67 GWh
Wind Turbine
16,000 Households

GE World's Most Powerful Wind Turbine

Haliade-X 12 MW will produce 45 percent more energy than any other offshore wind turbine available today and will generate up to 67 GWh annually, enough renewable power for up to 16,000 European households

TI - Automotive, mA-to-kA Range, Current Shunt Sensor Reference Design

50mA to 1500A Current Shunt Sensor

Wind River
No Longer
an Intel Unit

Intel to sell Wind River unit to TPG

Intel-owned embedded software unit Wind River announced that global alternative asset firm TPG is acquiring the company for an undisclosed amount.
Intel acquired Wind River for USD 884 million back in 2009

Ex TESLA to lead
INTEL Silicon
Engineering

Surprising move from TESLA to INTEL Keller joins Intel to lead Silicon Engineering

Intel named Jim Keller as a senior vice president, effective from 30 April. He will lead the company's silicon engineering

THEMIS
is now
MERCURY

Mercury acquires Themis for $180M

Including Themis, Mercury has acquired six companies for $575 million total over the past two years

MEN
merging with
duago

A Unity for Computing & Communication

MEN Mikro Elektronik GmbH and duagon Holding AG are merging to become a provider of software and hardware s olutions for data processing and communication

Machine Vision

Edge computing, deep learning and open-source Robot Operating System driving the evolution of machine vision from ADLINK

In this Edition

< Edge computing, deep learning and open-source Robot Operating System driving the evolution of machine vision

< Intel to sell Wind River unit to TPG

< McAfee, do you remember how and what

< Surprising move from TESLA to INTEL, Keller joins Intel to lead Silicon Engineering

< Mercury closes $180M Themis Computer acquisition

< MEN Merging with duagon

< Automotive, mA-to-kA Range, Current Shunt Sensor Reference Design

< GE announces Haliade-X, the world's most powerful offshore wind turbine

< Embedded Computing Boards Overview: Qseven, SMARC, PC/104, COM Ewpress, VPX, CompacPCI, AdvancedTCA (ATCA), AMC, MicroTCA, Industrial Motherboard, Mini-ITX, PCIe, PXI / PXIe

Daniel Dierickx
CEO & co-Founder
at e2mos
Acting Chief Editor

Over 3 decades Chips & Embedded Systems Market Expertise

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Edge computing, deep learning and open-source Robot Operating System driving the evolution of machine vision

San Jose -- 2018/04/17

Manufacturers today are looking to transform traditional production systems as they struggle to addresses challenges associated with shortening product life cycles, rising labor costs and wide-ranging consumer demands. This has given rise to Industry 4.0, smart factory and Industrial Internet of Things (IIoT) developments, which are also propelling growing applications of machine vision technologies.

Alex Liang, product manager, IoT Solutions and Technology Group, ADLINK, thinks three critical trends will lead future developments of machine vision. With these trends come both new opportunities and challenges for machine vision.

First of all, with widespread applications of big data analytics, businesses demand higher data processing efficiency and are growingly making use of distributed computing, cloud computing, fog computing or edge computing. This is bringing changes to where and how machine vision is used. Machine vision systems have to make a breakthrough from the traditional concept of gauge, inspection, guide and identification (GIGI) to include the ability to perform computation and analysis and work in conjunction with other devices.

Furthermore, maturing IoT technologies have enabled a variety of devices to become connected. Communication across different devices via a network has become necessary. Therefore, communication solutions including OPC unified architecture (OPC-UA), Robot Operating System 2.0 (ROS 2), Data Distribution Service (DDS) and Message Queuing Telemetry Transport (MQTT) are increasingly important and will influence machine vision developments.

In response to shorter product life cycles, manufacturers endeavor to accelerate production to accommodate rapid market changes so they are keen to adopt easy and ready-to-use solutions to help them shorten the learning curve and speed up the introduction process. This is leading the development of machine vision software to gear toward simple, intuitive and user-friendly design.

Machine vision infused with innovations becomes instrumental to smart manufacturing

According to Liang, in the foreseeable future, machine vision will not only be used to perform quality inspection but it should also play an active role to allow robots to have human-like vision so that they can easily carry out loading, picking, gripping and packing operations with no need for an intricate guiding process. To achieve such purposes, machine vision systems have to incorporate the ability to collect, analyze and process large amounts of data in real time while supporting close communication with other devices. Therefore, how machine vision can keep up with advancing technologies such as edge computing, OPC-UA, ROS 2 and vision guided robotics (VGR) to fully support smart manufacturing requirements on high efficiency, high precision and low latency has become the next topic and challenge.

Take edge computing for example. The traditional machine vision design has separate camera modules and processing units (industrial PC). However, the rapid growth of data volume imposes increasingly challenging requirements on computational power so now the camera module has to turn into an edge-located computing node that can pre-process data and offload some of the burden from the processing unit.

OPC-UA, a machine-to-machine communication protocol for industrial automation, enables heterogeneous platforms or devices in a smart factory to communicate and exchange data. In the past, machine vision systems engage in communication with PLC, I/O or motion control equipment through various specific protocols or customized functions, making integration very difficult. The availability of OPC-UA will be able to resolve such problems.

