



**Audi Environmental Foundation**

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## **Audi Environmental Foundation supports Nunam: cells from old laptop batteries become mobile power banks**

- **Nunam, a German-Indian start-up, manufactures stationary energy storage systems from discarded batteries and produces power sources for Indian merchants**
- **Rüdiger Recknagel, Managing Director of the Audi Environmental Foundation: “Effective cycles are an important lever for conserving resources”**
- **Prodip Chatterjee, co-founder of Nunam: “Even a five-year-old laptop can serve as a light source, power a small fan or charge a mobile phone”**

**Berlin/Bangalore/Ingolstadt, August 25, 2020 – The Audi Environmental Foundation is supporting the nonprofit start-up company Nunam of German-Indian founder Prodip Chatterjee. The 29-year-old is working to prevent premature recycling of electronic waste. Nunam buys discarded laptop batteries from scrap dealers in the Indian state of Karnataka and uses their battery cells for stationary energy storage systems. The resulting power banks can supply electricity to items that consume small amounts of power such as smartphones, fans or lamps, and can serve as a power source for people in rural areas of India. Nunam has so far found that old laptop batteries have an average remaining capacity of approximately two thirds.**

“Technology is most environmentally friendly when it remains in use as long as possible. If we can it for other purposes after their initial use, we can save energy and raw materials and reduce the amount of electronic waste. Effective cycles are an important lever for conserving resources,” said Rüdiger Recknagel, Managing Director of the Audi Environmental Foundation. The foundation therefore targets its support to projects for environmentally friendly use of technology under the “Greenovation” action area.

These “second life” use cases conserve resources in multiple ways: using reconditioned materials means less need for primary raw materials – that is, materials that are specifically extracted for production. This conserves raw materials and energy already in the production phase. In addition, reusing the material reduces the amount of scrap that would otherwise end up in residual waste, landfills or recycling. The source of power also helps protect the environment: the power banks are charged with solar energy and not with coal-based electricity, for example.



Nunam co-founder Prodip Chatterjee says: “We are creating win-win situations: Old battery cells that would otherwise end up in residual waste are first reused and then disposed of properly. Scrap dealers earn money by reselling to us and Indian families and merchants benefit from affordable power banks. A five-year-old laptop can serve as a light source for Indian fruit and vegetable merchants at a market, can power a small fan or can charge a mobile phone.” Millions of people in India live without reliable access to electricity and can benefit from solutions like this.

Nunam tests the condition and capacity of every battery cell purchased from electrical scrap. Cells with more than 60 percent residual capacity are assembled into new power banks. These prototypes have a capacity of around one kilowatt hour. According to a user analysis by Nunam, a module of this type is sufficient to charge smartphones or operate smaller household appliances for a day, for example. Cells that can no longer be used are passed on by Nunam to a local battery recycling company which recycles them professionally. The prototypes are connected to the Internet via SIM card and transmit data. This ensures that the powerbanks are returned to Nunam again at the end of their service life. The project collects important findings this way on the reusability, performance and service life of new battery systems made from a maximum variety of different cells.

The Audi Environmental Foundation is funding the pilot phase of the project, during which Nunam plans to develop the new power banks to production maturity. To date around 5,000 battery cells from 1,000 laptop battery packs have been disassembled and tested. More than 25 energy storage systems are to be developed from this. These are being allocated in rural areas of India for a pilot trial. In the long term, Nunam plans to set up a small-scale production facility and transfer the findings to other sources in order to develop additional power sources. The TU Berlin is providing methodical support to the project. Together with the department of Electrical Energy Storage Technology, Nunam is working on a model to better predict the wear and tear of used batteries. At the end of the project, the results, videos, data and other findings from the project will be published in a specially created open source portal for anyone interested. This will ensure that the greatest possible number of interested persons can benefit from these findings and put them to further use.

The Audi Environmental Foundation (Audi Stiftung für Umwelt GmbH) is an active promoter of research into new technologies and scientific methods for a future worth living. Its stated goal is to make a contribution to environmental protection and to create and promote ways of sustainable action. The foundation focuses in particular on the promotion and development of environmentally compatible technologies, environmental educational activities and the protection of the natural resources of humans, animals and plants. It was established in 2009 by AUDI AG as a wholly owned subsidiary and is part of its social and environmental commitment.