

Press release

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Inventors fighting to ‘close the gap’

Two scientists and their vision of changing the world – with pencils based on aerospace technology



Two scientists, a background in aerospace science, and a revolution in the world of pencils – how entrepreneurial inventiveness has resulted in designer pencils that need no wood and can ease the burden on our planet. That said, manaomea is a social start-up with long-term aims – goals that go way beyond its current horizons. Their vision is to bring the world together and close the gap of social inequality. The company’s two founders talk about

meaning and why the next step is to launch a crowdfunding campaign.

Ulrich Riedel PhD (48) and Christine Arlt PhD (37) are inventors. For years, they helped develop new technologies and materials used in satellite construction and aerospace at the German Aerospace Center (DLR). But it wasn’t until recently that they found their real calling in life as inventors, setting up their own company and coming up with the first invention they can truly call their own. It’s a pencil that contains no graphite filling, a pencil without wood. Of course it’s nothing new that ‘lead’ pencils have no lead in them – but pencils without wood, that’s new¹. But why? Surely using wood was just fine. Correct, but one thing not widely known is that to manufacture a small pencil, fully grown trees are needed that are at least 20 years old. And only one fifth of the actual wood is used to make the pencils; the other four-fifths are considered waste – by-products for incineration, condensing into chipboards or processing into humus.

<p>Ulrich Riedel PhD</p> <p>Last job Global Director of New Technologies at Johnson Controls, Burscheid, Automotive Experience.</p> <p>Previous position Deputy Head of Department, Multifunctional Materials, DLR, Braunschweig</p> <p>Education Degree in Chemistry before gaining a PhD in Engineering (TU Braunschweig)</p> <p>Awards Technology Transfer Prize from the Braunschweig Chamber of Commerce for a paper on industrial protection helmets made of bio-composites</p>	<p>Christine Arlt PhD</p> <p>Last job Deputy Head of Institute, German Aerospace Center (DLR), Braunschweig.</p> <p>Previous position Program Architect, Space, DLR Braunschweig</p> <p>Education PhD in Materials Science (University of Magdeburg)</p> <p>Awards Young Leader for Sustainability, bestowed by the Collective Leadership Institute e.V. in collaboration with GIZ and the WWF</p>
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¹ The only two ‘wood-free’ alternatives are actually thick sticks of graphite with no surround, or mechanical pencils made with plastic. For the inventors, these cannot be considered classic pencils.

Small materials in, small products out. Big materials in, big products out.

The pencils invented by Riedel and Arlt are different. They're made with textile fibres, jute, flax or cotton. These are plants that grow year in, year out and they produce very little waste or by-products – or as Arlt puts it: “Big things are for making big things, small things are for making small things. Trees are ideal for making furniture, but not pencils.” By using textile fibres, the only additions are small amounts of waste products from sugar cane production to glue the materials together and the graphite for writing with. It's not as if Arlt and Riedel need new fibres for their pencils. They can also use old clothing and fabric leftovers. Pencils made from old fabrics – how's that for 'upcycling'.

The scientists have based their processes on technology used in aerospace. Normally, this involves producing carbon fibre components for satellites, although carmakers also use the technology to produce lighter and stronger car parts.

The technology is just one part of the story

Producing strong pencils from textile fibres is only something the two inventors can do. That's because they own the patent, which Riedel registered back in 2002. For years, the idea was on the back burner just waiting to be introduced to the market. Riedel invested time in a variety of research projects in an attempt to enter into partnerships with companies and launch the pencils – but to no avail. The products may have been innovative, but they somehow lacked a magic ingredient, that certain *je ne sais quoi* that would make them extra-special.

The bit that was missing was heartfelt passion. Christine Arlt wasn't involved yet. Then, in 2005, the two entrepreneurs bumped into one another at the DLR in Braunschweig. Riedel was a deputy head of department at the time. Arlt was working as a research assistant on her way to becoming deputy head of the institute. The first thing that happened was that they fell in love. Then came a passion for a new joint undertaking, as Arlt explains: “There was this adorable big thinker with his ingenuity – Uli and his pencils. And I thought, they've got every potential to be something more than just pencils made out of textile fibres. All that these products need is a heart and soul.”

