

# Embedded Systems World

Automation - Transportation - Medical - Video  
Communication - Energy - Mil/Aero - IoT - AI

**Covering all Embedded App's**

Modular Open Systems - Boards - Platforms  
Chips - Software - Tools - T&M

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May-Jun 2017



## Drones & UAV's

**500 Manufacturers  
based in 60+ Countries**



**Commercial & Military  
Applications**

**Very Small Size to Large**

**Huge Business Opportunities  
for Embedded Computing Boards  
Qseven - COM Express - PC/104  
AMC - VPX ...and more**

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### Dear Reader,

Here is your free copy of Embedded Systems World, one of our five e-magazines published by e2mos.

Our aim is to provide you with relevant information directly in relation with your activity.

Those magazines are part of the e2mos « Go-to-Market Platform »

This GLOBAL Platform is a UNIQUE Set of Services for Telecom ICT, Video Broadcast, Embedded Computing, IoT and AI Vendors from Multicore Chips to Application-ready Systems & Rack Space Servers.

Our WORLDWIDE Services include:

- Business Discovery
- Customer Meeting Setup
- Telemarketing
- Call Campaigns
- e-mailings Worldwide
- and our 5 e-magazines, each magazines has its own Website (see below).

It is all based on:

- 30+ Years Customer Relationship and Market & Technology Expertise
- our PREMIER Database started in 1980 and maintained EVERY DAY using many sources and research.

Thank you, Daniel Dierickx

### Editor/Publisher:

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# Real Time Business Segment of Concurrent Computer Corp. Acquired by Battery Ventures

Spinout Creates Concurrent Real-Time, Inc., a Battery Wholly Owned Subsidiary Providing Real-time Technology for Sectors Including Aerospace, Defense, Automotive, Energy and Financial

POMPANO BEACH, FL--(Marketwired - May 15, 2017) - Battery Ventures, a global, technology-focused investment firm, announced today it has completed the acquisition of Concurrent Real-Time, a business segment of Concurrent Computer Corporation (NASDAQ: CCUR), a software and services company. The transaction creates a new, independent operating business named Concurrent Real-Time, Inc. As part of the transaction, Battery General Partner Russell Fleischer and Battery Vice President Jordan Welu will join Concurrent Real-Time's board.

Concurrent Real-Time produces real-time software and systems, meaning technology that powers applications or simulations with mission-critical performance requirements, including those serving industries such as aerospace, defense, automotive, energy and financial. The company's product suite includes RedHawk, a real-time Linux operating system; NightStar, a set of development tools designed to aid developers in building better and faster real-time applications; and SIMulation Workbench, a real-time simulation application that runs on RedHawk and executes advanced, high-frame-rate, multiple model simulations.

"Our business plan for Concurrent is dedicated to expanding our leadership position in real-time software solutions, including hardware-in-the-loop (HIL), man-in-the-loop (MIL), data-acquisition and process-control," said Ken Jackson, President and CEO of Concurrent Real-Time. "We will remain dedicated to continued product innovation, just as we have done historically with early support of new platform technologies. Our customers will continue to receive high quality support and professional service."

"We have a solid foundation of blue-chip customers that include many of the world's aerospace and defense integrators," Jackson added. "By expanding our product portfolio through the SIMulation Workbench platform, we are addressing new market segments, including the automotive market. We have already added twenty-four new automotive customers that use both HIL and MIL simulation, and we see strong demand for real-time systems."

## About Battery Ventures

Battery strives to invest in cutting-edge, category-defining businesses in markets including software and services, Web infrastructure, consumer Internet, mobile and industrial technologies. Founded in 1983, the firm backs companies at stages ranging from seed to private equity and invests globally from offices in Boston, the San Francisco Bay Area, Tel Aviv and London. More: [www.battery.com](http://www.battery.com) -- Contact: Rebecca Buckman [becky@battery.com](mailto:becky@battery.com) +1-650-292-2077

## About Concurrent Real-Time

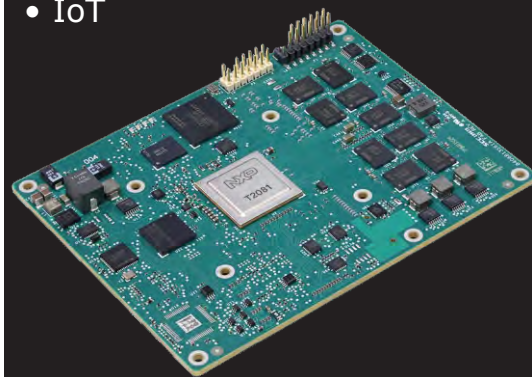
Concurrent Real-Time is a global software and solutions company that develops advanced server and embedded applications focused on mission critical opportunities. We serve industries and customers that demand uncompromising performance, reliability and flexibility to gain a competitive edge, drive meaningful growth and confidently deliver best-in-class solutions that enrich the lives of millions of people around the world every day. Offices are located in North America, Europe and Asia. More: [www.concurrent-rt.com](http://www.concurrent-rt.com) -- Vince Hauber [Vince.hauber@concurrent.com](mailto:Vince.hauber@concurrent.com) +1-954-973-5095