ADLINK ... from previous page

The combination of ROS 2 and VGR equips robots or automated guided vehicles (AGV) with machine vision to enhance their efficiency and ability to work in synchronization. ROS is an open-source robotics operating system. The first generation ROS 1 is based on the TCP/IP protocol while the later generation ROS 2 is built on the UDP+DDS architecture and provides more powerful support for real-time data sharing between devices with robust security. Major robot manufacturers worldwide have all implemented support for ROS 2 using common SLAM, Navigation, Perception and Manipulation resources and algorithms. This not only enables problem-free communication across robotic systems but also builds a broad development platform for machine vision. Factories in the future will no longer have independent devices or work stations but instead can connect robotic arms, AGV and other machinery of different brands to realize smart manufacturing for wide-ranging production needs through the new VGR concept.

In addition to the above trends, the development of deep learning should also be considered when we try to figure out where machine vision technologies and applications are headed, commented Liang. Deep learning is not a new technology. It basically imitates the workings of the human brain to carry out recognition, decision-making and prediction through training using a neural network paradigm. Execution of deep learning tasks used to rely on high-performance CPUs but the costs ran high and the processing took a long time. Advancements in GPU technologies in recent years have allowed GPUs to process graphics with a much higher efficiency than CPUs. Deep learning leveraging the GPU's processing power has therefore become a technology with a high cost-performance value. The marriage between deep learning and machine vision can be expected to create far-reaching synergy in the future.

Looking ahead to 2018, ADLINK hopes to provide total solutions designed to enable quick introduction and optimal values for Industry 4.0, smart factory and IIoT applications. For this purpose, ADLINK will highlight edge computing, ROS 2 and deep learning as its focus R&D areas. The integration of these innovative technologies will complement the company's machine vision product portfolio, including smart cameras and image processing systems.

ADLINK Showcasing Latest Machine Vision Solutions at AIA's The Vision Show

Application Ready Machine Vision Solutions for Robotic Guidance, Defect Inspection, Dimension Gauging and Identification Applications

San Jose -- 2018/04/06

ADLINK Technology, Inc., a global provider of advanced Edge Computing products will showcase the latest smart cameras, embedded vision systems and expandable computing platforms for graphic-intensive vision applications at AIA's vision show, April 10-12, at the Hynes Convention Center in Boston, Massachusetts in Booth #528.

 ADLINK will feature demonstrations of the company's latest vision system platforms, including: NEON smart cameras that combine a PC, a frame grabber, an I/O extension board, and a camera in a single housing. The NEON smart camera is an open x86 based platform and supports many industry leading vision software applications.
EOS compact vision systems featuring Intel Core i7/i5/i3 processors, FPGA pre-processing, and four independent PoE ports
Matrix and MVP series industrial PCs with high-performance computing combined with PCI/PCIe high-speed expansion slots in compact enclosures.
Full line of PCI frame grabbers including, PoE GigE, HDMI, Camera Link, and CoaxPress.

 Also on display in the ADLINK booth will be a live robotic vision demo with partner Recognition Robotics. The Robeye 3D vision guided robotic (VGR) solution demonstrates the NEON all-in-one smart camera integrated with an industrial robot arm for robot guidance.

ADLINK vision solutions will also be on display at the Robot Vision Technologies booth (#907). RVT will be showing off the latest version of its award winning collaborative Vision Factory (cVF) software platform, a highly advanced system allowing machines to more precisely operate in their environments.

"We are excited to see partners like Recognition Robotics and Robotic Vision Technologies leverage the value of an integrated solution like the NEON smart camera to develop unique 3D vision-guided robotic solutions." said Jacky Lin, Senior Sales Director at ADLINK. "The combination of powerful software capabilities integrated with compact, rugged, all-in-one smart camera solutions enables new capabilities and increased value for industrial automation and robotic vision guidance applications."

For more information on AIA's vision show or to register for an expo pass, please visit https://www.visionshow.org/
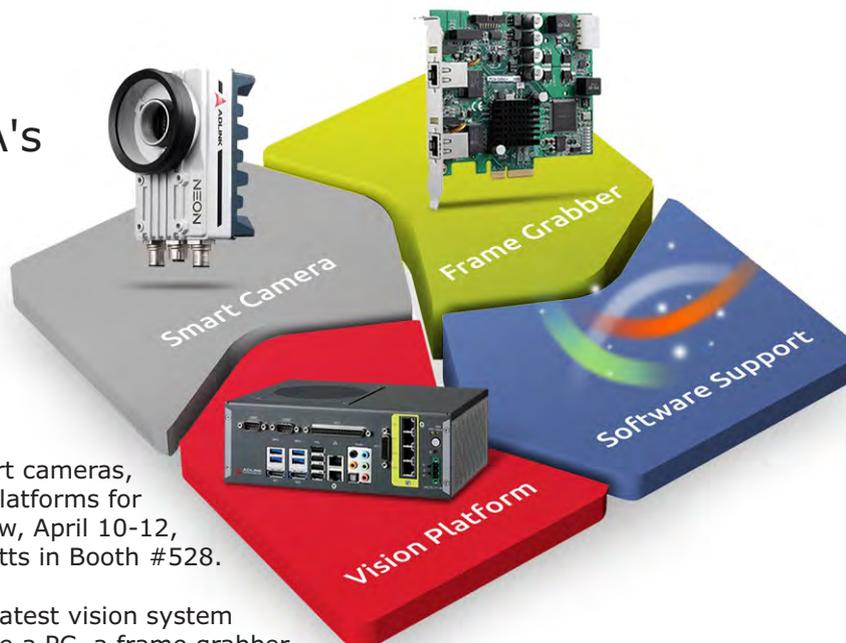
Intel to sell Wind River unit to TPG

Wednesday 4 April 2018 | 08:57 CET | Intel-owned embedded software unit Wind River announced that global alternative asset firm TPG is acquiring the company for an undisclosed amount. Wind River president, Jim Douglas, and his existing executive management team will lead the newly independent Wind River after the transaction closes, said the company, which was acquired by Intel for USD 884 million back in 2009.

