

**[ 01 ] Investing at the cutting edge of innovation, worldwide – ten years of Bosch venture capital**

**[ 02 ] Robert Bosch Venture Capital GmbH (RBVC)**

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## **Investing at the cutting edge of innovation, worldwide – ten years of Bosch venture capital** Successful international portfolio; on course for further growth

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- ▶ Bosch CEO Denner: “Robert Bosch Venture Capital makes an important contribution to the Bosch culture of innovation, and thus its agility.”
- ▶ Local presence: new office in Shanghai, China
- ▶ Promising investments: automated driving and systems based on artificial intelligence (AI)
- ▶ Open innovation: speedier identification of new trends
- ▶ Successful exits: Movidius, GreenPeak

Stuttgart and Ludwigsburg, Germany – Ten years of investment, ten years of innovation: over the past decade, Robert Bosch Venture Capital GmbH (RBVC) has made a string of successful investments in tech start-ups. The venture capital wing of the Bosch Group invests up to 15 million euros in individual young start-ups, and also provides them with the know-how and contacts it has as a leading global supplier of technology and services. Apart from looking for a healthy return on the capital it invests, RBVC is also eager to help young companies develop new technologies. Here, the investment strategy focuses on complementary technologies or on business models that fit particularly well with the Bosch Group portfolio. “RBVC has successfully established itself alongside major institutional venture capital companies. Our VC wing provides us with valuable contacts to the start-up scene, and thereby makes a significant contribution to the Bosch culture of innovation, and thus its agility,” says Dr. Volkmar Denner, chairman of the board of management of Robert Bosch GmbH. The RBVC portfolio comprises over 35 pioneering technology start-ups from around the world. This international focus offers a clear strategic advantage in the field of disruptive innovations. “RBVC will continue to expand its portfolio of innovative start-ups, and thus ensure its success story continues,” Denner says. “Among its most promising investments are projects that will advance the development of automated driving and AI-based systems.” The Bosch venture capital subsidiary manages a total fund volume of over 300 million euros.

### **Presence in China boosts business**

In view of the big long-term opportunities it sees in the Chinese market, RBVC has opened a new office there. “Our Shanghai office reinforces our presence in one of the world’s most dynamic markets,” says Dr. Ingo Ramesohl, one of RBVC’s managing directors. “Tech start-ups with interesting products and services are now emerging in China on an almost daily basis. Having a local presence will enable us to take on an even more active role in the country’s start-up scene.” The goal is to build on the company’s success in China and establish it in the local market as a leading investor in tech ventures. In particular, RBVC will be focusing on start-ups operating in the fields of artificial intelligence (AI), the internet of things (IoT), automated driving, augmented and virtual reality (AR/VR), and blockchain technology. From its base in Germany, RBVC has already been active in the Chinese market. To date, it has made a total of five investments there. Thanks to the organizational structure behind it, RBVC is one of the few non-Chinese investors in a position to make investments in renminbi, the local Chinese currency. The VC wing of Bosch operates out of five locations worldwide. The ability to engage in major technology hot spots, particularly Silicon Valley and Israel, will be crucial to the company’s long-term success.

### **Open innovation: speedier identification of new trends**

Each year, experts from RBVC examine the new technologies and business models of over 2,000 start-ups from around the world. Only around a hundred of these make it to the shortlist. “We invest in six to ten carefully selected companies each year,” says the RBVC managing director Philipp Rose. “This strict process of selection is in line with our strategy of focusing – like an institutional VC company – on only the most promising investments. But even dealing with the start-ups we ultimately don’t select is interesting for us, because it helps widen the potential for innovation at Bosch.” RBVC regularly creates contacts between young companies and Bosch operating units. As a result, these start-ups may ultimately become a supplier, technology partner, or even customer of Bosch. This “open innovation” approach selectively involves external partners in a company’s own innovation process. It means that each party can benefit from the other’s experience and know-how. This business model, in which RBVC provides more than just venture capital, produces numerous win-win situations. “In addition to capital, we also offer know-how and operational support, which gets us directly involved in the start-up scene,” Rose says. “As a result, we get to identify new trends and opportunities a lot earlier than technology companies that aren’t involved in open innovation.”

## **Long-term investment**

“We are a tech investor and, as such, we often discuss highly complex technologies with start-ups,” Ramesohl says. “We are also prepared to take on the financial risk of investing in such technologies.” A look at the success of the past ten years confirms this. The current portfolio comprises thriving companies operating in areas such as blockchain technology, IoT, machine learning, and semiconductor development. Examples here include the British processor company Graphcore, which produces AI components designed to accelerate machine learning, and the Berlin start-up IOTA, which is developing a cryptocurrency for payments on the internet of things – for example, at charge spots for electric vehicles. Both these business models complement the portfolio of the Bosch Group, and both exemplify the long-term orientation of RBVC’s investment strategy. The past ten years have also brought a number of successful exits. These include Movidius, a manufacturer of image processors, which was taken over by Intel, and GreenPeak, a developer of hardware and applications for wireless systems, which was acquired by the semiconductor producer Qorvo.