## Artesyn Launches New COM Express Modules based on NXP QorIQ® T Series Processors

### Typical Applications:

- Networking
- Military & Aerospace
- IoT



### Features:

- NXP T2081 and T1042 high performance e6500/e5500 CPU cores
- Soldered down 4G and 8G DDR3L ECC memories, up to 16GB optional
- 10/100/1000 BASE-T, SATA, SGMII and PCIe interfaces to carrier board
- Rugged design to support extended operating temperature and vibration
- Basic size form factor 95 x 125 mm
- Linux 4.1 kernel and NXP® QorIQ® SDK 2.0
- Longevity of supply
- Global technical support

**MORE:** [Click Here](#)

### Contact us:

<https://www.artesyn.com/computing/>

# AMC module Intel® Xeon® based with PCI Express® connectivity

## AdvancedMC® Module based on Intel® Xeon® Processor E3-1500 v5 Family

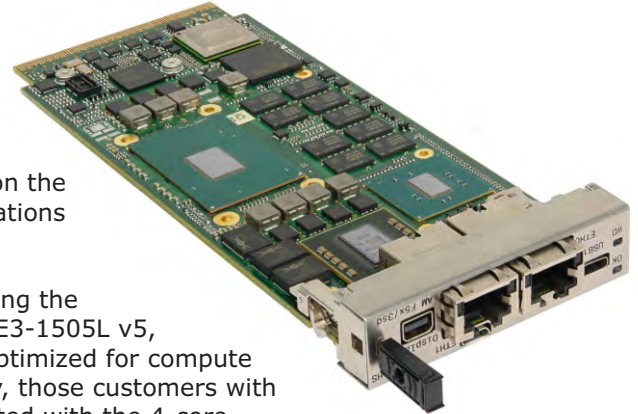
AM F5x/msd is an AdvancedMC® Single Module (Mid size or Full-size) based on an Intel® Skylake microarchitecture processor for long life-cycle, high performance applications. Compatible with legacy AMC modules.

### Features

- 4-core Intel® Xeon® processor variants for CPU or GPU intensive processing loads
- Gen 3 PCI Express® fabric interface options for flexible connection to other payloads
- Front panel connections including:
  - ♦ 2 x 10GBASE-T Ethernet for networking
  - ♦ DisplayPort™, USB 3.0 and Serial interfaces for configuration
- Optional Flash Drive Module for local boot and data storage
- Optional I/O in extended options region

With high performance PCI Express® (PCIe®) Gen 3 connectivity on the backplane, AM F5x/msd is designed for use in long life-cycle applications within the test, wireless, scientific and semiconductor markets.

AM F5x/msd users are able to specify a choice of processors including the Intel® Xeon® Processor E3 1505M v5 or Intel® Xeon® Processor E3-1505L v5, these are both 4-core devices with Intel® HD Graphics P530 and optimized for compute performance and low power consumption respectively. Alternatively, those customers with GPU intensive applications, can specify a version of AM F5x/msd fitted with the 4-core Intel® Xeon® Processor E3-1515M v5 which has Intel® Iris™ Pro Graphics P580 graphics capabilities. The processing capability is complemented with 16GB of soldered down DDR4 ECC DRAM for reliable, high speed memory access speeds and a removable solid state disk module with up to 128GB capacity for the Operating System, application code and data storage. For connection to additional AdvancedMC modules, AM F5x/msd can be used in a x4 or x8 PCIe lane configuration giving a maximum throughput of 7.8GB/s across the fabric interface. External connectivity includes a range of standard I/O interfaces including two 10GBASE-T Ethernet connections for high speed networking.



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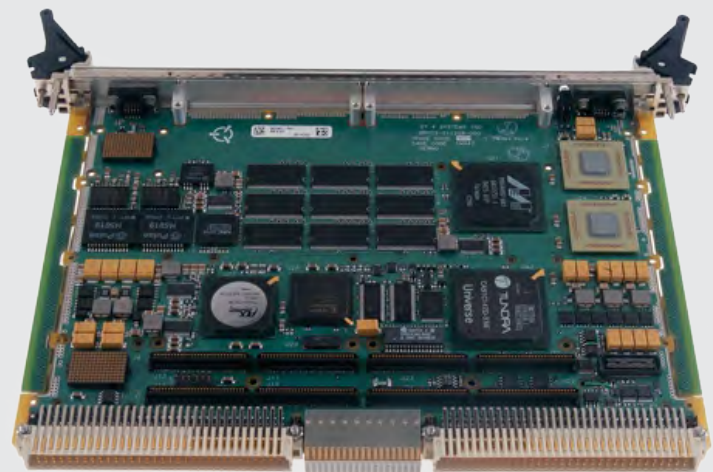
## Curtiss-Wright wins \$9 Mio Navy contract to provide VME computers for surface warships

LAKEHURST, N.J. – May 2017 – U.S. Navy aerial warfare systems designers needed VME single-board computers for the AN/UPX-29(V) identification-friend-or-foe (IFF) interrogator system aboard surface warships. They found their solution from the Curtiss-Wright Corp. Defense Solutions Division in Ashburn, Virginia.

