

FCS TODAY



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FCS set a Brilliant Record in TAIPEIPLAS 2018

Reported by MPO



The Taipei International Plastics and Rubber Industry Exhibition (Taipeiplas) is held every two years and is the largest plastic rubber industry event in Taiwan.

The 8/15-8/19 period of 5 days attracts about 500 exhibitors and 18,096 domestic and international visitors. Among them, the top brand of the injection molding machine industry, FCS, has set a brilliant record of three highs - high-tech content, high guest wave, and high order amount.

Smart Technology brings new chances

With the MIT belief, FCS has selected the most up-to-date research and development results in Taipeiplas' debut, making it different from other international exhibitions. For this exhibition and for the first time, FCS announces the iMF 4.0 (Intelligent ManuFactory), which is a smart production management system that linked to FCS's newly released Standard Toggle Hydraulic IMM (FA-160 & FA-300) and Electric IMM (CT-300), was also connected to the molding equipment at its Tainan head office to showcase the concept of off-site production management.

The iMF 4.0 system is based on the cycle time management and introduces the concept of mold management, machine management and material management, and OPC international communication protocol to achieve instant display of overall equipment efficiency information and abnormal message statistics. The production manager can promptly grasp the production status and rapidly achieve the purpose of abnormal production countermeasures.

The most important thing is that the iMF4.0 system can be used regardless of any brand of IMM. It is no wonder that during the exhibition, many customers are attracted to FCS stand.

Smart machine achieves the grand prize

FCS exhibited three brand new models, which not only upgraded the specifications, but also optimized the design. The appearance was more in line with the aesthetics and corporate identity and well received by domestic and



foreign customers. Moreover, those three machines are equipped with various quality monitoring systems and connected to iMF 4.0 intelligent manufacturing system, let FCS win the Excellent prize and First prize of the Research and Innovation Award of Taipeiplas.

New Generation Molding System : FA-160

FA series is the new generation of standard servo energy-saving models released by FCS. Its performance and intelligence, and high-end electronic control systems make it an intelligent injection molding machine. During the show, the FA-160 equipped with the systems of "Tie bar clamping force monitoring" and "mold cooling flow and temperature monitoring", automated producing a two-cavity multi-functional stacking bin. The great performance made this machine sold immediately, and its "Injection Industry 4.0 Solution -Adaptive control technology for viscosity variation inhibition of melt" also won the highest honor of excellence prize.

In Mold Labeling Molding System : CT-300

FCS introduces advanced All-Electric injection molding machine with a 300-ton clamping force, high purity, high response, low noise and Combined with the in-mold quality signal monitoring system, which quickly and easily produce 100 ml ice cream boxes with 4+4 cavities. It not only doubles production output through the stack mold technology, but also uses mold cavity flow balance module for monitoring and automatic compensation and screening of defective products to achieve unmanned production monitoring. It demonstrates the concept of a smart factory.

MuCell Molding System : FA-300

Foaming injection molding application is one of the important developments under the drive of lightweight and environmental awareness. Except light weighting, it could also achieve dimensional stability, shrinkage avoiding, heat and sound isolation, and energy saving. However, its poor surface quality is the disadvantage. FCS has mastered this application trend and key process technology for customers in advance. We take the new generation IMM FA-300 equipped with MuCell screw and gas injector to molding the 10~12% light weighting shoe stretchers that are also free from secondary processing and surface coating.



▲ Shoe Stretchers

Smart marketing wins the brilliant result

Every exhibition, FCS's theme is to meet the market demand and industry development trend, and to lead the innovative R&D professional capabilities. In addition to booth visitors, FCS always welcomes the industry, government, and research groups visit reservation and media interviews. Moreover, FCS was also invited to participate in the Industry 4.0 Summit Forum of this Taipeiplas. The CEO Alan Wang gave a wonderful speech on how FCS can make injection molding intellectualization. All of these marketing efforts let FCS obtain exciting results during this Taipeiplas, the award of glory, booth visitors and orders are multiplied, nearly 600 valid business cards, the record of more than 600,000 US dollars order for the first day, and the total performance has exceeded 2.5 million US dollars, which has made the FCS staff more convinced that even if the Taipeiplas seem to be localized, the road to "break-through and innovation" is absolutely not lonely. FCS, based in Taiwan, will uphold the MIT spirit to support the local exhibition continuously and push Taiwan brand to the world.



