MINALOGIC

Revametic: Metallic Waste Recycling and Recovering

Background

Due to its thermal and conductive properties, copper is an essential element for the manufacturing of electronic components in the semiconductor industry. The baths used to deposit copper in aqueous environments and the chemical mechanical polishing (CMP) process carried out after the deposition phase generate metallic waste. Chip manufacturers want to be able to collect the aqueous fraction of this waste and reuse it as process water.

Concentrated metallic waste is typically processed with neutralizing agents (usually lime) in heavy metal containment ducts, which creates a mixed sludge. This process has two drawbacks: it wastes metallic resources and it increases the volume of sludge to be handled.

Most chip manufacturers previously outsourced their bathwater process operations, but are now looking for on-site processing options to handle the growing amount of metallic waste that they generate.

Innovation

The Revametic project aims to promote green electronics by allowing chip manufacturers to recycle the aqueous fractions and metallic waste from their electrolytic deposition and CMP processes. The benefits for the environment include the preservation of mined resources and less waste to be stored in a “Class 1” (under the French system) underground containment center. The financial benefits include considerable savings on outsourcing and lower shipping and storage costs, since the metal is recycled.

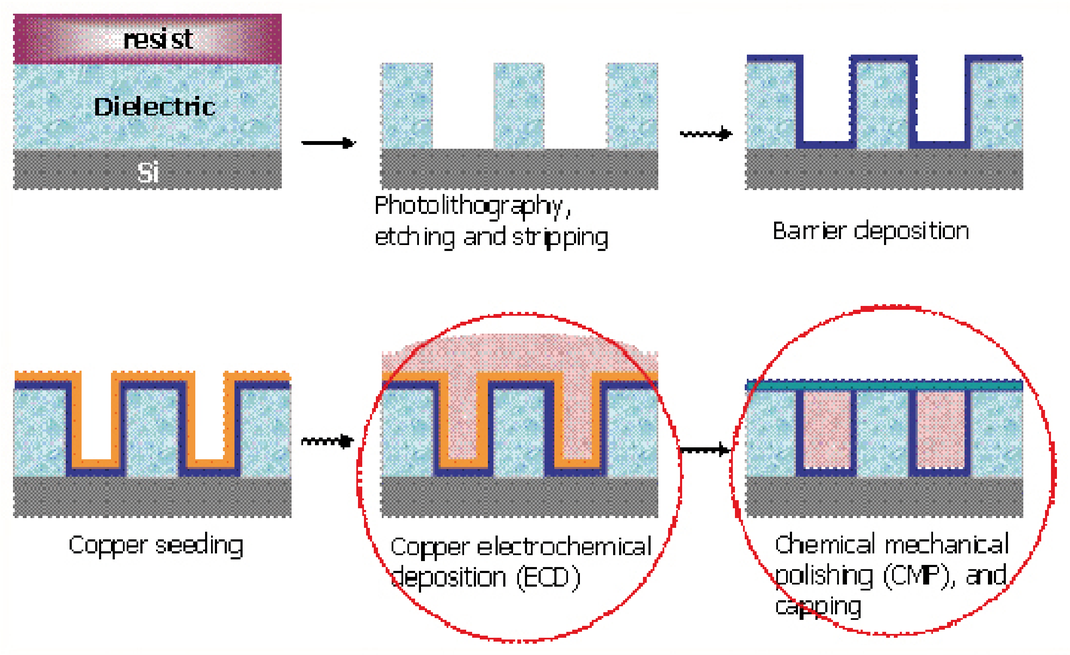
The first step in the Revametic project will be to identify the characteristics of the dirty bathwater, and select the target components that need to be monitored or treated because they are toxic, potentially harmful to the environment, or could interfere with metal recovery processes. This information is then used in the second step of the project to design innovative systems that significantly reduce bathwater toxicity and can recover metals in a reusable form.

Partners

Corporate
STMicroelectronics

SME
Recupyl

Research laboratories
CEA-Leti - INPG-LEPMI



Chemical mechanical polishing (CMP) steps for copper interconnections

Key figures

Budget: €1 million
Duration: 24 months
Human resources allocated: 5.5 FTE