Officials of the Naval Air Warfare Center Aircraft Division in Lakehurst, N.J., announced a \$9 million contract to Curtiss-Wright for 142 VME single board computers.

### Full story

See article from Military & Aerospace Electronics May 1, 2017 by John Keller [Click Here](#)







**ADLINK**  
TECHNOLOGY INC.

## Embedded Computing Boards

### Industrial - Military - Aerospace & Drone Applications

Product Range UPDATE - [Direct Link Click on the Pictures](#)

#### Qseven



Intel-based: several CPU 's  
Standard Size (70 mm x 70 mm)

#### SMARC

Smart **M**obility **ARCH**itecture



Intel-based: several CPU 's  
Short Size (82 mm x 50 mm)  
Full Size (82 mm x 80 mm)

#### PC/104 PCI/104 Express



Intel-based: several CPU 's  
PCI/104-Express (V3.0)  
Size (117.4 mm x 96 mm)

#### COM Express



Intel-based: several CPU 's

##### Type 6

Basic Size (125 x 95 mm)  
Compact (95 x 95 mm)

##### Type 7 - Intel Xeon-based

Basic Size (125 x 95 mm)

##### Type 10

Mini Size (84 x 55 mm)

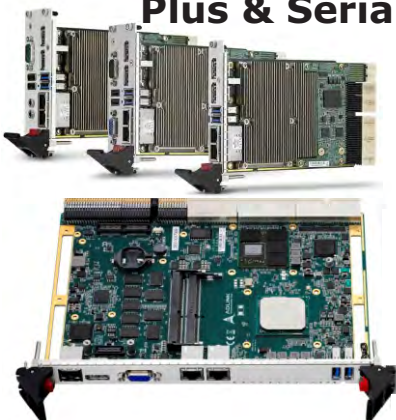
##### Type 2

Basic Size (125 x 95 mm)  
Compact (95 x 95 mm)

#### 3U-6U VPX Conduction & Air-cooled



#### 3U-6U CompacPCI, Plus & Serial



#### Sealed Extreme Rugged™ COTS computing platform in a tiny VITA-75 footprint

*Ideal for Mil / Aero: ground, air, and sea deployments*

Based on 3rd generation Intel® Core™ i7 CPU and optional GPGPU parallel processing engine. Easily configured application-ready platform for fast integration of custom rugged embedded applications. A wide array of fast IO provided on uniquely-keyed MIL-DTL-38999 connectors.



**HPERC-IBR-HC**  
Coldplate Mount  
High Speed Connectors



**HPERC-IBR-HH**  
Finned-Convection  
High Speed Connectors



**HPERC-IBR-MC**  
Coldplate Mount



**HPERC-IBR-MH**  
Finned-Convection

#### About ADLINK

ADLINK is a global company with a local touch. Headquartered in Taiwan, ADLINK offers manufacturing in Taiwan and China; R&D and integration in the US, Germany, Taiwan and China; an extensive network of worldwide sales and support offices; and a continually expanding partner ecosystem. ADLINK is ISO-9001, ISO-14001, ISO-13485 and TL9000 certified and is publicly traded on the TAIEX Taiwan Stock Exchange (stock code: 6166).

# COVER STORY - 500 Drone Vendors from 60 Countries

UPDATE June 2017 | By Daniel Dierickx - e2mos

We (e2mos) are finalizing a very important update of our Database of Drone Manufacturers WORLDWIDE.

Tentative Database content:

- 500 Manufactures – about 1,000 Competence Centers - 60 Countries
- 3,000 New/Updated Key Contacts including: C-level, VP R&D, VP Product Management, Engineering Team Leaders, Senior Engineers Embedded Computing, and more (all will receive our e-magazines FREE of charge)

We have also identified the 50 Leaders and about 80 Startup's at this point of time.

While performing this immense work obviously we came across a lot of market information. Here are a few items which might be of interest to our readers:

## What is a Drone - Definition

- Drone as a noun: a continuous low humming sound like generated by a flying bee or a machine in the far distance.
- In a technological context, a drone is an unmanned aircraft also known as UAV (Unmanned Aerial Vehicle) in fact a flying robot. It includes also UCAV (Unmanned Combat Aerial Vehicle), UGV (Unmanned Ground Vehicle), USV (Unmanned Surface Vehicle, sea), UUV (Unmanned underwater Vehicle) ...