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*Robert Bosch Venture Capital GmbH (RBVC) is the corporate venture capital company of the Bosch Group, a leading global supplier of technology and services. RBVC invests worldwide in innovative start-up companies at all stages of their development. Its investment activities focus on technology companies working in areas of business of current and future relevance for Bosch, above all, automation and electrification, energy efficiency, enabling technologies, and healthcare systems. RBVC also invests in services and business models as well as new materials that are relevant to the above-mentioned areas of business.*

*The Bosch Group is a leading global supplier of technology and services. It employs roughly 402,000 associates worldwide (as of December 31, 2017). The company generated sales of 78.1 billion euros in 2017. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected manufacturing. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group’s strategic objective is to deliver innovations for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is “Invented for life.” The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiary and regional companies in 60 countries. Including sales and service partners, Bosch’s global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company’s future growth is its innovative strength. At 125 locations across the globe, Bosch employs some 64,500 associates in research and development.*

*The company was set up in Stuttgart in 1886 by Robert Bosch (1861-1942) as “Workshop for Precision Mechanics and Electrical Engineering.” The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant upfront investments in the safeguarding of its future. Ninety-two percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.*

Additional information is available online at [www.bosch.com](http://www.bosch.com), [www.iot.bosch.com](http://www.iot.bosch.com), [www.bosch-press.com](http://www.bosch-press.com), [www.twitter.com/BoschPresse](https://www.twitter.com/BoschPresse).



## Robert Bosch Venture Capital GmbH (RBVC) Investments in tech start-ups

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- ▶ **Headquarters** Robert-Bosch-Platz 1  
70839 Gerlingen, Germany
- ▶ **Locations** Stuttgart office (DE)  
Frankfurt am Main office (DE)  
Tel Aviv office (IL)  
Sunnyvale affiliate office (USA)  
Shanghai affiliate office (CN)
- ▶ **Associates** Approximately 30 worldwide
- ▶ **Management** Dr. Ingo Ramesohl, managing director  
Philipp Rose, managing director
- ▶ **Company** RBVC is the venture capital wing of the Bosch Group. As a tech investor, RBVC scours the globe for innovative start-up companies that are potential game-changers for entire industries. These companies can be at any stage of development. Its investment activities focus on technology companies working in areas that are relevant to Bosch, both now and in the future. RBVC also invests in selected independent venture capital funds that focus on a particular region or sector.
- ▶ **Fund volume** Current third fund: 150 million euros; former funds: 120 and 150 million euros (total investment per company in portfolio is generally between 5 and 15 million euros, in return for a holding of between 10 and 25 percent of equity).
- ▶ **Holdings** RBVC currently holds equity in over 35 companies worldwide.
- ▶ **Network** RBVC also works with other venture capital funds, start-ups, and companies, as well as a network of universities and start-up accelerators, in order to identify new investment opportunities.

## Investment strategy

- ▶ Investment focus
  - ▶ Automation and electrification
  - ▶ Mobility solutions
  - ▶ Healthcare
  - ▶ Energy efficiency
  - ▶ Artificial intelligence (AI) and deep learning
  - ▶ Internet of things (IoT)
  - ▶ Analytics
  - ▶ Disruptive computer architectures (hardware and software)
  - ▶ Augmented and virtual reality (AR and VR)
  - ▶ Blockchain and other distributed ledger technologies
- ▶ Active investor RBVC acts as an institutional venture capital company in the international venture capital and investment market. RBVC uses its network within Bosch and beyond in order to help start-ups establish and scale new business models, and to help them ramp up industrial production.

## Procedure

- ▶ Investments
  - ▶ Initial finance (series A/B): 3–5 million euros
  - ▶ Further finance up to a total investment of 15 million euros
  - ▶ Selective injection of seed capital up to 0.5 million euros
  - ▶ Selective investment in other venture capital funds in order to build up international and industrial networks
- ▶ Investment types
  - ▶ Equity investments in any currency
  - ▶ Investments in China in local currency (renminbi)
  - ▶ Bridge financing and SAFE notes
  - ▶ Token/cryptocurrency investments



