Message from the President

Shoulder-to-Shoulder with Customers, Ready for the Challenge

Dramatic advances in computing and network technologies are driving the emergence of numerous products and services that create innovative value by being “connected.” The reality for modern manufacturing companies, however, is that defining the development requirements of cutting-edge products at the conceptual stage is increasingly complex and demanding. Circumstances demand that companies seek the next revolution that will profoundly transform conventional design and engineering processes.

Zuken too, must constantly evolve and transform itself so as to stay one step ahead in meeting the challenges undertaken by its customers. We are committed to providing a comprehensive lineup of software and services that facilitate cutting-edge product development, starting at the conceptual stage—the phase most important to the future success of new products. Shoulder-to-shoulder with customers, Zuken is always ready for the challenge.

Our Value

A Trusted Partner for Product Development

Zuken steps forward, smoothly linking conceptual design to detailed design

Makoto Kaneko
President and Representative Director, Zuken Inc.
Zuken brings automation and efficiency to electrical and electronic design, supporting manufacturers across a broad range of industries in the quest for greater sophistication and optimization through the entire product development process.

Main Industries Served by Zuken Worldwide

- Industrial Machinery
- Consumer Electronics
- Electronic Components
- Medical Devices
- Mobility, Special-Purpose Vehicles
- Rail Transport
- Aerospace

Zuken Inc. and Overseas Affiliates

Our Business  The Zuken Group Business Domains

Zuken Inc. provides a variety of solutions and services primarily to customers in the mechatronics industry, including development, sales, and support for electrical CAD. It sells and customizes 2D/3D general-purpose mechanical CAD and CAE systems. As a new business area, Zuken Alfatech is also developing 3D modeling applications for the construction field, which is a domain with excellent potential.

Zuken Alfatech

DiverSync is devoted to planning and development of IT platforms to realize synchronized and bidirectional collaboration between design and manufacturing, which is the new normal in the age of the Internet of Things.

DiverSync Corporation

Zuken Tec provides consulting, on-site manager and engineer dispatch, as well as contracting services that support a broad range of design and development operations, including CAD installation, startup, and operation.

Zuken Tec Inc.

Zuken NetWave sells and supports state-of-the-art hardware and software for corporate networks, which are indispensable for today's business activities. These networks also include security and storage solutions.

Zuken NetWave Inc.

Zuken Elmic focuses on communication as the key element in technologies. It develops, sells, and provides support for middleware IP libraries, software, and related hardware for the embedded systems that support the security, industrial, and in-vehicle network fields.

Zuken Elmic Inc.

Zuken PreSight develops and markets creative products that support the manufacturing industry, including product lifecycle management (PLM) systems based on technology that coordinates lightweight 3D data and bill of materials (BOM). It also provides knowledge management solutions with a unique concept that reduces user burden.

Zuken PreSight Inc.

Zuken brings automation and efficiency to electrical and electronic design, supporting manufacturers across a broad range of industries in the quest for greater sophistication and optimization through the entire product development process.

Electronic Design Automation

Since its establishment, Zuken's core business has been the development and sale of the electronic design automation software needed to implement the advanced functions of today's ever-evolving electronics products. Zuken's design automation software is now used by electronics manufacturers worldwide, together with our unique solutions for managing electronic components and design data (PDM/PLM) based on extensive expertise in electronics design.

Zuken Tec Inc.

Automotive & Machinery Design Solutions

Today's automobiles employ a range of electrical and electronic systems that are becoming ever more complex. Zuken develops and sells the electrical wire harness design software that is the linchpin of their development, as well as electrical and electronic control and design software for industrial machinery and equipment. Our technology utilizes 3D data to model wiring at a facility-level scale, enabling various simulations for smart factories.

DiverSync Corporation

Zuken Alfatech Inc.
Founded in 1976, Zuken's story mirrors the growth of the electronics industry. Zuken has provided behind-the-scenes support for the development of a multitude of electronic devices that have made society a better place, and as the use of electronics has spread, so have Zuken's solutions and businesses. All around the world, customers take on the challenge of creating new technologies. Zuken continues to accept this challenge.