## Applications

- Many, the pictures on the cover of this magazines are showing examples.
- Categories include: Terrestrial Imagery & Mapping, Precision Agriculture, Inspection & Monitoring, Delivery & Transport, Consumer & Entertainment, Military & Defense ...
- 20%, but growing, in relation with Industrial IoT

## Drivers and Sizes

- Drones are powered by electrical motors or thermal engines.
- From very small to large (see cover)

## Large UAV example:

The RQ-4 Block 30 Global Hawk Unmanned Aircraft System from Northrop Grumman (in picture here on the right)



Wingspan .....	130.9 ft (39.9 m)	Payload .....	3,000 lbs (1,360 kg)
Length .....	47.6 ft (14.5m)	Ferry Range .....	12,300 nm (22,780 km)
Height .....	15.4 ft (4.7m)	Loiter Velocity ...	310 knots TAS (True Air Speed)
Gross Takeoff Weight .....	32,250 lbs (14,628 kg)	On-Station Endurance at 1,200 nm .....	24 hrs
Maximum Altitude .....	60,000 ft (18.3 km)	Maximum Endurance .....	32+ hrs

## Intelligent On-board Embedded Computing - Hardware, Software, Peripherals, IIoT and A.I.

The Drones may be remotely controlled or can fly autonomously through software-controlled flight plans in their embedded systems working in conjunction with onboard sensors, GPS, cameras, storage and more.

## Business Opportunities for Low Power Microcontroller and Board & System Vendors

Small and Consumer Type Drones will be based on proprietary Hardware while Larger Drones are build with Standard Computer Boards like: Qseven - COM Express - PC/104 - AMC - cPCI - VME - VPX ... (see examples page 5)

## Global Investment Activity by Country (many sources)

- USA leading with about 65%
- 12 Countries very active including China (of course)
- Japan has apparently a strong strategic plan (see page 10: Can Korea lead the Commercial Drone market?)

## Global Investment Activity by Market Segment (Source: Goldman Sachs)

- Global Expected Spend through 2020 (2016-2020): \$100Bn
- 70% Military & Defense, 30% Commercial & Consumer

## Chinese-made Drones in the US Army, rumors about Cyber issues \*\*\*\*\*

In May / June there were some rumors about cyber issues with Chinese-made drones used in the US Army? Strange to see Chinese-made drones deployed in volume by the US Army as you may remember that Huawei (a leading Chinese Telecom Equipment Manufacturer) is not allowed the sell their products in the US for the same reasons.

Moreover those drones are commercial types apparently without military specifications.

Summer holiday may bring clarification on this "hot" issue.

# Kontron starts 2017 without a loss



Official Press Release from Kontron (Source [Click Here](#))

- Revenues of € 92.4 million comparable to prior year (1Q16: € 89.5 million)
- Net result for the period of € 150k marks a return to the profit zone (1Q16: net loss of € 6.5 million)
- Merger plans on track

Augsburg, May 5, 2017 – Kontron AG, a leading global provider of Embedded Computer Technology (ECT), presents its key financials for the first quarter of 2017.

In line with the guidance announced by the company for 2017, revenues of € 92.4 million roughly match the prior year (1Q16: € 89.5 million). Order intake in the first quarter of 2017 stood at € 82.1 million, representing a book-to-bill ratio of 0.89.

On a pleasing note, EBIT improved to € 2.2 million (1Q16: € -6.1 million). The net result for the period of € 150k (1Q16: a net loss of € 6.5 million) is back in the profit zone again for the first time since 2015. This improvement in earnings results from a more favorable product mix in the first quarter combined with a significant decrease in operating expenses of € 3.5 million. These cost savings are largely a result of the restructuring program initiated in November 2016.

"The worst is over," claims Hannes Niederhauser, CEO of Kontron. "After concluding the most difficult year in Kontron's history in 2016, we returned to profit in the first quarter posting net result for the period of € 150k. This has made us optimistic, but we are still cautious. In terms of technology, we must start catching up with the field and improve our order intake. This means we must rapidly complete the merger between S&T and Kontron to combine the strengths of the two companies and develop innovative Industry 4.0 products."

## Merger plans on track

On May 2, 2017 Kontron AG announced that the Supervisory Board of Kontron AG had approved the conclusion of a merger agreement between Kontron AG and S&T Deutschland Holding AG. The Supervisory Board of S&T Deutschland Holding AG issued their approval to conclusion of the merger agreement on the same day. The merger agreement requires the approval of the general meetings of Kontron AG and S&T Deutschland Holding AG. The respective general meetings will be held on June 19, 2017 and June 20, 2017.

## Outlook 2017

The Management Board is forecasting similar revenues and seasonal fluctuations in fiscal year 2017 as in the 2016 fiscal year. The gross profit margin is expected to rise to over 25 % on account of the partnerships with Ennoconn and S&T. In addition, the Management Board expects EBIT to be positive in 2017. The new restructuring program is expected to produce annual cost savings of over € 15 million, most of which were already realized in the first quarter of 2017.