## Extract from the [portfolio](#) of companies

- ▶ [Almotive](#) (HU) developing a new type of computer-vision system for autonomous and semi-autonomous vehicles. This technology is based primarily on the analysis of camera images – but also radar and lidar signals – by means of AI processes. In addition to software, the company also supplies embedded hardware solutions and a simulation and verification package.
- ▶ [Graphcore](#) (UK) developing a new type of processor known as the IPU (intelligent processing unit). Equipped with a completely new processor architecture, IPUs are specifically designed for the workloads of machine learning and artificial intelligence. IPUs can significantly accelerate AI applications in the cloud or data center.
- ▶ [IOTA](#) (DE) developed the cryptocurrency IOTA on the basis of the Tangle protocol, which is related to blockchain technology. Its main area of use is for settling small due amounts in an M2M (machine-to-machine) environment – for, example, payments at a charge spot for electric vehicles.
- ▶ [Poka](#) (CAN) developing a cloud solution for knowledge sharing and personnel training at industrial companies. This solution is comparable to a YouTube portal for manufacturers. It helps them respond to the demand for a flexible and highly qualified workforce capable of operating increasingly complex and increasingly automated production lines.
- ▶ [Prophesee](#) (FR) developed one of the most advanced neuromorphic vision systems for machines, robots, and driverless cars. This solution is based on neural networks and uses extremely fast image sensors.
- ▶ [Sensoro](#) (CN) produces beacons and wireless sensors for industrial applications. Its wireless sensor networks are used to provide environment data for IoT applications. They are both simple to operate and easy to monitor. Sensoro has already networked large cities and whole regions in China.





**Dr. Volkmar Denner**  
Chairman of the Board of Management,  
Robert Bosch GmbH

January 1, 2019

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Volkmar Denner has been chairman of the board of management of Robert Bosch GmbH and a limited partner of Robert Bosch Industrietreuhand KG since July 1, 2012. His responsibilities include corporate strategy, corporate communications and governmental affairs, and real estate and facilities. He is also responsible for the Bosch Healthcare Solutions GmbH subsidiary.

Born in Uhingen, Germany, on November 30, 1956, Volkmar Denner is married and has three children. After taking his university entrance examination in 1975, he studied physics at the University of Stuttgart, taking his diploma examination in 1981. After a research stay in the United States, he was awarded a doctorate in physics (Dr. rer. nat.) by the University of Stuttgart in 1985.

He is a member of the managing board of the VDA (German Association of the Automotive Industry) and of the BBUG (Baden-Baden Entrepreneurs' Conference), as well as chairman of the Vereinigung von Freunden der Universität Stuttgart (Society of Friends of the University of Stuttgart).

## **Career stages in the Bosch Group**

<b>1986</b>	Senior expert for power semiconductor development, Semiconductors and Electronic Control Units division
<b>1989</b>	Department head in power semiconductor technology development
<b>1991</b>	Department head in integrated circuit development
<b>1994</b>	Head of sales, ECU development, and systems application, Gasoline Engine Management division
<b>1998</b>	Director of engine ECU development
<b>2000</b>	Head of ECU development and product manager for ECUs Executive vice-president sales and development, Semiconductors and Electronic Control Units division
<b>2003</b>	President, Automotive Electronics division

**2006** Member of the board of management,  
Robert Bosch GmbH

**July 2012** Chairman of the board of management  
of Robert Bosch GmbH



**Dr. Ingo Ramesohl**  
Managing director, Robert Bosch Venture Capital GmbH

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Dr. Ingo Ramesohl has been the managing director of Robert Bosch Venture Capital GmbH (RBVC) since July 1, 2015. His areas of responsibility include technology strategies and decision-making at RBVC. In addition, he is in charge of liaising with the Bosch divisions. Ramesohl joined RBVC in early 2015, after holding various positions at Bosch in Germany, South Korea, and China over the course of 16 years. He has accumulated years of experience in various domains, including automotive electronics, development, quality assurance, accounting, and corporate planning. Ramesohl earned his doctorate in electrical engineering at RWTH Aachen University.

**Career stages in the Bosch Group**

July 2015	Managing director, Robert Bosch Venture Capital GmbH, Stuttgart
2012	Head of the electric vehicle and hybrid systems business unit, Ludwigsburg
2010	General manager, UAES, electric vehicle and hybrid technology, Shanghai, China
2007	Director, office of the chairman of the board of management and CEO, Corporate Affairs Planning, Gerlingen
2003	Head of engineering, Daejon, South Korea
1999	Section head, small engines development, Bühl



## **Philipp Rose**

**Managing director, Robert Bosch Venture Capital GmbH**

June 28, 2018

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Philipp Rose has been managing director at Robert Bosch Venture Capital GmbH (RBVC) since July 1, 2014. He is responsible for all commercial aspects of company business and is also one of the investment partners at RBVC. His principal areas of responsibility are portfolio management and fund management, financial, legal, and tax issues, and liaison with the Bosch Group. Before joining RBVC in 2014, he occupied a range of positions within the Bosch Group. Rose joined Bosch in 2003, after gaining many years of experience in M&A at Credit Suisse and J.P. Morgan. He has a degree in business administration from the University of Regensburg, Germany.

### **Career stages in the Bosch Group**

July 2014	Managing director, Robert Bosch Venture Capital GmbH, Stuttgart, Germany
2011	Managing director, ETAS GmbH, Stuttgart, Germany
2007	Head of commercial affairs, Pacifica Group Ltd., Melbourne, Australia
2003	Senior consultant, corporate M&A, Stuttgart, Germany