Wind River's products and solutions enable engineers, developers, manufacturers and system integrators to build intelligent connected devices, sensors, gateways and networks that unlock machine data and connect it to cloud and IT environments. The spun-off unit said it's looking to focus on the opportunity of industrial software driven by the convergence of the Internet of Things (IoT), intelligent devices and edge computing.
Source: CLICK HERE   **SEE ALSO WIND RIVER PR:** CLICK HERE

Intel and TPG to Collaborate to Establish McAfee as Leading Independent Cybersecurity Company Valued at $4.2 Billion

Intel & TPG to Collaborate to Establish McAfee as Leading Independent Cybersecurity Company Valued at $4.2 Billion

REMEMBER: Sept. 7, 2016 (2016) - Intel Corporation and TPG Announce an Agreement Under Which the Two Parties Will Establish a Newly Formed, Jointly-Owned, Independent Cybersecurity Company Called McAfee

Highlights:
• TPG and Intel to jointly invest in spin-out of Intel Security in a transaction valuing the business at $4.2 billion
• Intel to receive $3.1 billion in cash and retain 49 percent stake after completion of the transaction
• TPG to own 51 percent of the new company, which will be named McAfee
• Investment reflects TPG's confidence in Intel Security's industry-leading enterprise and consumer businesses, strong market position, and business momentum
• Positions new company as one of the world's largest pure-play cybersecurity firms
• Intel senior vice president and Intel Security general manager Chris Young and existing management team to lead the new company following transaction close

SANTA CLARA and SAN FRANCISCO, Calif., and FORT WORTH, Texas, Sept. 7, 2016 (**2016**) – Intel Corporation and TPG today announced a definitive agreement under which the two parties will establish a newly formed, jointly-owned, independent cybersecurity company. The new company will be called McAfee following transaction close. TPG will own 51 percent of McAfee and Intel will own 49 percent in a transaction valuing the business at approximately $4.2 billion. TPG is making a $1.1 billion equity investment to help drive growth and enhance focus as a standalone business.

Through this transaction, TPG, a leading global alternative asset firm with demonstrated expertise in growing profitable software companies and carve-out investments, and Intel, a global technology leader that powers the cloud and billions of smart, connected computing devices, will work together to position McAfee as a strong independent company with access to significant financial, operational and technology resources. With the new investment from TPG and continued strategic backing of Intel, the new entity is expected to capitalize on significant global growth opportunities through greater focus and targeted investment.

The new company will be one of the world's largest pure-play cybersecurity companies. Last year, Intel Security unveiled a new strategy that refocused the business on endpoint and cloud as security control points, as well as actionable threat intelligence, analytics and orchestration. This new strategy allows customers to detect and respond to more threats faster and with fewer resources.

"Security remains important in everything we do at Intel and going forward we will continue to integrate industry-leading security and privacy capabilities in our products from the cloud to billions of smart, connected computing devices," said Brian Krzanich, CEO of Intel. "As we collaborate with TPG to establish McAfee as an independent company, we will also share in the future success of the business and in the market demand for top-flight security solutions, creating long-term value for McAfee's customers, partners, employees and Intel's shareholders. Intel will continue our collaboration with McAfee as we offer safe and secure products to our customers."

"We believe that McAfee will thrive as an independent company. With TPG's investment, along with continued support from Intel, McAfee will sharpen its focus and become even more agile in its response to today's rapidly evolving security sector," said Jim Coulter, Co-Founder and Co-CEO of TPG. "TPG is excited to partner with Intel and McAfee management to accelerate growth of the business by enhancing its go-to-market strategy and continuing to grow and strengthen its core product offerings."

"At TPG, we look to partner with both established and emergent leaders in dynamic and growing markets," said Bryan Taylor, Partner at TPG. "We have long identified the cybersecurity sector, which has experienced strong growth due to the increasing volume and severity of cyberattacks, as one of the most important areas in technology. Given McAfee's leading global market position, loyal customer base, and trusted technology, we see a compelling opportunity to invest in a highly-strategic platform that is growing consistently and addressing significant and evolving market demand."
**Source Intel: more here** https://newsroom.intel.com/news-releases/intel-security-tpg-partnership-mcafee/

Kontron announces new COM Express® Type 6 module with high-performance 8th Gen Intel® Core™ / Xeon® E processors

COMe-bCL6 Computer-on-Module offers increased power density as well as flexible, scalable computing performance and connectivity with the latest Intel® processors

