Building a Circular Economy in the Electronics Manufacturing Industry

E. Demircan
Director Advocacy and Public Policy
SEMI, Bruxelles, Belgium

Biography
Emir Demircan, Director of Advocacy and Public Policy, SEMI Europe. He is a professional in public policy and government affairs in engineering technologies. At SEMI, he is responsible for leading pan-European advocacy actions on technology, talent, regulatory and government incentives. He previously worked in the 3D printing, chemical and digital sectors. He studied international political economy at King's College London.

Building a circular economy in the electronic manufacturing industry: the perspective of a material solution supplier.

C. Q. Carl Quaeyhaegens
Program Director
Umicore, Olen, Belgium

Abstract
Responsible mineral sourcing and recycling are an integral part of the array of innovative solutions a material solution provider can offer to the semiconductor ecosystem. In this talk both the logic and the business sense will be explored that are driving the development of urban mining.

Biography
Alumni of London Business School and PhD in material science.
Carl build-up a broad international experience in business development and in commercial and operational rolls at Umicore before assuming the role of general manager. Today Carl is Program Director at Umicore.

Transitioning to a circular economy in the Sub Fab supporting EUVL

T. Key
Business Line Manager
Edwards, Burgess Hill, United Kingdom

Abstract
A circular economy is a model for economic activity that is restorative and regenerative by design. This contrasts with the conventional linear model – take, make and waste – that has largely dominated production design since that advent of the industrial revolution. To early industrialists the combination of non-animal power sources (steam) with seemingly unlimited material resources promised ever increasing production and decreasing cost. We know now that both energy and material are ultimately scarce and consumption of both carries unacceptable costs paid ultimately by the degradation of our shared environment. Circular economic design recognizes these costs and emphasizes reuse, sharing, repair, refurbishment, remanufacturing and recycling of materials through a circle of value, creating a closed system that reduces the consumption of resources and the creation of waste and pollution. Environmental costs are minimized, and economic benefits enhanced by more efficient use of resources.
Driven by our commitment to sustainable manufacturing and environmental stewardship, Edwards has adopted the principles of circular economy across our design, production and support operations. For example, our dedicated EUV lithography vacuum and abatement system (EUV Zenith) benefits from circular methods throughout its lifecycle.
EUV vacuum and abatement is one example of an implementation of circular economic principles. By adopting these principles throughout our industry we can realize significant benefits, both economic and environmental.

Biography
Tony Key, Business Line Manager Semiconductor Service EMEA

Tony Key has over 35 years of industrial experience including over 30 years at Edwards mostly focused on the Semiconductor industry. Since joining Edwards, which later became part of the Atlas Copco Group, as a Quality Engineer in a manufacturing unit, Tony held roles in Production and Manufacturing Engineering Project Management prior to taking up his first Service Management role based on a semiconductor device manufacturer's site in Ireland. Since then Tony has held a variety of regional and global management roles in the Edwards Service business. He has managed customer site service operations all around the world as well as central Service Marketing and Product Management teams. He is currently responsible for all aspects of the Edwards Semiconductor Service business in the EMEA region.

Tony is based at the Edwards Global Technical Centre and Semiconductor Division HQ in Burgess Hill, UK. He is a Chartered Engineer and holds a B.SC in Mechanical Engineering

A Circular Economy for Smartphones

K. Schischke
Fraunhofer IZM, Berlin, Germany

Abstract
Some smartphone brands incorporate increasingly Circular Economy approaches in their business and design strategies. This presentation will adress some of these approaches and discuss the pros and cons of these. Design and product use patterns have to be a good match to yield a better "sustainability". Design concepts, such as various types of modularity, require e.g. a willingness of consumers to repair devices or manufacturers to put in place a return policy for used units. Modularity includes modules on the mainboard level, targeting at better reusability of individual functional blocks, but also fully open modularity platforms allowing third parties to build smartphone modules, which are compatible with those modules manufactured by others. Modularity however is not "for free": Modularity requires additional materials and components to connect and house modules. This has to be offset by a longer lifetime of the product. Circular design without changing economic cycles will not work out.
At end of life research targets at better recyclability of some spice metals, which are not yet recovered in state-of-the-art smelters. Robotics are a way forward to extract components containing specific elements for a separate treatment. The presentation will give some insights in increasing the recycling potential through such approaches. Chosen examples are neodymium, tantalum and tungsten.
Legislation and standardisation try to keep pace with these trends. Policy intends to regulate mobile ICT devices under the European ecodesign regulation. The presentation will touch on the latest developments and will give an outlook on possible consequences for the smartphone market.

Biography
Karsten Schischke is Group Manager Product Ecodesign and Circular Materials at Fraunhofer IZM and holds a degree in Environmental Engineering from Technische Universität Berlin. He has 19 years' experience in applied research on sustainability of electronics. He has been involved in several technical product group studies in preparation of the EU's eco-design product policy. Since 2008 he is coordinating large European research and innovation projects in the FP7 and Horizon 2020 programme, including projects on recycling of post-consumer plastics for new electrical and electronic equipment and eco-design of smart mobile devices. this latter project, sustainablySMART, involves large companies, such as AT&S, and small enterprises exploring circular concepts for mobile ICT devices, such as Fairphone B.V., Circular Devices Oy, MicroPro Computers, and Speech Processing Solutions. The presentation at SEMICON Europe mainly covers the findings from this H2020 project. Karsten supports the European Commission and stakeholders to implement the European EPREL database as part of the German National Top-Runner Initiative, financed by the Federal Ministry for Economic Affairs and Energy.