Ningbo FCS is Listed Among the Top Ten Enterprises

Reported by FCS Ningbo

Sponsored by Ningbo Science & Technology Bureau, Beilun District People's Government of Ningbo, China Plastics Machinery Industry Association, Ningbo Plastic Machinery Industry Association hosted the 2018 China (Ningbo) New Materials and Industrialization International Forum and China Plastics Industry Development Innovation Summit in Radisson Hotel in Yingxiu City of Ningbo on November 22, and Ningbo FCS attended by invitation.

At this summit, Chinese and foreign well-known figures in the digital industry brought wonderful speeches and held discussions with the guests present on coordinating the development and shaping a better world. At the banquet, the Top Ten Enterprise Awards of 2017 Ningbo Plastics Machinery Manufacturing were presented. FCS has also been ranked among the top ten enterprises for several consecutive years. There is still a long way to go for these enterprises to become the top ten in the world. FCS must keep accumulating experience and work hard.

In recent years, with the continuous development of the injection industry, the most infiltrating industries have strengthened their business cooperation with the injection

industry. Based on the win-win, sharing and mutual progress spirits, the injection industry has been further promoted.

In the era of intelligence, how can the era of Injection Industry 4.0 be launched? How can the injection industry achieve self-innovation? FCS looks forward to your visit and cooperation at the capital of injection machinery in Ningbo, China!



Official Launch : FCS Intelligent ManuFactory



Reported by MPO

As the current plastic products are changing fast, and the requirements for process stability are getting higher, the early injection molding methods can no longer satisfy more innovative products. Therefore, FCS Group established the Intelligent ManuFactory in June 2018, covering an area of about 800m², and equipped with two sets of brand-new 2nd-generation machine production lines, and 24-hour intelligent factory core situation room which is able to display the real-time management of information collection, analysis and visualization. The decision-making of the whole factory is data-driven, and connected with the whole world.

Alan Wang, CEO of FCS, said that FCS has been devoted to the field of Industry 4.0 in recent years. The official launch of the factory represents the comprehensive development era of FCS integrating the software with hardware. Cored on the iMF4.0 strategy, Intelligent ManuFactory is elaborately built by IT connections and professional injection technology. Three areas are mainly planned in Intelligent ManuFactory, namely the production demonstration line, iMF4.0 situation room and sample display area, which demonstrate the real-time display of the overall equipment efficiency information, equipment and production abnormality statistics, thereby enabling the production managers to master the real-time production status and make a quick response to abnormalities. In addition, it can also connect with the global branch office and the customer building in real time, monitor the production data and check the order status. Furthermore, Intelligent ManuFactory can provide added value and service for many customers:

1. New process/technical cooperation solutions: Such as MuCell, long carbon fiber, and technical introduction of Industry 4.0.
2. Optimization service of trial mold/process: Including trial mold and volume production evaluation, parameter setting and optimization.
3. Technical service of Industry 4.0: Including counseling guidance, training and process capacity diagnosis and analysis.

Targeted at the various process applications, FCS worked with the Plastics Center to complete three innovative technology seminars in North, Central and South Taiwan, and attended the Intelligent Machinery Forum in Thailand as well as the CPRJ Automotive Plastics Technology Forum in Chongqing, China. FCS exchanged with the professional speakers about Industry 4.0, lightweight automotive parts, injection machine performance and selection analysis, intelligent manufacturing and peripheral auxiliary machinery to arouse the interests of the advanced talents from all walks of life, and lead to enthusiastic discussions. They were eager to inquire about the technical thresholds and challenges in the plastic injection field.

