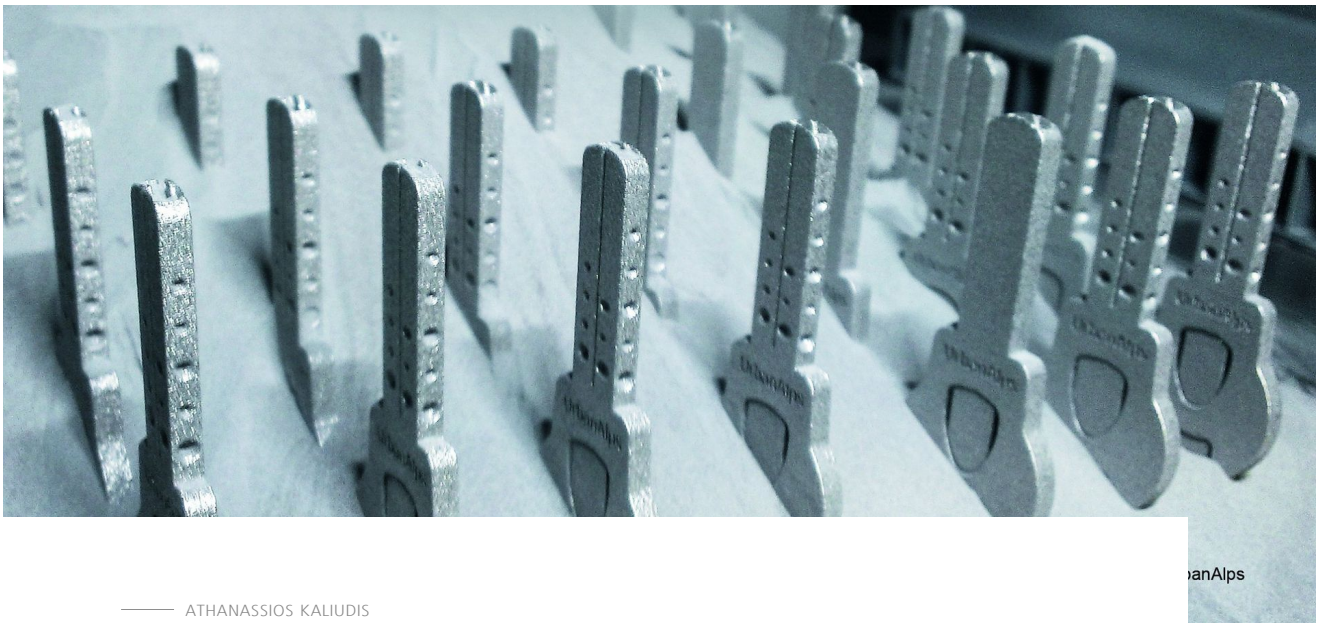


ATHANASSIOS KALIUDIS

3D printed keys: „Nobody can copy that“

A Swiss start-up prints the most secure keys in the world: the Stealth Key. Alejandro Ojeda, cofounder of UrbanAlps, wonders why nobody else came up with the idea earlier.

Mr. Ojeda, has your home ever been burglarized?

No, luckily not.

Then what inspired you to design more secure keys?

On August 2013 I was reading an article in Forbes about two MIT students who had 3D printed highsecurity keys. They claimed that 3D printing was the end of the mechanical key.

Today, your neighbor’s kid can secretly 3D scan your key and copy it on a 3D printer. I immediately thought, “They are completely missing the potential of 3D printing!” Just re-invent the key using 3D printing. And so we did.

But how?

Using selective laser melting, you build parts layer by layer. This enables you to create complex internals easily and shape them any way you like, and that’s exactly what we do: our key has holes and recesses like any other key.

But not only outside – inside as well! It is hollow and has an opening at the front. Our locks are able to mechanically read these security features concealed inside the key. You can’t see them from the outside, and no 3D scanner can read them, either. The idea is so simple that I’m surprised nobody else thought of it earlier.

So the keys can never be duplicated?

The general public cannot. Admittedly, professional thieves with very special tools and skills could theoretically make copies. But those people have always been capable of copying keys. The issue for most people is the amateur copier: previous tenants at your home, your ex-partner or a caretaker. If you have our key, you don’t have to worry about them anymore. Our Stealth Key system brings back the sense of safety.

Your key must be extremely expensive …

Not really – the manufacturing costs of keys produced using additive manufacturing are already roughly the same as for conventional highsecurity keys. And, unlike drilling holes on sheets of metal, this process is very young and its costs are going

down year by year. Today with a single powder-bed system, we can print 800 keys in ten hours.

You only need one machine, no key blanks at all and you have hardly any material waste. Moreover, each key can be completely different at no cost, say with a company logo.

The industry must love the idea!?

That's what we thought. But up to now, they were not as enthusiastic as we suspected. Our goal is to convince the industry to rethink their ways and to demonstrate the potential of 3D printing to them. We firmly believe that the future of high-security keys lies in additive manufacturing: it only has advantages.

Many people think electronic keys are the way forward. Sure, there's something attractive about the idea of using your smartphone to open your front door, a safe-deposit box and maybe your car. For hotels and offices it is a fantastic solution.

But then you come home with your bags of groceries in the pouring rain and you can't open the door because an update is missing or the battery is dead. Electronics bring convenience, mechanics security. We exist to help those who care about their security.



Alejandro Ojeda (left) shows us the additively manufactured key by UrbanAlps; at his side co-founder Felix Reinert. The 3D printing process enabled the young engineers to completely redesign the traditional key. Picture: UrbanAlps



The intrinsic values count. The qualities that make this key so secure aren't visible externally. Picture: UrbanAlps



The key is hollow and conceals additional security features inside. Picture: UrbanAlps



Thanks to 3D-printing, each key can be completely different. Picture: UrbanAlps

When will we be able to buy your locking systems?

They will be available next year, but for niche applications related to the banking sector. We're currently running endurance tests to ensure the mechanical longevity of the locks so that they will work reliably for 20 to 30 years. Everything's going very well.

Why not the front doors of homes first?

Penetrating the housing market is a real challenge and we will probably only expand to that phase together with established partners.

The man

Alejandro Ojeda studied mechanical engineering in Las Palmas, Torino and Oxford. He worked in Zurich for four years as project leader, and completed his Ph.D. in laser processing at ETH Zurich in September 2016.

The company

UrbanAlps AG was founded in July 2014 by Alejandro Ojeda and Felix Reinert, who subsequently developed keys with matching locks produced with 3D printing. They intend to launch their first products on the market in 2017. The two engineers had previously worked together at a company that produces gas turbines, where they focused intensively on additive manufacturing and laser-based processes.



ATHANASSIOS KALIUDIS
SPOKESPERSON - TRUMPF LASER TECHNOLOGY
TRUMPF MEDIA RELATIONS, CORPORATE COMMUNICATIONS