1970s
- 1983: Japan's first full-scale CAD/CAM system Create 2000, for the design of printed circuit boards, developed.
- 1986: Zuken America Inc. (now Zuken USA Inc.) established in California, United States.

1980s
- 1980: Zuken opened the floodgates with Japan's first CAD/CAM system for PCB design in 1978.
- 1982: Zuken established an unshakable position amid growing demand for smaller, thinner, and lighter electronic devices.
- 1988: Zuken America Inc. (now Zuken USA Inc.) established in California, United States.
- 1989: Zuken Europe GmbH (now Zuken GmbH) established in Germany.
- 1989: Zuken Europe GmbH (now Zuken GmbH) established in Germany.
- 1990: Zuken India Private Limited established in India.
- 1992: Zuken Europe GmbH (now Zuken GmbH) established in Germany.
- 1993: Zuken America Inc. (now Zuken USA Inc.) established in California, United States.
- 1994: Zuken acquired all the shares of Racal-Redac Ltd. of the United Kingdom.
- 1994: Zuken acquired all the shares of Racal-Redac Ltd. of the United Kingdom.
- 1994: Zuken acquired all the shares of Racal-Redac Ltd. of the United Kingdom.

1990s
- 1991: Registered on the Second Section of the Tokyo Stock Exchange as the first electronic design automation (EDA) corporation.
- 1992: Zuken Europe GmbH (now Zuken GmbH) established in Germany.
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- 1994: Zuken acquired all the shares of Racal-Redac Ltd. of the United Kingdom.
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2000s
- 2000: Zuken split off its PreSight Division to establish Zuken PreSight Inc.
- 2002: Zuken acquired the shares of INCASES Engineering GmbH.
- 2002: Zuken acquired the shares of INCASES Engineering GmbH.
- 2003: Zuken acquired Germany's CIM-TEAM (now Zuken E3 GmbH).
- 2004: Zuken acquired Germany's CIM-TEAM (now Zuken E3 GmbH).
- 2005: Zuken acquired Germany's CIM-TEAM (now Zuken E3 GmbH).
- 2006: Zuken acquired all issued shares of Alfatech Inc. and made it a subsidiary.
- 2007: Zuken acquired Germany's CIM-TEAM (now Zuken E3 GmbH).
- 2008: Zuken acquired Germany's CIM-TEAM (now Zuken E3 GmbH).
- 2009: Enterprise PLM Presight released.
- 2009: Enterprise PLM Presight released.

2010s
- 2010: Zuken acquired a 14% share in Lattice Technology Co., Ltd.
- 2011: Visual BOM, a new generation engineering platform that merges bill of materials technology with the ultra lightweight 3D format XVL, released.
- 2011: CR-8000, a next-generation electronic device design platform, released globally. Design Force launched, which completed Zuken’s system level electronics design environment.
- 2011: Zuken acquired all issued shares of Alfatech Inc. and made it a subsidiary.
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- 2015: Zuken acquired all issued shares of Alfatech Inc. and made it a subsidiary.
- 2016: Zuken merged its U.S. operations into Vitech Corporation of the United States.
- 2017: Zuken acquired all issued shares of Alfatech Inc. and made it a subsidiary.
- 2018: Zuken acquired all issued shares of Alfatech Inc. and made it a subsidiary.

Net Sales
- 1970s: Zuken opened the floodgates with Japan's first CAD/CAM system for PCB design in 1978.
- 1980s: Contributed to the miniaturization of electronic devices.
- 1990s: Our CAD/CAM technology established an unshakable position amid growing demand for smaller, thinner, and lighter electronic devices.
- 2000s: We have cultivated a global R&D and business network.
- 2010s: We continue to expand into new business fields and are pursuing an active partnership strategy.


**Global Network  Challenges in Global Markets Accelerate Our Growth**

**Japan & Asia**

Our head office is in Yokohama, the city where Zuken was founded. The head office oversees product and business development in Japan and worldwide.