Augsburg, Germany, 24.04.2018 – Kontron, a leading global provider of IoT/Embedded Computing Technology (ECT), announces the new Computer-on-Module Kontron COMe-bCL6 in the COM Express® basic Type 6 form factor (125x95 mm). It is based on processors of the latest 8th Gen Intel® Core™/ Xeon® E family with a mobile chipset (CM246/QM370 PCH). The COMe-bCL6 offers highest industry-grade quality and allows for flexible application scenarios.
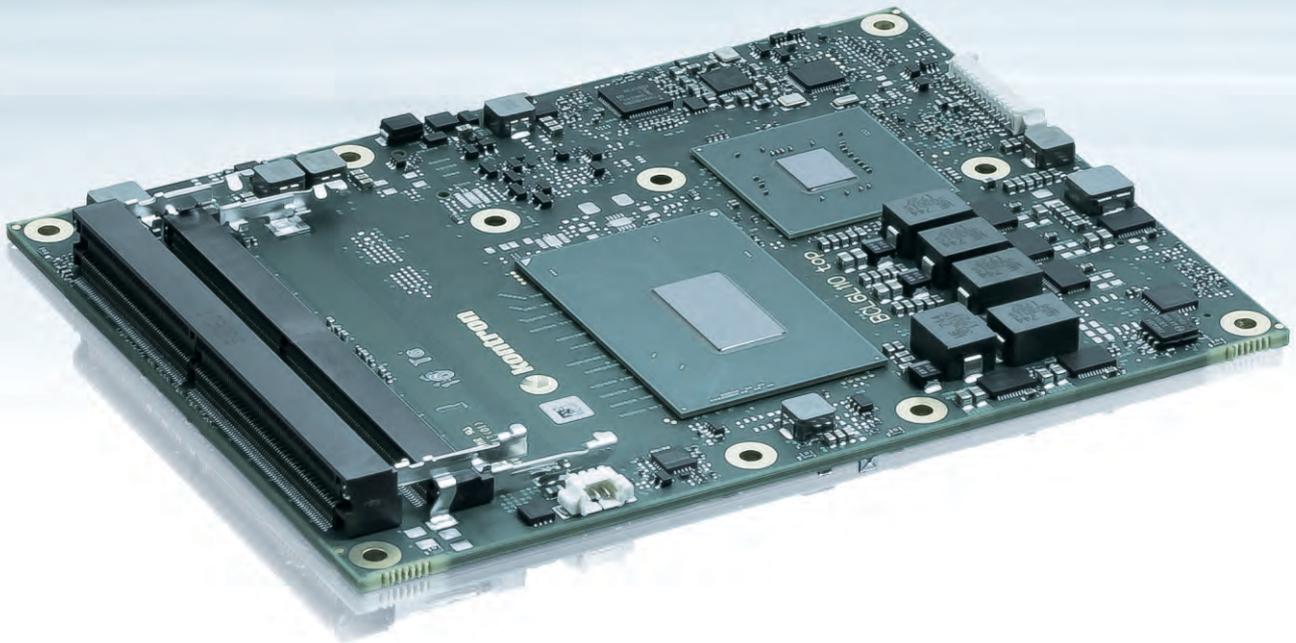
The new COM Express® module is available in different processor variants, including hexacore CPU versions. All variants are available with up to 64 GB non-ECC/ECC DDR4 storage, a third and fourth slot can be equipped on demand. The new Kontron COM Express® module supports the fast Intel® Optane™ systems acceleration for quick high-capacity mass storage data transfer, as well as the fastest available storage technology NVMe SSD in a very compact design. USB 3.1. support with up to 10 Gbps and USB Type C support offer twice the bandwidth as compared to USB 3.0 for fast data transfer. The COMe-bCL6 also benefits from the excellent graphics performance of the 8th generation Intel® processors. Four 4K displays can be controlled, three of them separately. UHD streaming supports high quality video applications.

By consistently continuing slot allocation and feature implementation, the COMe-bCL6 is well suited as a high-performance successor for existing solutions. Typical areas of application include communications, digital signage, professional gaming and entertainment, medical imaging, surveillance and security, as well as the control of industrial systems, machines and robots on the shop floor level as well as in the control room. In its robust R E2S version, the COMe-bCL6 meets the particular demands of the defense and transportation sectors by offering integrated rapid shutdown, ECC storage support, and deployment in industrial temperature ranges from -40°C to +85°C.

Additionally, the new COMe-bCL6 supports the Kontron APPROTECT Security Solution. Based on an integrated Wibu-Systems security chip and in tandem with a specifically developed software framework, it provides IP and copy/reverse engineering protection. Kontron APPROTECT Licensing also enables new business models such as "pay per use", demo versions for limited time periods, or activation/deactivation functions.

The COMe-bCL6 module is available in these processor variants:
- Intel® Xeon® E-2176M, 6x 2.7 GHz (4.4 GHz), GT2, 45/35 W
- Intel® Core™ i7-8850H, 6x 2.6 GHz (4.3 GHz), GT2, 45/35 W
- Intel® Core™ i5-8400H, 4x 2.5 GHz (4.2 GHz), GT2, 45/35 W

For more information please visit: www.kontron.com/products/boards-and-standard-form-factors/com-express/com-express-basic/come-bcl6.html

Surprising move from TESLA to INTEL
Keller joins Intel to lead Silicon Engineering

Friday 27 April 2018 | 09:51 CET | News

Intel named Jim Keller as a senior vice president, effective from 30 April. He will lead the company's silicon engineering, which encompasses system-on-chip (SoC) development and integration. Keller brings to Intel more than 20 years of experience in x86 and ARM-based micro-architecture design across a broad range of platforms, including PCs, servers, mobile devices and cars. Keller joins Intel from Tesla, where he most recently served as vice president of Autopilot and Low Voltage Hardware.