## Key performance indicators for the first quarter of 2017

		Q1/17	Q1/16	Δ
Order intake	€ million	82.1	79.9	2.8 %
Revenues	€ million	92.4	89.5	3.2 %
Book-to-bill ratio	pp	0.89	0.89	-
EBIT	€ million	2.2	-6.1	8.3
Net result for the period	€ million	0.2	-6.5	6.7
Cash flow from operating activities	€ million	1.5	6.9	-5.4

## About Kontron:

Kontron, a global leader in embedded computing technology and a pioneer in secure IoT platform solutions, provides a combined portfolio of hardware, middleware and services. With its leading-edge standard products and solution ready platforms, Kontron enables new technologies and applications across multiple industries. As a result, customers benefit from accelerated time-to-market, reduced total cost of ownership, product longevity and the best overall application with the highest reliability in embedded technology. Kontron is a listed company. Its shares are traded in the Prime Standard segment of the Frankfurt Stock Exchange and on other exchanges under the symbol "KBC". For more information, please visit <http://www.kontron.de>

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# Kontron Expands its Product and Services Portfolio in Association with S&T Group

Official Press Release from Kontron (Source [Click Here](#))

Augsburg, June 27, 2017 -- Kontron, a leading global provider of Embedded Computing Technology (ECT), announces that it will merge with S&T Deutschland Holding AG. The merger had been resolved at both the Kontron Annual General Shareholder Meeting (AGM) as well as the AGM of S&T Deutschland Holding AG on June 19 and June 20 respectively.

After the merger the brand "Kontron" will continue to provide its customers with integrated solutions for embedded modules, boards and systems, Internet of Things (IoT) and Industry 4.0 applications. With more than 2,300 experienced engineers from both OT and IT backgrounds, Kontron together with S&T will offer further innovative solutions for the seamless and secure connection of embedded systems into the Embedded Cloud.

Through S&T Group's software know-how Kontron will be able to extend its portfolio of software applications and services and thus consolidate its technological leadership position. Leveraging the Original Design Manufacturing Services (ODM) by Foxconn subsidiary Ennoconn Kontron will be able to fulfill even large delivery options moving forward. The extended product and services portfolio will help Kontron customers reduce time-to-market for products of their own significantly.

The merger creates additional cost-saving opportunities and simplifies the group's organization further. A lean management structure and more effective decision-making will shorten development times and evolutionary cycles.

In the beginning of 2017 Kontron restructured its regional areas of responsibility creating clear fields of competences and accountability of success. As S&T Group is also organized on a regional level, Kontron customers will face new reference contacts only in very few exceptional cases after the merger.

In association with S&T Group, Kontron regains a solid financial foundation facilitating future investment and innovation.

Together Kontron and S&T strive to become technology and industry leaders in the ECT, IoT and Industry 4.0 markets. Both companies aim to achieve combined sales between EUR 860 and 890 million in fiscal year 2017, and plan to break the one billion Euro mark in revenues in 2018.

## About Kontron – An S&T Company

Kontron is a global leader in embedded computing technology (ECT). As a part of technology group S&T, Kontron offers a combined portfolio of secure hardware, middleware and services for Internet of Things (IoT) and Industry 4.0 applications. With its standard products and tailor-made solutions based on highly reliable state-of-the-art embedded technologies, Kontron provides secure and innovative applications for a variety of industries. As a result, customers benefit from accelerated time-to-market, reduced total cost of ownership, product longevity and the best fully integrated applications overall. Kontron is a listed company. Its shares are traded in the Prime Standard segment of the Frankfurt Stock Exchange and on other exchanges under the symbol "KBC".

For more information, please visit: [www.kontron.com](http://www.kontron.com)

For further information please contact:

Alexandra Habekost Head Investor Relations & Corp. Com. Kontron AG



**CEO Hannes Niederhauser**  
comments on the joint future of  
Kontron and S&T

[VIDEO on YOUTUBE](#)

# Imagination puts MIPS, Enigma up for sale



Struggling processor IP licensor Imagination Technologies Group plc has said it intends to sell its MIPS and Enigma business units and strip back to its strongest business in licensing graphics processing units (GPUs).

However, that strength stood in part on licensing its PowerVR GPUs to Apple and Imagination has been pushed into further turmoil since it announced recently that it had been put on notice that Apple was going to stop paying royalties within 18 months to two years.

MIPS was acquired by Imagination for \$100 million in 2013 just as Imagination was coming under increasing pressure from rival IP licensor ARM, which was able to offer Cortex-A processor plus Mali GPU bundles.

IP licensor Imagination Technologies Group has said it intends to sell its MIPS and Enigma business units and strip back to its strongest business in licensing graphics processing units (GPUs).

