



— Redesign —

# RE DESIGN



Loop project - National research  
**INTERVIEWS:** Entry # 44



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## ANTONIS KOUNTOURIS

Mechanical engineer, manager of  
Nicolaidis & Kountouris Metal Company Ltd



Authorized by Antonis Kountouris,  
manager of the Nicolaidis & Kountouris  
Metal Company Ltd

### Antonis Kountouris

was born in 1985 in Nicosia (Cyprus) and studied Mechanical Engineering. He holds a master's degree in the study of thermal insulation products while he is a PhD candidate in Mechanical Engineering studying the development of building materials from polymer waste. He has been the manager of the Nicolaidis & Kountouris Metal Company Ltd family industry since 2009, holding the position of Research and Development Officer. He is the project manager for the production of an innovative construction product derived from the company's plastic industrial waste.

### TELL US a little about your business and how the idea of changing the approach for a greater circularity of design was born.

Since 1977, our company "Nicolaidis & Kountouris Metal Company Ltd" has been involved in the construction industry by providing standard and custom designed steel structures as well as cold formed steel sections, roof claddings and insulation panels. More specifically, we are responsible for design, constructing and assembling of metal building structures and the production of appropriate products for the construction sector (for example thermal insulating products, metal pieces for closing buildings, tin and many more).



Polystyrene box. A.Kountouris consent form

We started dealing with the system of the Circular Economy when in 2013 we had to deal with the problem of polyurethane waste management, which is a plastic waste of thermal insulation products. Following the European Directive, the Cyprus' government applied a legislation where we could no longer throw our waste in garbage dumps or landfills, so we had to find a way to manage it.



Thermal insulation mortar. A.Kountouris consent form

Unfortunately, industrial polyurethane waste cannot be reused like other thermoplastic materials, as for example polystyrene. We had to study for solutions from abroad but because we are a small country, it was expensive for us to implement them. Therefore, the problem of managing this waste remained unresolved. So, this sparked my motivation to find a solution.

Along with a team of specialised technicians and of course after research and observation of other similar examples, we designed a new machine in which we recycle the material, granulate it and produce a new product for thermal insulation of floors and ceilings that is back on the market. Thus, we take the waste and put it back on the market in a new form.



PS-thermal insulation mortar. A.Kountouris consent form

### **How did we get the idea to join this system of Circular Economy?**

Essentially, in simple words, because of the need to manage our waste effectively, we were driven to finding this idea and implementing it. The company has secured a polyurethane waste management license issued by the Environmental Department of the Ministry of Agriculture, Natural Resources and Environment of Cyprus.

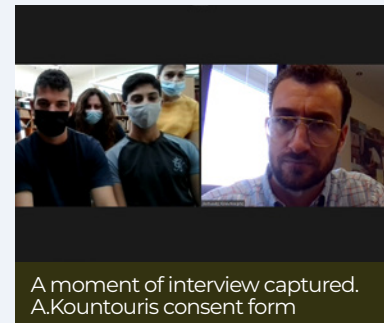
The endeavour has not only achieved that goal but it has gone beyond our expectations. Investing in research and high technology, the company has created an innovative application for the treatment of waste polyurethane foam while we are aiming higher for the future. "Nicolaidis & Kountouris Metal Company Ltd" rises to challenges and always tries to successfully adapt to new circumstances which are constantly evolve.



## difficulties you encountered in dealing with processes of change in product (or service) design?

We have to deal with many difficulties in order to implement changes in production processes and to design or redesign our machines.

As Department of Environment, among others, we tried to set targets such as, “Environmental protection that is achieved through the rational management of resources and waste, pollution control and more while contributing to the creation of green economy”. Unfortunately, the most basic difficulty which we encounter on many levels as part of Cypriot industries, is first of all the bureaucracy on various levels and issues.



Furthermore, in terms of securing various funds to implement our idea, we have to comply with many conditions in order to ensure funding. This happens because it is very different to have one idea and it is another issue to have the resources to implement it successfully. Secondly, due to endless bureaucracy, we have faced difficulties from many governmental departments in obtaining a waste management license so that we can legally manage this waste.



Moreover, as we are currently collecting waste from all companies that have this type of waste (polystyrene and polyurethane waste) we have to be fully compatible with legislation. The third difficulty was convincing these companies of the need to do this and how positive it could be for them to bring us their waste. Of course, the hardest part was convincing the companies that already produce similar products with us and have similar waste to follow our lead.

The difficulty was mainly due to the process as they know that their rubbish in essence, would be treated by us in order to make money.