Themis Acquired by Mercury Systems

FREMONT, CA, United States, 2/1/2018

Themis Computer®, a leading designer and manufacturer of rugged SWaP optimized computing systems, confirmed today that it has been acquired by Mercury Systems.

"We are excited to be joining the Mercury Systems family," said Bill Kehret, CEO of Themis Computer. "This merger will help Themis expand its footprint in Industrial and Defense markets, by bringing new, complementary technology and services to the 'One Mercury' product portfolio."

For more information, visit www.mrcy.com/acquisition

About Mercury Systems
Mercury Systems (NASDAQ:MRCY) is a leading commercial provider of secure sensor and safety-critical processing subsystems. Optimized for customer and mission success, Mercury's solutions power a wide variety of critical defense and intelligence programs. Headquartered in Andover, Mass., Mercury is pioneering a next-generation defense electronics business model specifically designed to meet the industry's current and emerging technology needs. To learn more, visit www.mrcy.com

Mercury closes $180M Themis Computer acquisition

By Ross Wilkers
Feb 01, 2018

Mercury Systems said Thursday it has closed its $180 million-cash acquisition of ruggedized server and storage system maker Themis Computer.

First announced in December, the deal gives Mercury greater access to military customers that include all four military branches and the Army National Guard. Themis also provides its platforms to the Coast Guard.

Themis builds its technologies to work in missile systems, unmanned aerial vehicles, radars and combat management systems.

Including Themis, Mercury has acquired six companies for $575 million total over the past two years and intends to use Themis as a platform for more deals to grow in the C4I market -- command, control, communications, computers and intelligence.

About the Author

Ross Wilkers is a senior staff writer for Washington Technology. He can be reached at rwilkers@washingtontechnology.com. Follow him on Twitter: @rosswilkers. Also find and connect with him on LinkedIn.

MEN Merging with duagon

A Unity for Computing and Communication

Apr 06, 2018. MEN Mikro Elektronik GmbH and duagon Holding AG are merging to become a provider of software and hardware solutions for data processing and communication.

The previous investor of MEN, HQ Equita, has decided to sell MEN Mikro Elektronik with its subsidiaries in China, France, and the USA to Deutsche Beteiligungs AG (DBAG) in the course of the merger. duagon Holding was already a company in the DBAG portfolio.

The integration and further development of the newly created group will be accompanied by MEN founder Manfred Schmitz.

With the joint expertise of MEN and duagon, new products and complete solutions are to be developed. The focus is on automatic safety systems and technological trends such as autonomous driving.

Dr. Markus Dilger, former CEO of duagon and future CEO of the Communication business unit, comments: "We are pleased with the new perspectives that the merger of MEN and duagon opens up for both companies. For duagon, these include access to MEN's hardware expertise, for example in terms of reliability standards, and to new markets such as aerospace and medical".

Bernd Härtlein, former CEO of MEN and future CEO of the Computing business unit, adds: "We look forward to working with duagon and are confident that this merger will create a market-leading company for complete computing and communication hardware and software solutions for safety-critical markets.

Automotive, mA-to-kA Range, Current Shunt Sensor Reference Design

Features

- Full-scale accuracy of:
    - 0.02% full-scale range (FSR) for < 20A and < 0.05% FSR for 20A to 1500A at 25°C
    - 0.1% FSR for < 20A and 0.25% FSR for 20A to 1500A at 50°C
- Suitable for 50mA to 1500A range current measurement; configurable to varied current spans
- High-side sensing and low-side sensing
- Supports bi-directional current
- Bi-directional current measurement: -1500A to +1500A
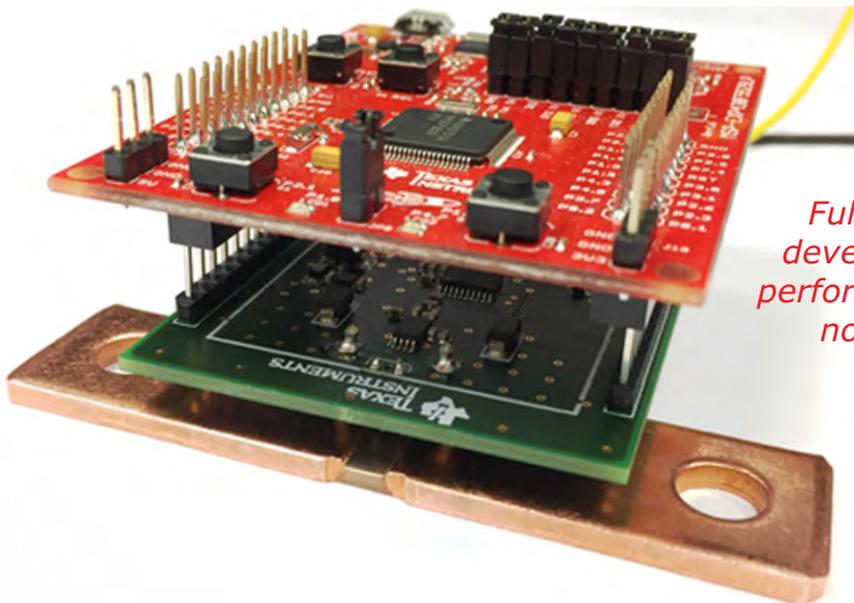
Fully assembled board developed for testing and performance validation only, not available for sale

