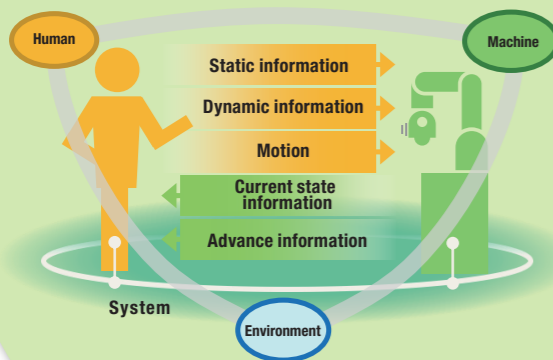


Technology



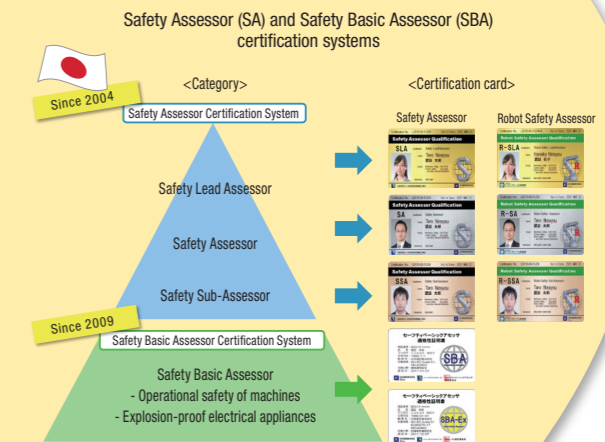
[Technology]

Under the Safety 2.0 concept, safety can be ensured with collaboration: efficiently and effectively sharing information between people, machines, and the environment. When based on the Safety 1.0 concept, machines are controlled by binary logic: "If safety is not confirmed, the machines stop" and "If safety is confirmed, the machines start". In contrast, when based on the Safety 2.0 concept, machines are controlled by multiple-valued logic, flexibly changing the status of machine operation depending on the people and environment around it. In this way, the machine is kept in an optimally safe status without stopping (staying safe without downtime), and productivity (the production rate) can be increased while maintaining safety. It is also possible to visualize the safety status of machinery through information sharing.

Human

[People]

A comprehensive knowledge and understanding of machine safety, functional safety, and robot safety is necessary for workers to build and operate a safe, ANSHIN system. The Safety Assessor System, a qualification system developed by NECA* with the support of Japan's Ministry of Economy, Trade and Industry (METI), is a representative qualification system for objectively assessing safety technological knowledge. Alongside design engineers and machine operators, managers and executives must also hold an understanding of safety in line with the responsibilities of their role. For such roles, the Safety Officer System has also been developed by IGSAP**. * Nippon Electric Control Technology Industries Association ** The Institute of Global Safety Promotion



Achievement of Collaborative Safety

[Rule-making]

To achieve Collaborative Safety, it is essential that each element—technology, people, and management—fulfils the requirements specified by rules such as international standards. The development of international standards for Collaborative Safety is advancing within IEC. The IEC white paper 'Safety in the Future', developed by the IEC's Market Strategy Board (MSB), was published in 2020. IEC Guide 127, 'Guidelines for Safety-Related Risk Assessment and Risk Reduction in Collaborative Safety Systems' developed based on the IEC white paper, was scheduled for publication in 2026. Furthermore, the Institute of Global Safety Promotion (IGSAP) launched a scheme to assess products and systems that comply with the technical requirements for Collaborative Safety (Safety 2.0), issuing certification and a conformity mark for compliant items.



Rule-making

[Management]

As advocated for under Vision Zero, to achieve safety at work companies and organizations must invest in safety measures related to machinery and equipment, as well as safety personnel (under the leadership of top management). Safety must be regarded as an investment, not an expense. The ISO 45001 safety standard (Occupational health and safety management systems), published in 2018, requires an organization's top management to demonstrate leadership and commitment in their work to achieve occupational health and safety.



Management