

2007 North American Frost & Sullivan Award for Technology Leadership**CyboSoft**

The 2007 Frost & Sullivan North America Technology Leadership Award in the field of Industrial Automation goes to CyboSoft in recognition of its patented Model-Free Adaptive (MFA) Control technology. MFA represents a major breakthrough in automatic control since it is the only "No Model" adaptive and robust control technology that can control complex systems with superior performance requiring no process models, nor parameter tuning.

Founded in 1994, CyboSoft, General Cybernation Group Inc., headquartered in Rancho Cordova, California began developing MFA controllers to solve difficult control problems. MFA control products have been widely deployed for process control, building control, and equipment control. MFA users have achieved significant economic benefits such as improved product quality, safer and more efficient operations, energy and cost savings, faster time to market, and competitive advantages. MFA is often an enabling technology for emerging high-tech processes, devices, and equipment.

MFA controllers have been embedded in various control equipment and are becoming available on more and more platforms offered by multi-vendors including building automation systems, loop controllers, motion controllers, control software, programmable logic controllers (PLCs), hybrid controllers, process automation controllers (PAC), and distributed control systems (DCS).

Traditionally PID (Proportional-Integral-Derivative) controllers have dominated the automatic control market since the 1940s. Although simple in architecture and widely used for all general-purpose applications, PIDs exhibit inherent limitations. For a PID to work with utmost efficiency, the process needs to be linear and time-invariant. Also PIDs cannot adapt or tune themselves with changes in operating and environmental conditions. To overcome this limitation self-tuning PID controllers were introduced but they too suffer from the inability to control complex systems.

MFA represents a superior alternative for controlling complex processes such as nonlinear, time-varying, multivariable, and time delayed. An MFA controller includes an artificial neural network making it smart. Based on the core MFA

technology, CyboSoft has developed a set of MFA controllers, each of which solves a tough control problem. For instance, SISO MFA to replace PID, MIMO MFA to control multivariable processes, Nonlinear MFA to control nonlinear processes, Anti-delay MFA to control processes with large time delays, MFA pH controller to control pH processes, MFA Eagle to control DC motors, and MFA Tiger to control piezomotors.

The most laudable features of MFA include the absence of manual tuning, no separate process identification or controller design for a specific process, and finally closed-loop system stability, which is ensured through inbuilt stability analysis. By and large, while MFA controllers can be used for applications classified as general-purpose, they have an inherent adaptive capability, are easy to use and maintain, and could be regarded as the face of the next generation of mainstream controllers.

Application-wise MFA products have addressed control problems in oil & gas, chemical & refining, space & aerospace, power & utility, steel & metal, building control, pharmaceuticals, biotechnology, semiconductor, food processing and many other areas. CyboSoft has won awards from numerous organizations including grants from the U.S. Department of Energy for its MFA-focused work in Intelligent Control of Advanced Power Generation Systems.

In summary, CyboSoft is recognized with Frost & Sullivan's Award for Technology Leadership for its pioneering leadership toward advancing Model-Free Adaptive (MFA) control technology, which has the potential to be used across a wide gamut of application areas, including the ones with strategic importance to the world: energy, renewable energy, environmental protection, and medical devices.

Award Description

Frost & Sullivan's Technology Leadership Award is bestowed upon the company that has pioneered the development and introduction of an innovative technology into the market; a technology that has either impacted or has the potential to impact several market sectors. This award recognizes a company's successful technology development that is expected to bring significant contributions to the industry in terms of adoption, change, and competitive posture. It also recognizes the leadership of the company in the successful promotion of the technology and its continuing impact in technology commercialization.

Research Methodology

To choose the award recipient, Frost & Sullivan's analyst team tracks technology innovation in key hi-tech markets. The selection process includes primary participant interviews and extensive primary and secondary research via the bottom-up approach. The analyst team shortlists candidates won the basis of a set of qualitative and quantitative measurements. The analyst also considers the pace of technology innovation, the potential relevance or significance of the technology to the overall industry. The ultimate award recipient is chosen after a thorough evaluation of this research.

Measurement Criteria

In addition to the methodology described above, there are specific criteria used to determine the final rankings. The recipient of this award has excelled based on one or more of the following criteria:

- Significance of the technology in the industry
- Competitive advantage of technology vis-à-vis competing ones
- Potential of technology to become an industry standard or degree of acceptance in the market place
- Breadth of intellectual property ownership
- Recognition by industry participants as to the leadership of a company in this technology
- Impact of technology in terms of shifting R & D focus
- Degree of technology adoption in industry product lines or strategies

About Best Practices

Frost & Sullivan Best Practices Awards recognize companies in a variety of regional and global markets for demonstrating outstanding achievement and superior performance in areas such as leadership, technological innovation, customer service, and strategic product development. Industry analysts compare market participants and measure performance through in-depth interviews, analysis, and extensive secondary research in order to identify best practices in the industry.

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