Description

This reference design shows how to detect current from the mA-to-KA range using a busbar-type shunt resistor. The increasing demand of high-capacity batteries in electric vehicles (EVs) and hybrid electric vehicles (HEVs) drives the requirement for larger current spans and highly-accurate current sensors. Obtaining a good accuracy over three decades (mA to A, 1 A to 100 A, and 100 A to 1000 A) is quite challenging due to large amounts of noise in the system. This design solves this problem by using a high-resolution analog-to-digital converter (ADC) and high-accuracy current shunt monitors from TI.

Source TI: http://www.ti.com/tool/TIDA-03050?HQS=sys-auto-hevp-ptsensor-asset-rd-ElectronicSpecifier-eu&DCM=yes#0

Reference Design Technical Info 43 pages: http://www.ti.com/lit/ug/tidud33a/tidud33a.pdf
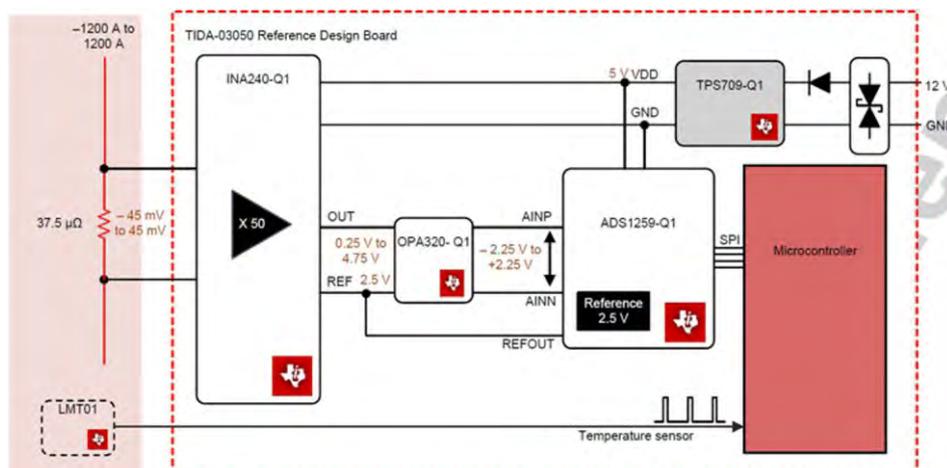
GE announces Haliade-X, the world's most powerful offshore wind turbine

- Haliade-X brings higher value to customers by producing more energy from the wind with a 12 MW generator rating, an industry-leading capacity factor[1] and advanced digital capabilities

- Haliade-X 12 MW is currently being bid for projects that will ship in 2021

- Haliade-X 12 MW will produce 45 percent more energy than any other offshore wind turbine available today and will generate up to 67 GWh annually[2], enough renewable power for up to 16,000 European households[2]

- $400 million program will fund engineering, testing and supply chain development over the next three to five years

www.gerenewableenergy.com

Paris, France – March 1, 2018 – GE Renewable Energy (NYSE:GE) today unveiled its plan to develop the largest, most powerful offshore wind turbine: the Haliade-X. Featuring a 12 MW direct drive generator and an industry leading gross capacity factor of 63 percent[1] the Haliade-X will produce 45 percent more energy than any other offshore turbine available today[2]. GE will invest more than $400 million over the next three to five years in development and deployment of the Haliade-X.

John Flannery, Chairman and CEO of GE, said, "We want to lead in the technologies that are driving the global energy transition. Offshore wind is one of those technologies and we will bring the full resources of GE to make the Haliade-X program successful for our customers."

Towering 260 meters over the sea, more than five times the size of the iconic Arc de Triomphe in Paris, France, the Haliade-X 12 MW carries a 220-meter rotor. Designed and manufactured by LM Wind Power, the 107-meter-long blades will be the longest offshore blades to date and will be longer than the size of a soccer field. One Haliade-X 12 MW turbine will generate up to 67 GWh annually[2], enough clean power for up to 16,000 households per turbine, and up to 1 million European households in a 750 MW windfarm configuration.

GE announces Haliade-X,
the world's most powerful
offshore wind turbine

12 MW capacity	
220-meter rotor	
107-meter long blades	
260 meters high	
67 GWh gross AEP*	
63% capacity factor	
38,000 m² swept area	
Wind Class IEC/ IB	
*AEP Annual Energy Production	