The operating environment faced by manufacturing industries is increasingly global and borderless. Companies look to Asia as not only a manufacturing base, but as an important center for product development. We have therefore established subsidiaries in China, South Korea, Taiwan, Singapore, and India. We have built a system for accurately identifying the needs of customers in each region to offer the best possible solutions.

**Americas**

North America has many innovative companies that greatly influence manufacturing worldwide, and is also an important business development base for Zuken. In this market Zuken provides many leading U.S. high-tech companies with advanced solutions. In addition, to develop products and businesses for global markets, the Zuken SOZO Center promotes strategic partnerships with companies that own innovative technologies.

**Europe**

Zuken has a strong business foundation in Europe, a region that is home to many leading companies in global markets such as industrial machinery and automotive products. We complement our European sales network with bases that carry out core technology development. Our Global Automotive and Transportation Competence Center in Germany is part of Zuken’s organization for developing next-generation automotive electronic and electrical design solutions for global markets.

**Distribution of Personnel**

(As of the End of March 2019)

*Excluding domestic affiliated companies and employees stationed overseas.*
For the manufacturing industry, product development is an important, fundamental operation that determines future growth. Zuken provides solutions required for competitive product development. For us to support our customers’ strategic product development and give them long-term confidence in our solutions, we must have solid financial foundations ourselves.

Also, in the world of information technology, where technological innovation is intense, we must invest flexibly in order to continue providing cutting-edge technology in a timely manner. For this reason, since our founding, we have established and maintained a solid financial foundation as one of our most important management strategies.

### Financial Information

**A Solid Financial Foundation**

Net sales

- **Year ended March 2019**: ¥26,787 million
- **2014-2018**
- **($Millions of yen)**

Total assets

- **Year ended March 2019**: ¥47,190 million
- **2014-2018**
- **($Millions of yen)**

Operating income

- **Year ended March 2019**: ¥3,050 million
- **Operating income ratio**: 11.4%
- **2014-2018**
- **($Millions of yen)**

Shareholders’ equity

- **Year ended March 2019**: ¥32,607 million
- **Shareholders’ equity ratio**: 69.1%
- **2014-2018**
- **($Millions of yen)**

Profit attributable to owners of parent

- **Year ended March 2019**: ¥2,113 million
- **2014-2018**
- **($Millions of yen)**

Dividends

- **Note**: The 2016 dividend includes a commemorative dividend of 10 yen.
- **Year ended March 2019**: ¥26
- **2014-2018**
- **($Millions of yen)**
The Evolution of Engineering toward Collision-Free Cars

Automotive manufacturers worldwide are racing to develop vehicles with autonomous driving functions. Various levels of driving autonomy have been defined, ranging from limited driving assistance to full driving automation under all conditions. The greatest leap is from Level 2 (partial driving automation) to Level 3 (conditional driving automation). Up to Level 2, a human makes driving decisions and is in control all the time, but at Level 3 or above, the system takes the wheel and controls steering, acceleration and braking as necessary. In other words, from Level 3 the car itself must be able to make the complex and advanced situational judgments that are usually made by humans. Systems must therefore be able to comprehensively evaluate a vast amount of data from sensors including on-board radar, cameras and accelerometers, to safely control the behavior of the car. An externally connected network is also a likely development, enabling vehicles to communicate with each other and with traffic infrastructure, including traffic lights and intersection cameras capable of detecting cars or pedestrians in the vehicle’s blind spots. For autonomous driving, onboard subsystems must not only operate correctly, but also interact with other subsystems as part of an interconnected whole. This is the “complexity” to which Mr. Long is referring. In product development, while the functional design of subsystems remains crucial for manufacturers, the importance of functional design for holistic systems has increased exponentially.

The Systems Engineering Approach

Developing complex products involves an increasingly vast number of conceptual stage requirements, types of data handled, technical fields and component elements. All interact in a complex manner, so the division of roles is predicated on linking multiple technical disciplines. Moreover, it can be difficult to verify that all elements are working in concert to deliver on functional specifications. The technical approach to resolving such issues is systems engineering, a field in which Vitech specializes. The emergence of systems engineering can be traced to the 1960s, starting with the U.S. aerospace industry and the Apollo program, where development was divided among specialists, teams and suppliers spanning a range of disciplines. Making refinements to spacecraft required trial and error in the field, beyond the capabilities of a standard engineering process. The idea behind systems engineering was to understand the system at a highly abstract level and then fill in details in stages during the design and engineering process. More than half a century later, this way of thinking and manufacturing is still the basis for developing the products people use every day.