Ful article from Peter Clarke (eeNews of May 04, 2017) and other related

[Click Here](#)





## BMW i Ventures Leads Strategic Investment in GaN Systems



Mountain View – July, 2017 – GaN Systems, the world's leading provider of GaN power transistors, announced the closing of an investment round led by BMW's investment arm, BMW i Ventures. Consistent with its investment strategy, BMW i Ventures recognizes that GaN Systems' products maximize the efficiency of electronic systems while dramatically reducing size, weight and overall system cost. The investment will be used to expand global sales and accelerate new product development. BMW i Ventures joins the existing investors: BDC Capital, Chrysalix Venture Capital, Cycle Capital Management, RockPort Capital and Tsing Capital.

"GaN Systems' power transistors have created new possibilities for engineers to build the power electronics demanded by today's systems. Gallium Nitride-based transistors have become, in my opinion, the next big stepping stone in miniaturization. We have seen systems ¼ of the size while providing better efficiency than traditional silicon-based alternatives. With GaN, any system that needs power can become smaller, lighter and more efficient. These capabilities are particularly relevant in the automotive sector," stated Uwe Higgen, managing director, BMW i Ventures.

GaN Systems' CEO, Jim Witham, commented on the landmark investment, "From computer/phone chargers and data center servers to factory motors and electric cars, our customers have validated the GaN value proposition of small, efficient, low-cost power electronics. These benefits are widely recognized by the world's biggest companies across all industries."

"There are many examples of how GaN benefits power systems," continued Higgen. "With autonomous cars, there will be the need to massively scale the data center infrastructure. Data center power consumption is one of the biggest cost drivers, and increasing the efficiency of power conversion will account for billions of dollars in cost savings and enable a more sustainable infrastructure around the globe."

### About GaN Systems

GaN Systems manufactures a range of Gallium Nitride high power transistors for consumer, enterprise, industrial, solar/wind/smartgrid, and transportation power conversion applications. Featuring exceptionally low on-resistance and negligible charge storage, these devices enable switching efficiencies well in excess of current silicon based solutions and offer dramatic benefits to switching power supply designs, inverters, hybrid and electric vehicles, battery management and power factor correction.

Based on the breakthrough GaN Systems device design IP, these gallium nitride devices use low cost GaN-on-silicon base wafers. For the first time, compound semiconductor devices are cost competitive with silicon devices, while offering vastly superior performance. **MORE:** GaN Systems Inc., Ottawa ON, Canada <https://www.gansystems.com/>

# Can Korea lead the Commercial Drone market?

Posted by Johannes Nanz on 16 Mar 2017 (see below about the author)

EDITOR NOTE: Excellent contribution to the Drone Business Intelligence (Daniel Dierickx, e2mos)

Korea has once again topped the Bloomberg Innovation Index, which scores economies using factors including R&D spend, the density of high-tech companies and patent activity.

The drive to become leaders in innovative technologies is illustrated by Korea's recent plans with regards the commercial drone market.



Commercial drones are a major global growth sector, with the market expected to expand rapidly from \$7 billion in 2016 to over \$21 billion by 2022. In fact, a recent PwC report values the addressable market at \$127 billion, indicating that there is much room for further growth.

The commercial drone market in Korea is still in its infancy, currently worth \$2.6 million. The Korean Ministry of Science, ICT and Future Planning (MSIP) ranks the market seventh in the world. Not content with this position, the MSIP has announced its intent to turn Korea into a leader in the global commercial drone market.

The Korean government is backing up this claim by relaxing regulations and actively promoting the development of the commercial drone market through research grants and public-private partnerships. By 2019, the government aims to inject \$428 million in combined public-private investments, with the goal of growing the overall Korean drone market to \$1 billion by 2020 and \$3 billion by 2025. One example of these investments is drone software, where the MSIP is investing \$4.3 million to develop flight control computer, task control computer and failure diagnosis software together with the Korea Aerospace Research Institute (KARI) and Electronics and Telecommunications Research Institute (ETRI).

Ahead of simplifying drone permit regulations, the Korean government is carrying out trials in eight sectors of strategic importance for drone use, including transportation, land surveying, and communications network provision, with the objective of establishing safety standards and business models,

15 universities, research institutions and private corporations are currently carrying out trial services throughout the country through to 2019. For example, CJ Korea Express and Hyundai Logistics are testing package delivery via drones, LX started a drone land surveying trial service, and KT is using drones as mobile emergency LTE base stations.

Deregulation, public/private investments and expanding commercial trial services are starting to produce effects, with registration statistics showing strong growth in the commercial drone market. 2016 saw an 84% increase in the number of commercial drones registered with the Ministry of Land, Transport and Maritime Affairs when compared to 2015. Likewise, both the number of drone operating companies and individual certified operators have increased significantly since the Korean government first began regulating the commercial drone market in 2012.

While Korea's goal is clear, the country will require significant further efforts to catch up to leaders in drone technology such as China, Israel and the United States. For foreign drone technology companies, this means there are licensing and joint development opportunities, along with a rapidly expanding end user market.