Heights shown in chart:
- Flat Iron Building — 285 ft / 87 m
- Statue of Liberty — 305 ft / 93 m
- Washington Monument — 555 ft / 169 m
- Chrysler Building — 1046 ft / 319 m
- Empire State Building — 1454 ft / 443 m
- Halide-X 12 MW — 853 ft / 260 m
- Eiffel Tower — 1063 ft / 324 m
- London Eye — 443 ft / 135 m
- Big Ben — 315 ft / 96 m
- Tower of Pisa — 186 ft / 57 m
- Arc de Triomphe — 162 ft / 49.5 m
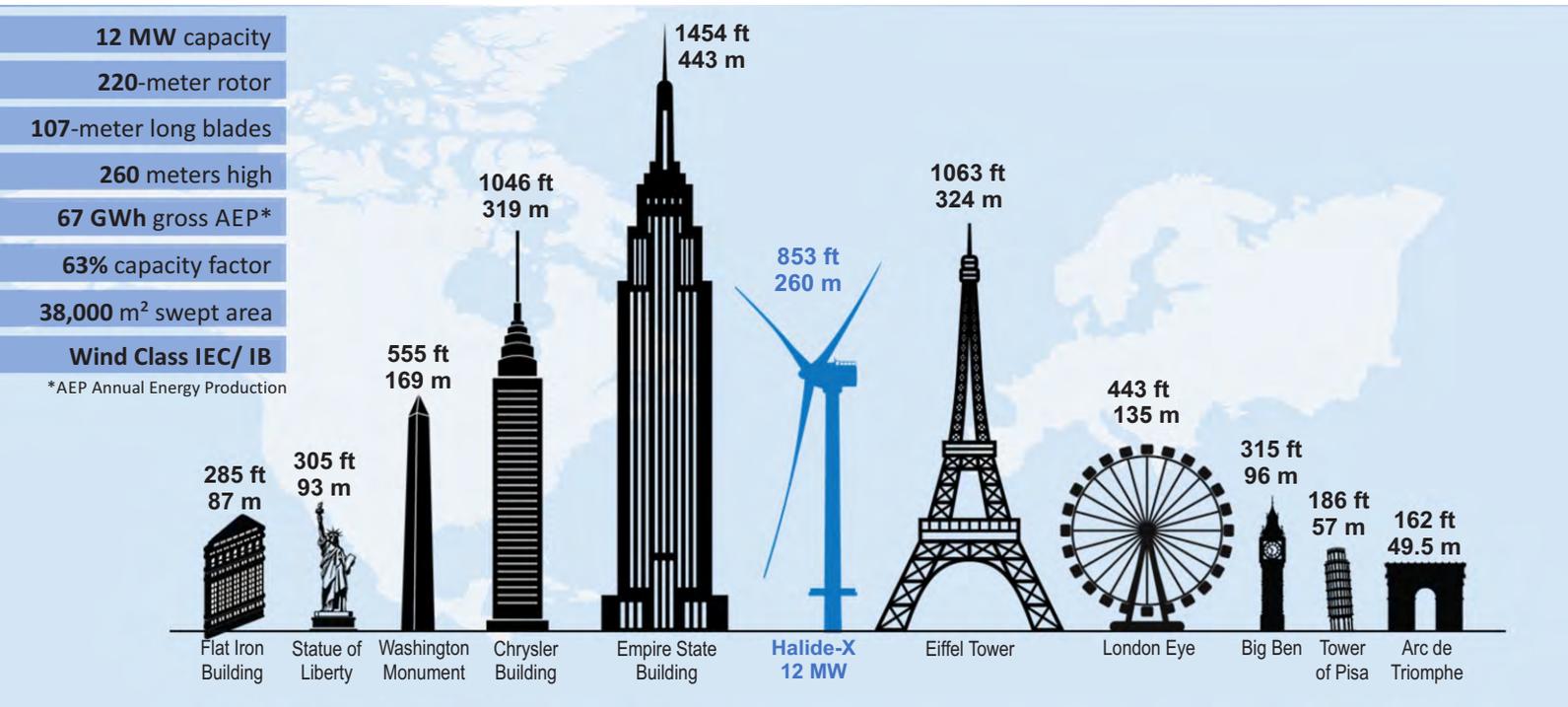
Jérôme Pécresse, President and CEO of GE Renewable Energy said, "The renewables industry took more than 20 years to install the first 17 GW of offshore wind. Today, the industry forecasts that it will install more than 90 GW over the next 12 years. This is being driven by lower cost of electricity from scale and technology. The Haliade-X shows GE's commitment to the offshore wind segment and will set a new benchmark for cost of electricity, thus driving more offshore growth."

The ability to produce more power from a single turbine means a smaller number of turbines in the total farm, which translates to less capital expenditure for the balance of plant and reduced risk in project execution as the installation cycle time is reduced. It also simplifies operation and maintenance of the wind farm. All of this reduces the investment and operation cost for developers, makes offshore wind projects more profitable, and ultimately lowers cost of electricity for consumers.

John Lavelle, CEO of Offshore Wind at GE Renewable Energy said "The Haliade-X 12 MW will help our customers in an increasingly competitive offshore environment, and through its size and digital functionality provide important value across manufacturing, installation and operation."

GE's Haliade-X platform is designed to offer greater efficiency in generating power from the wind that is available. With a 63 percent gross capacity factor1, the Haliade-X 12 MW is five to seven points above the current industry benchmark. Therefore, it will produce more energy per MW installed, which will significantly increase returns for customers.