Systems engineering deals with many technical elements and is difficult to execute through text-based documentation. Consequently, the use of system models has gained traction over the past decades. Model-Based Systems Engineering (MBSE) approaches describe the system as a whole using a language that defines exchange formats and rules. Successful use of system models enables iterative confirmation that the original intent is achieved at each design and validation stage, and also serves as a common language that forestalls misunderstandings when conveying key information to colleagues working on different parts of the project. System models are highly effective for developing complex products. Furthermore, through digital representation and the use of IT tools, system models can weed out conflicts when defining complex requirements, and allow respective parties to work efficiently during the development process while carrying out anytime validation of subsystem interconnections. MBSE is an excellent choice for efficient and effective systems engineering.

Summary of Levels of Driving Automation

<table>
<thead>
<tr>
<th>Level</th>
<th>Narrative definition</th>
<th>OEDR/DST+ feedback</th>
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<tbody>
<tr>
<td>Automated driving system (ADS) performs the entire DDT (while engaged)</td>
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</tr>
<tr>
<td>Level 5</td>
<td>Full Driving Automation</td>
<td>The sustained and ODD-specific performance by an ADS of the entire DDT and DDT feedback without any expectation that a user will respond to a request to intervene.</td>
</tr>
<tr>
<td>Level 4</td>
<td>High Driving Automation</td>
<td>The sustained and ODD-specific performance by an ADS of the entire DDT and DDT feedback without any expectation that a user will respond to a request to intervene.</td>
</tr>
<tr>
<td>Level 3</td>
<td>Conditional Driving Automation</td>
<td>The sustained and ODD-specific performance by an ADS of the entire DDT with the expectation that the DDT feedback-ready user is receptive to ADS-issued requests to intervene, as well as to DDT performance-relevant system failures in other vehicle systems, and will respond appropriately.</td>
</tr>
<tr>
<td>Driver performs part or all of the DDT</td>
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<tr>
<td>Level 2</td>
<td>Partial Driving Automation</td>
<td>The sustained and ODD-specific execution by a driving automation system of both the lateral and longitudinal vehicle motion control subtasks of the DDT with the expectation that the driver completes the OEDR subtask and supervises the driving automation system.</td>
</tr>
<tr>
<td>Level 1</td>
<td>Driver Assistance</td>
<td>The sustained and ODD-specific execution by a driving automation system of either the lateral or longitudinal vehicle motion control subtasks of the DDT (but not both simultaneously) with the expectation that the driver performs the remainder of the DDT.</td>
</tr>
</tbody>
</table>

(Source: Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles, SAE J3016; E. 201609)

1. Object and event detection and response (ODDR). Subtasks include monitoring the driving environment and executing an appropriate response to objects and events.
2. Dynamic driving task (DDT). All of the real-time operational and tactical functions required to operate a vehicle in real-world traffic.
3. Operational design domain (ODD). Operating conditions under which a driving automation system is designed to function, including environmental, geographical, tree-of-life restrictions and traffic or roadway characteristics.
Formula SAE

Formula SAE is an engineering competition that challenges teams of undergraduate and postgraduate students to conceive, design and fabricate a single-seater formula car with open wheels and cockpit. Entries are judged on comprehensive criteria, including driving performance, design concept, mass-production cost estimates and sales strategy. Formula Student was first held in the U.S. in 1981, and following a standard format, subsequent competitions have been held around the world, including in the UK, Italy, Australia, Austria, Germany, Japan and Brazil. Formula SAE Japan began in 2003, and this year around a hundred teams from Japan, Europe, China, India and other countries/regions competed.