However, at the moment, when the controls by the Department of Environment began and the legislation became stricter, they were forced to bring us their waste because they have nowhere else to discharge. The fourth difficulty was finding the appropriate technical staff who could meet our needs and standards for the production of new products, that is, to participate in the production process but also to install them.

In general, one of the problems in Cyprus is finding qualified staff and I hope that many of you students of the Technical and Vocational schools of Education and Training will choose to pursue such professions because they have great future potential in the industry. For Circular Economy to be achieved we require innovation, flexibility and people with open minds. Then, we can achieve our targets and move forward to a new era of industrialization.



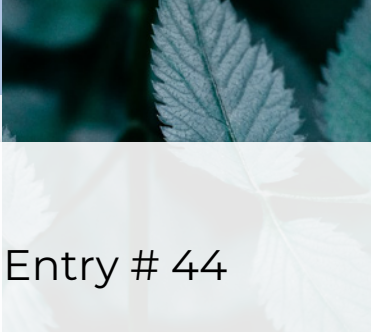
Materials. A.Kountouris consent form

## **SPEAKING OF DESIGN: what shape do you think the future of your business could have in terms of circularity and sustainability?**

As I have already explained to you the whole idea was to join what is called Circular Economy and Sustainability. Our experience shows that one thing leads to another, so our goal is to continue this effort because these issues related to the Circular Economy are the future.

The ultimate goal is to manage all the quantities of this waste that I mentioned in Cyprus but also to find more new ideas to utilize other waste or to optimize the idea that I mentioned earlier.





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After the success we had with the issue of the waste of polyurethane, the Department of Environment visited our premises and suggested, after solving the problem of management of this waste, for us to look for solutions to the problem of polystyrene waste which comes from fish packaging, electrical appliances and so on.



Thus, as we had the polyurethane waste management machine, we have made adjustments in order to manage the waste of polystyrene. Today, our company is able to produce another product from polystyrene waste even if we do not have such waste. Many other industries or companies bring it to us in order to transform it to new products. Therefore, our first idea, when it was implemented, brought another one and after that, the polystyrene products other industries brought to us increased a lot.

Accordingly, we had to find a way to manage the leftovers that we had and we could not integrate them in the production process. Thus, another idea was born according to which we would take the polystyrene waste and after cleaning it, we would compress it and turn it into something that looks like a brick. So, in this form, we export them and sell them, mainly, in China and Malaysia where some companies melt them by turning them into powder.



Thermal insulation materials ready for shipment. A.Kountouris consent form

The powder is placed in molds for decorative frames. As we have already noticed, our products have an impact in Cyprus but we cannot send them abroad because they are light and bulky, so we designed this machine that allow us to sell those products abroad to similar operating industries. Thus, our immediate goals are now to promote our know-how abroad in countries that want to manage polyurethane and polystyrene waste to produce new products like we do.



The interviewers. Authorized by Chrystalo Domazou

We are currently, after redesigning, building a new improved machine (funded by the European Union) that recycles this waste, which is certified and better than the first one we had made and we are, now, trying to promote this machine abroad. So, our goal is to sell our idea and see what else will come next. When you get into this concept, the so-called “Circular Economy” and you are constantly trying and you have a great team, then, consequently, new ideas are constantly being born. The most difficult and challenging issue, of course, is to find resources and means to implement them.

# RE DESIGN

# QUESTIONNAIRE

## 1. What is the so-called “circular economy”?

A	B	C
19%	8%	3%

## 2. Do you believe that a more sustainable economic system can be equally productive than the current one?

A	B	C
8%	15%	7%

## 3. Which of these consumer choices have you decided to implement in the last 10 years to protect the environment?

A	B	C
7%	8%	15%

## 4. How will the so-called “circular economy” affect the job market?

A	B	C
3%	18%	9%

## 5. In your work, how many strategic choices related to sustainability have been made in the last 10 years?

A	B	C
10%	14%	6%



**6. Which of these 4 “Rs” is more important to ensure a better future for humanity?**

A	B	C	D
4%	9%	10%	7%

**7. Which of these 4 “Rs” is most present in your family’s daily life?**

A	B	C	D
6%	3%	20%	1%

**8. In your opinion, what link is there between technology and the “circular economy”?**

A	B	C
20%	5%	5%

**9. Do you think we will be able to change the way we consume so as not to affect the environment and its limited resources?**

A	B	C
2%	21%	7%

**10. Are you familiar with the UN 2030 Agenda or have you ever heard of SDGs?**

A	B	C
15%	5%	10%

## QUESTIONNAIRE



# QUESTIONNAIRE

**11. Do you think that the economy in the past was more sustainable than it is today?**

A	B	C
15%	9%	6%

**12. Which of these 3 statements do you consider the most true and important?**

A	B	C
5%	20%	5%

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