Companies entering the market early should be well positioned once the use of commercial drones in Korea becomes widespread. DJI, for one, the world's largest vendor of leisure and commercial drones with a global market share of around 70%, is banking on the Korean market and opened a flagship store in Seoul in March 2016, the company's first flagship store outside China. As deregulation progresses and the scope of commercial drone applications expands, DJI's example is sure to be followed by other foreign vendors.

## About the author Johannes Nanz



Originally from Germany, Johannes holds an MBA from Sungkyunkwan University and an LL.M. degree from Maastricht University. Johannes first moved to Korea in 2008 and specializes in the telecommunications and intellectual property sectors. Prior to joining Intralink, he consulted for Korea Telecom (KT) and was instrumental in securing overseas contracts and winning multiple industry awards. Johannes further worked as a Researcher for the University of Bonn, where he researched international trade, investment and intellectual property law between Korea and the EU.

Johannes is based in Intralink's Seoul office and is fluent in Korean. <http://www.intralinkgroup.com/>

# B&R now together with ABB - source B&R

ABB (ASEA Brown Boveri) is a Swedish-Swiss multinational corporation headquartered in Zürich, Switzerland, operating mainly in robotics, power and automation technology areas.

B&R Industrial Automation GmbH is headquartered in Eggelsberg, Austria also known as: Bernecker + Rainer Industrie-Elektronik

## It's official: B&R now ABB's center for machine and factory automation

B&R is now ABB's global center for machine and factory automation. Following approval by EU competition authorities, the acquisition of B&R by ABB became legally effective on July 6, 2017. B&R will operate as an independent business unit within the ABB Group's Industrial Automation division. Division President Peter Terwiesch and B&R Managing Director Hans Wimmer announced an array of investments that will strengthen R&D activities and expand production capacity.

## Unwavering customer focus

"Building close relationships with our customers is and remains essential to who we are as a company," affirms Wimmer on announcing finalization of the acquisition process. "We will continue to work hand-in-hand with our customers to develop the most innovative solutions, and they will see no changes in their day-to-day points of contact. »

B&R's primary focus will stay centered on the OEM market, accompanied by expansions to its factory automation portfolio. With B&R building on ABB's global presence and complementary offerings, customers will see substantial benefits from the merger. B&R will also be intensifying its activities in the Industrial IoT arena and expanding on ABB's industry-leading portfolio of digital solutions.

## Capacity boost for both R&D and production

« ABB and B&R are united in their innovation and customer focus," adds Terwiesch. "These will be central factors as we evolve together going forward." Ensuring its ability to handle the steadily increasing demand for B&R's advanced solutions, ABB is investing in a new R&D center at B&R headquarters in Eggelsberg as well as expanded production capacity a few kilometers away in Gilgenberg. Additionally, the technical office in Salzburg is being expanded to make room for 50 new developers in the areas of control, motion control and Industrial IoT communication.



*"We will be investing heavily in expanding our R&D infrastructure and adding production capacity," says B&R Managing Director Hans Wimmer.*



## IHS Markit Report

### Will B&R acquisition give ABB a boost in industrial automation?

By Alex West, Principal Analyst

Early this month ABB; a supplier of robotics, process automation, and electrification components, acquired B&R Automation, an industrial software and automation hardware company. This is the latest acquisition that ABB has made in recent years. In 2012, ABB acquired Thomas & Betts for \$3.9 billion, followed by Power-One Inc in 2013 for \$1 billion. So what does the B&R Automation acquisition mean for ABB?

#### Product portfolio and OEM sectors

B&R Automation adds to the ABB portfolio, bringing established product lines in PLCs, industrial PCs, HMIs, I/O modules, servo drives, and servo motors. This gives ABB, one of the leading vendors in process automation, a step-up in terms of a discrete automation portfolio, which was an obvious gap in the offering. It also brings access to discrete automation sectors and an established business with over four thousand machine builders. By acquiring B&R Automation, ABB has expanded its 'knowledge' pool. They now have more expertise in discrete automation, which has strengthened their capability of providing products, and IoT solutions to OEMs in sectors like packaging machinery. There is certainly opportunity to expand their IoT solution business as the uptake of IoT technology has so far been faster in discrete sectors, particularly those that are consumer related.