With a focus on Europe, Zuken has actively supported students from various countries in Formula SAE. Among the teams supported by Zuken’s European affiliates are the Firenze Race Team from the University of Florence in Italy, the Formula Student Team from the University of Wolverhampton in the U.K., and several Formula Student race teams from the Ravensburg-Weingarten University of Applied Sciences in Germany. In Asia, Zuken India (Photo 3) supports the formula car building efforts of Team Chimera from RV College of Engineering in India.

Building a Formula Car Teaches the Essence of Manufacturing

Completing a formula car requires broad-ranging knowledge, from mechanical engineering, electronics and drive systems, to software control and production technologies. Formula SAE participants from various backgrounds must be ready to collaborate, have courage to share and reconcile opinions and ideas, and acquire diverse technical knowledge, in pursuit of optimal automotive design and fabrication outcomes. This competition teaches much more than how to build a car. It imparts the essence of manufacturing by exposing students to broad aspects of technology and production in the process of refining vehicle performance.

A Passion for Automotive Production Leads to New Challenges

Zuken delivers design solutions suited to the needs of manufacturers in countries at the forefront of the global automotive industry. We provide student teams with the same solutions that have evolved over the course of our relationships with these manufacturers, enabling students to advance their projects using state-of-the-art technology that is the culmination of industry trial and error. At the same time, students conceive outside-the-box ideas as they take on the challenge of building a car. Formula SAE is thus a confluence for advanced technology and innovative ideas, and a valuable experience for the supporting companies.

The shift to electric vehicles is gaining momentum, as evidenced by France’s announcement in 2017 to ban the sale of new gasoline and diesel vehicles by 2040, along with several other major European and emerging economies following suit with plans to ban new gasoline vehicles. For companies in emerging economies that would otherwise face an uphill struggle to catch up with advanced internal combustion engine technology, this paradigm shift could be an opportunity to seize the lead in the global automotive market with electric vehicle technology. Automotive development was previously the domain of a limited number of companies in developed economies, but this is now changing dramatically. Likewise for Formula SAE, the competition can expect many more participants from emerging economies. It is a place where new automotive technologies can be conceived, and where the super engineers who pioneer the future of the automotive industry can cut their teeth.

Zuken will continue to support the students taking on challenges, and thereby help nurture the engineers who will create the future of mobility and manufacturing.
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Zuken Inc.</th>
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<tbody>
<tr>
<td>Foundation</td>
<td>December 17, 1976</td>
</tr>
<tr>
<td>Head Office Location</td>
<td>2-25-1, Edahigashi, Tsuzuki-ku, Yokohama, 224-8585 Japan</td>
</tr>
<tr>
<td>Paid-in Capital</td>
<td>JPY 10,117,065,000</td>
</tr>
<tr>
<td>Number of Employees</td>
<td>407 (consolidated: 1,328; as of the end of March 2019)</td>
</tr>
<tr>
<td>Stock Listing</td>
<td>Tokyo Stock Exchange, First Section</td>
</tr>
<tr>
<td>Business Areas</td>
<td>Research and development of a wide variety of software solutions that support the optimization of product design and engineering operations for manufacturing industries, and marketing of software solutions with expert consulting services.</td>
</tr>
<tr>
<td>Directors and Auditors</td>
<td>Makoto Kaneko, President and Representative Director</td>
</tr>
<tr>
<td></td>
<td>Jinya Katsube, COO and Representative Director</td>
</tr>
<tr>
<td></td>
<td>Kazuhiro Kariya, Managing Director</td>
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<td></td>
<td>Yoshikazu Soma, Managing Director</td>
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<td></td>
<td>Takeo Osawa, Director</td>
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<td>Koichi Saotome, Director</td>
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<td>Takashi Sano, Director *</td>
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<td></td>
<td>Yoichi Arai, Director *</td>
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<tr>
<td></td>
<td>Fusao Wada, Full-time Audit &amp; Supervisory Board Member</td>
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<tr>
<td></td>
<td>Yasushi Ozaki, Audit &amp; Supervisory Board Member *</td>
</tr>
<tr>
<td></td>
<td>Takashi Handa, Audit &amp; Supervisory Board Member *</td>
</tr>
</tbody>
</table>

* Outside director or outside audit & supervisory board member.