The duo pooled their resources and set up manaomea, a German limited liability company (GmbH). Then, thanks to Arlt's ideas, the pencils became storytellers: “Few things are so close to people as they walk around, few things are so closely linked to memories than the things people are actually wearing – on their body.” So why not make personally designed writing implements from the material used to make their wedding dress? Or out of that old T-shirt they had on when they first met at a crowded concert. Or even the underpants they had on for their first date!

Stories that make the world a smaller place

The stories Arlt is so keen to tell go beyond nostalgic reminiscences or funny anecdotes. It's why she's the heart of the start-up. Riedel is the head. It's the heart that wants the pencils to do great things in all the places they come into contact with people. Arlt points to something she calls 'the gap' and how to close the gap. These are contradictions in the world, which she finds simply unjust. “Our raw materials and the other kinds of components we use are an opportunity to really make things happen. The textile fibres typically come from places where lots of the people are having a rough time. For example, our pencil called The Queen is made out of cotton wool from

Uganda. The tale it tells is of the Ugandan women who pick the cotton buds. They turn these into queens – turning the standard conditions of work and trade in the textile industry on its head and allowing people in the raw material countries to make the profit.”

The idea is for anyone writing with manaomea pencils to sense a connection with all of the other people who have accompanied the pencil on its journey. “In every product there are materials, human endeavour, interpersonal relationships. The pencils of manaomea do nothing to hide these relationships; they tell their story. They tell us how we don’t just use a pencil to write something down, we write the course of history – just like we do with every product we purchase and every decision we take.”

The big goal: a new approach to global business. How: through crowdfunding

The aim for the future is not just for the wool to come from Uganda, where it’s grown organically and traded according to high ethical standards – the pencils should also be made there so that the full added value is generated locally. This is the big difference to most of the companies that produce overseas. Although they already source their raw materials in some of the world’s poorest countries, most of the profits are generated in the industrial nations. Of course there’s still a long way to go before everything is set up. As things currently stand, manaomea has pre-serial production in place, thanks to equipment currently standing in Stuttgart that they designed themselves. But it’s not their equipment and it’s still on the grounds of an institute they’re working with. Riedel: “To ramp up to larger volumes and enter serial production, we’ll first have to build our own machine here in Germany. The second step will involve transferring the technology to Uganda.” To fund the engineering outlays, Arlt and Riedel have launched an online crowdfunding campaign on Startnext. Apart from producing standard manaomea pencils, backers of the start-up can also produce collections made out of their own items of clothing. Or, just for fun, order a pencil made out of a ski suit once worn by the coach of the German Ski Association, Charly Waibel.

What happens next with manaomea largely depends on how things go with the crowdfunding campaign. If everything works out, the natural fibre pencils will have many a tale to tell in the future. If it doesn’t – well actually the duo don’t want to think about that possibility. That’s the second point that defines Arlt and Riedel as inventors: they know that success often hangs from a golden thread.

About manaomea

manaomea GmbH was founded by Christine Arlt PhD and Ulrich Riedel PhD in Munich in August 2015. Originally from the aerospace industry, the scientists are inventors of carefully designed products that do good things in the world. They’re driven by a simple question: how can we create products that surprise people, win them over and at the same time bring the world that little bit closer together? This is because for manaomea, doing good things is about social equilibrium and ecological sustainability. Every product offered by manaomea should make a difference somewhere in the world by helping to close a gap in social inequality.

Awards:

- European Ethical Design Award 2016
- PSI Sustainability Award 2016

Backing:

- EXIST Start-up grant (Federal Ministry for Economic Affairs and Energy - BMWi)
- WIPANO Patentförderung (Federal Ministry for Economic Affairs and Energy - BMWi)
- Innovation vouchers from the states of Bavaria and Baden-Württemberg

To find out more, go to www.manaomea.com.

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