GE announces Haliade-X,
the world's most powerful offshore wind turbine

To design and build the Haliade-X platform, GE Renewable Energy is relying on an unprecedented collaboration across the GE portfolio, leveraging the knowledge of GE's Onshore wind team, with 50,000 turbines in the field; the blade expertise of LM Wind Power; the GE Power and GE Aviation engineers for peer reviews of component and systems design; the Global Research Center for control systems and component validation; and GE Digital for supporting digital modelling, analytics and app development. The program is a GE-wide effort.

GE Renewable Energy aims to supply its first nacelle for demonstration in 2019 and ship the first units in 2021.

1. "Capacity factor" compares how much energy was generated against the maximum that could have been produced at continuous full power operation during a specific period of time.

2. Based on wind conditions on a typical German North Sea site.

About GE Renewable Energy

GE Renewable Energy is a $10 billion start-up that brings together one of the broadest product and service portfolios of the renewable energy industry. Combining onshore and offshore wind, hydro and innovative technologies such as concentrated solar power and more recently turbine blades, GE Renewable Energy has installed more than 400+ gigawatt capacity globally to make the world work better and cleaner. With more than 22,000 employees present in more than 55 countries, GE Renewable Energy is backed by the resources of the world's first digital industrial company. Our goal is to demonstrate to the rest of the world that nobody should ever have to choose between affordable, reliable, and sustainable energy.

HEIGHT
TOTAL HEIGHT OF THE HALIADE-X
853 ft /260 m
equivalent to **3X** the height of the **Flat Iron Building**

x3

DIAMETER
OF THE ROTOR
722 ft /220 m
equivalent to **Golden Gate Bridge** tower height above the water

SURFACE
OF THE BLADE SWEEP
410,000 sq ft
38,000 m²
equivalent to **7 American football fields**

x7
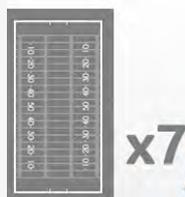
HALIADE-X 12 MW

GE Renewable Energy is developing **Haliade-X 12 MW**, the biggest offshore wind turbine in the world, with **220-meter rotor, 107-meter blade**, leading capacity factor **(63%)**, and **digital capabilities**, that will help our customers find success in an increasingly competitive environment.

ONE HALIADE-X 12 MW CAN GENERATE
67 GWh annually, which
is **45% more** annual energy production (AEP) than most powerful machines on the market today, and twice as much as the Haliade 150-6MW

THE HALIADE-X 12 MW WILL GENERATE ENOUGH CLEAN POWER FOR UP TO
16,000 European
households per turbine, and up to **1 MILLION** European households in a 750 MW configuration windfarm

Embedded Computing Boards Overview

Direct Link Click on the Pictures

ADLINK TECHNOLOGY INC.

Qseven

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

SMARC
Smart **M**obility **ARC**hitecture

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

PC/104
PCI/104 Express

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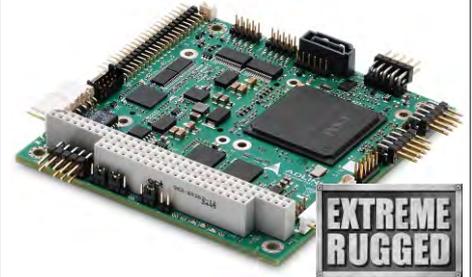
Intel-based: several CPU 's
PCI/104-Express (V3.0)
Size (117.4 mm x 96 mm)

COM Express

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)

Intel-based: several CPU 's

3U-6U VPX
Conduction & Air-cooled

3U-6U CompacPCI,
Plus & Serial

Conduction & Air-cooled

AdvancedTCA - ATCA -AMC - MicroTCA

ADLINK vigorously promotes the advantages of the ATCA technology by providing complete platform solutions that offer high-density processing power, faster data throughput, and intelligent system management. Designed for next-generation telecom, datacom, and equipment manufacturers, ADLINK's ATCA platforms significantly reduce over-all development costs, come with extended operating lifecycles, and speed up critical time-to-market.
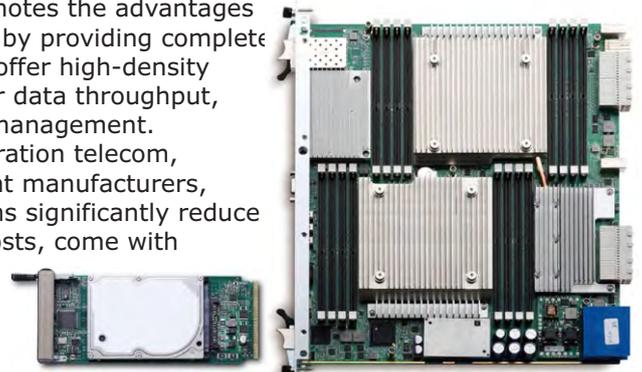
Ind. Motherboards
Mini-ITX
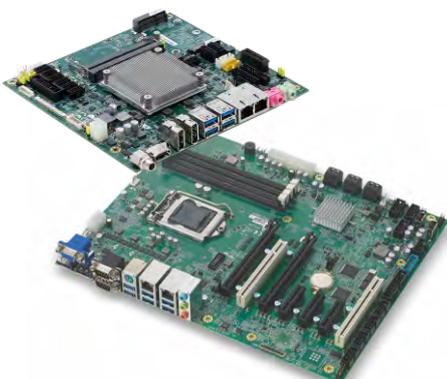
PCIe

Frame Grabbers
Video Capture Cards

PXI - PXIe