



## Kuusakoski Research Centre

Maria Lehtinen - Lab Manager

*In this interview, Michael Jakob, European Product Manager at LECO, speaks with Maria Lehtinen, Lab Manager at Kuusakoski Research Centre.*

### **Michael Jakob:**

First of all, let me introduce myself and say thank you for the interview. I'm Michael Jakob, European Field Product Manager. As discussed, we launch a series of interviews, to share what our customers do with others. Many people interested in our product simply don't know what other users are working on. We want to create a kind of win-win situation for both our customers and ourselves by spreading knowledge about how people use our machines. On one hand, we want to understand customer applications better; on the other hand, we want to give our customers the opportunity to do a little promotion for their laboratories.

The Finnish Kuusakoski Group is one of the big European players in the recycling and waste-recycling sector. But Maria, maybe you can say a few words about Kuusakoski, yourself, and your role there.

### **Maria Lehtinen:**

Yes, of course. My name is Maria Lehtinen, and I work as a lab manager here at Kuusakoski's Research Centre. I've been with Kuusakoski for over 20 years.

Since 2014, I've been working in this research center located in Lahti, about 100 kilometers north of Helsinki.

Kuusakoski is a 100% family-owned recycling company with a history of over 110 years. The company was founded in 1914 in Vyborg, Russia, and later moved to mainland Finland. Kuusakoski mainly works with metals and other recyclable materials—metals are still our core business, although we handle other materials as well.

We operate mainly in the Baltic Sea region, but our customers are worldwide. We sell materials all over the world, but our main operations are in Finland, Sweden, and Estonia. In addition to the main Kuusakoski Ltd operation (registered in Sheffield), SWEEP Kuusakoski in Sittingbourne focuses specifically on electrical and electronic equipment recycling (WEEE), processing e-waste for material recovery.

**OK. And how should I imagine this? Do people bring metals to you by ship or transport trucks?**

**Maria Lehtinen:**

Yes. Our industrial customers in Finland bring materials mainly by truck. We also have three shredder plants in Finland where we shred cars and larger metal pieces. After that, we upgrade and sort the materials, and then sell them to steel factories, copper smelters, and similar customers.

**That means you have a lot of different samples—metal can be steel, copper, aluminum, nearly anything?**

**Maria Lehtinen:**

Yes. In Lahti we mainly work with copper-based materials from electronic waste. We also analyze steel and other metals. In our scrap yards we use handheld X-ray instruments—this is one of the basic analytical tools in our business.

**Besides the handheld instruments in the yard, what analytical devices do you use in the lab?**

**Maria Lehtinen:**

In the laboratory, for metal analysis we use ICP-OES, ICP-MS, and a benchtop X-ray analyzer. For fuel analysis—mainly waste-derived fuels—we use your devices: the LECO Carbon phase analyzer RC612, the elemental analyzer CHN828, and the isoperibol calorimeter AC600.

**Do you know how many samples you analyze per year? It must be a huge number.**

**Maria Lehtinen:**

We typically handle around 600–800 samples per year. We're a small laboratory with two lab technicians, one technician who does sample melting, and me as lab manager. Of course, the number of analyses is in the thousands because one sample requires many different analyses.

**For fuel analysis you use the LECO CHN828 and the AC600 calorimeter. What type of fuel do you analyze?**

**Maria Lehtinen:**

We analyze solid recovered fuel (SRF) from waste processing. It contains plastics, wood, and various other materials.



LECO AC600 – illustrative image

**How do you perform sampling and sample preparation?**

**Maria Lehtinen:**

Most fuel samples arriving at our lab are already pre-shredded to about 15–40 mm. Fuel standards require the analytical sample to be below 1 mm. So we use two types of cutting mills: – a larger mill for pre-shredding to about 2–4 mm – a smaller cutting mill intended to bring particle size below 1 mm. Our materials are difficult, so getting below 1 mm can be challenging. We also have an ultra-centrifugal mill designed to reach below 0.5 mm, but there are some issues with that as well. We also have drying ovens, ashing ovens, etc., required for the analyses.



LECO CHN828 – illustrative image

**The CHN analyzer is used to convert gross calorific value to net calorific value, or do you use it for other purposes?**

**Maria Lehtinen:**

We mainly use it for determining the elemental composition needed to calculate net calorific value.

**Regarding your LECO RC612 solid TOC analyzer: Which of the TOC parameters do you measure?**

**Maria Lehtinen:**

Yes. TOC is one of the key parameters that determines whether material can be landfilled. We follow the standards: TOC400, TIC (around 900°C), and ROC (around 600°C). [Remark: After ISO 17505:2025 Soil and waste characterization — Temperature dependent differentiation of total carbon (TOC400, ROC, TIC900)]

We have two methods—if the customer only needs TOC400, we do that as an only method at 400°C because it's much faster. Doing all three takes considerably more time.

**How important are these three LECO instruments for your lab?**

**Maria Lehtinen:**

They are an essential part of our analysis work. We don't use them every day, but we rely on them regularly and they are very important for our daily work. Reliability is an important feature here.

**Any special experiences or wishes regarding the instruments?**

**Maria Lehtinen:**

No, not really.

**So they do what they are supposed to do?**

**Maria Lehtinen:**

Yes, exactly.

**Michael Jakob:**

That's all from my side. Thank you very much. If there is nothing to add, I wish you a nice week. Today is Monday 10:23 here in Berlin, and I think you're one hour ahead of us in Finland—so it's 11:23 now. Thank you very much and Greetings to Finland.

**Maria Lehtinen:**

Thank you. Bye-bye.