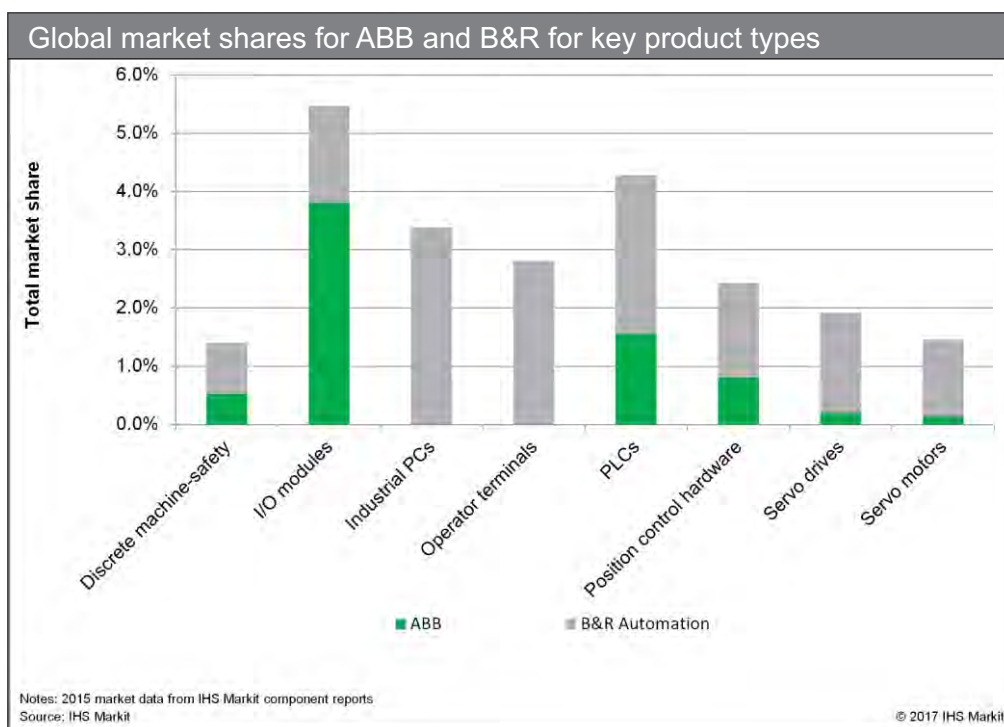
ABB Chief Executive Officer Ulrich Speisshofer states that the combined global customer base will create huge opportunities for the Fourth Industrial Revolution, with an "installed base of more than 70 million connected devices, 70,000 control systems and now more than 3 million automated machines and 27,000 factory installations around the world". It does sound impressive. Does this make the combined company a concern for other leading suppliers of industrial automation components?

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## Will B&R acquisition give ABB a boost ... from previous page

Globally there is little change to the competitive environment in terms of supplier rankings. According to IHS Markit's Industrial Automation Equipment Tracker, at a global level ABB show little advancement in the market share ranking. They will gain share for products such as industrial PCs, PLCs, servo drives and servo motors. The latter two product rankings show the greatest changes for the combined company. ABB was estimated to be ranked number 32 of servo drive suppliers and now moves to a top 15 position. For servo motors, ABB was ranked number 35 globally in 2015; the combined business is now estimated to put them at number 14. A significant change, but not enough to pose a threat to the leading suppliers to these markets.



This acquisition brings the combined company into more direct competition with Schneider Electric as they now have comparable global market shares for I/O modules, industrial PCs, position control hardware, servo drives, and servo motors. The greatest market share increase is estimated for the industrial PC market, with a market share increase of 3% to place the combined company as the seventh largest supplier in revenue terms. The market share increase is estimated at around 3% for the operator terminal and PLC markets. This puts ABB as the tenth largest supplier of operator terminals and sixth largest for PLCs at a global level.

### EMEA market impact

ABB will also gain the ability to scale the machine automation business in Europe, where B&R Automation generates around 65% of global sales. In the EMEA region, ABB's market share is estimated to increase by around 3% for I/O modules when using 2015 base figures. This moves ABB to second place of the leading suppliers to the EMEA market, above Schneider Electric. In EMEA the combined company is estimated to have gained market share of over 4% for operator terminals and PLCs, making it one of the top 5 leading suppliers for these products.

### Industrial communications

Another area of likely change is that of industrial communication protocols. B&R Automation's POWERLINK and openSAFETY protocols could now become the standard for ABB's automation products. According to IHS Markit's Industrial Communications Intelligence Service, POWERLINK is estimated to be the seventh largest industrial protocol at a global level in terms of 2015 new node connections; sixth in the EMEA region. For openSAFETY, it is estimated to be the eighth largest safety protocol at a global level by new node connections. ABB's acquisition of B&R Automation may see these protocols' being more widely supported with a larger product portfolio, which could impact share of other leading industrial communication protocols.

### Smart manufacturing

An area that may be worth watching is the ABB Ability Platform and how it will develop over the next few years. With trends to IIoT and smart manufacturing it is becoming increasingly important for industrial automation companies to develop and support software portfolios. This may be a driver of further ABB acquisitions as Spiesshofer explained to reporters "There will be more acquisitions...as one of the drivers of growth going forward, but there is no 'must haves' we are desperate about."

### Summary

The ABB acquisition of B&R Automation will fill a gap in the existing portfolio and will give them access to an established and loyal machine builder customer base. This will certainly be a concern for other leading suppliers to these product markets and sectors. The combined company will likely represent more of a challenge to some of the leading suppliers of I/O modules, industrial PCs, servo drives, and servo motors. At a global level, the acquisition is estimated to have made marginal improvements to the supplier rankings for machinery automation.