previous adopted method for extraction of organic compounds from waste was the Pressurized Liquid Extraction sequential technique (PLE).

| CHALLENGE

Iren Ambiente deals everyday with extractions of various contaminants from different environmental matrices like soils, clays, sediments, sludge and solid wastes.

Working daily with a high workload of solid waste, they were in a need to introduce another extraction technique that would allow to extract any type of sample avoiding the typical problems of sequential extraction.

The **main reasons** why they decided to implement ETHOS X microwave extraction system with the fastEX-24 rotor was the need to **improve their sample preparation procedure**

LAB PROFILE MICROWAVE EXTRACTION | ENVIRO



for waste samples, which was difficult and unreliable with the PLE technology.

At Iren Ambiente, they were impressed with the unparalleled **ease of use** of the new Milestone ETHOS X with the fastEX-24 rotor and by the ruggedness of this approach, even with difficult and unhomogenous samples like wastes.

Thus, Iren Ambiente was attracted by the system because it could help **solving maintenance problems** they had with their PLE system when processing samples with high plastic contents. These samples potentially led to tubes clogging or general pump issues.

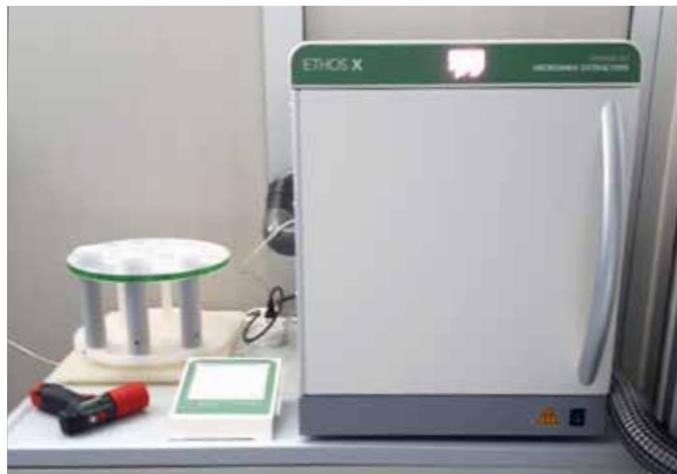
ETHOS X IMPLEMENTATION

When the new parallel method of microwave extraction was introduced, they could immediately see the potential of this new approach, in terms of productivity.

Iren Ambiente recognized in the ETHOS X a perfect solution for their needs since the new method **boosted their extraction procedure**, with minimal solvent usage.

Microwave solvent extractions are performed in compliance with the US EPA Method 3546 for the determination of **Semivolatile Organic Compounds** (SVOC Analysis) that include hydrocarbons, dioxins, phenols, pesticides, PCBs, PAHs, phthalate esters. No method development was needed and its implementation has been easy and smooth. They rapidly got consistent recoveries, comparable to those obtained with the previous technique.

Moreover, the robustness of the microwave hardware led to **expand their application range**. *"It has demonstrated to be able to process all kind of solid matrices, even those with high plastic content or highly polluted ones, eliminating*



"The advantages of ETHOS X compared to sequential technology are the improved productivity and the ability to process any kind of difficult sample."

- dr Michela Bottaro and dr Andrea Cresti

any clogging problem that typically occurs with sequential technique".

Practically **no learning curve** or expertise is needed to use the system: the operator simply follows a quick-to adopt process to prepare the run.

CONCLUSION

"This approach has been quickly adopted by the lab and standardly used for the most challenging waste samples."

A huge number of samples has been already processed so that Iren is looking to invest into an additional set of vessels to further enhance their productivity.

ABOUT MILESTONE

With over 50 patents and more than 20,000 instruments installed in laboratories around the world, Milestone has been widely recognized as the global leader in metals prep technology for the past 30 years. Committed to providing safe, reliable and flexible platforms to enhance your lab's productivity, customers worldwide look to Milestone for their metals digestion, organic extractions, mercury analysis and clean chemistry processing needs.

Learn more or request a demonstration of ETHOS X at www.milestonesrl.com



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