As we move towards 2019, FCS has planned to continue to create more cross-sector sharing platforms at home and abroad to help customers find various injection molding solutions and enhance their competitiveness, thereby shaping a better world.



iMF 4.0 Intelligent ManuFactory

Abstract

Injection molding production management is a production activity with organized planning and supervisory regulation. Have you ever felt that the production efficiency is not good enough, but been not sure about in what aspect you should improve? Is it the mold change time? Is it the maintenance time under machine failure? Is it poor quality or instability?

The traditional injection molding production management is based on handwritten records, which easily leads to many risks and problems that cannot be solved in real time. Therefore, the improvement effects of production management are not obvious. FCS Group PIM laboratory adopts the intelligent injection molding machine controller and collects the necessary interface

Reported by PIM Lab

device and process sensor information. Then, the process data is uploaded to the cloud in real time through OPC-UA communication protocol, and the manufacturing resource database is constructed. The intelligent manufacturing factory system (Intelligent ManuFactory 4.0) in the cloud converts resource database data into OEE (Overall Equipment Effectiveness) production trends, work order scheduling and automatic production statistics. Then, the Industry 4.0 action computing, analysis and optimization are performed to improve production efficiency and reduce production waste.



Figure 1. iMF 4.0 system concept

System functions

Case 1

At the production site, the robot arm is used to take out the molded product to reduce the manpower requirement. However, the robot arm cannot identify the quality of the molded product in real time. Therefore, manpower input should be increased at the production site to perform the edge inspection, which cannot really achieve the purpose of reducing manpower input.

Solutions:

The quality and environment sensing function module of iMF 4.0 can identify the molding quality, and automatically detect the suspected NG product with the robot arm to reduce the input cost of production manpower.

Case 2

The external environment, raw material variation and equipment aging affect the flow behavior of the injection molding melt in the cavity, which causes drifts in the molding capacity. The parameter changes of the monitoring machine molding process cannot directly and effectively ensure the quality of the molded products.

Solutions:

iMF 4.0 is equipped with the quality and environment sensing function modules to directly and effectively monitor the flow behavior of the melt in the cavity. Through the sensor feedback, the production operators are able to quickly detect the deviations in the process capability and make quick responses.

Case 3

The OEE is composed of equipment utilization rate, production efficiency and yield rate. The traditional OEE relies on the handwritten production operation data by the inspectors, which is then submitted to the production management unit (situation room). After the classification and statistics translation process, the abnormality countermeasures can be developed. Omissions or errors are frequent in the collection of operation data while the translation process is time-consuming and laborious. Consequently, it is impossible to quickly analyze the real cause, resulting in low production efficiency and increased production cost.

Solutions:

The OPC-UA communication function module of iMF 4.0 obtains the information of the injection molding interface device and the environmental monitoring sensor through Euromap 77, and automatically uploads the information to the cloud system, thereby reducing the risk of omission and error in manual operation.

The OEE function module of iMF 4.0 is equipped with OPC-UA communication function module to perform automatic data collection and statistical analysis, which eliminates the possible errors in the manual operations. In the meanwhile, it is equipped with the production execution management function module to quickly analyze equipment utilization rate, production efficiency and yield rate, thereby assisting the situation room in quickly formulating the countermeasures.

The production execution management function module of iMF 4.0 quickly selects backfilling shutdown reasons and production abnormalities through mobile devices, uploads and classifies the cloud records, outputs statistical reports, assists the situation room in the online control of operation state and judgment on the abnormality cause, thereby realizing patrol management and real-time prevention of production abnormalities.

Case 4

The patrol personnel check the equipment utilization and production capacity one by one through the equipment control panel. The information on equipment utilization and production capacity cannot be effectively collected, and the production management is time-consuming and laborious. In addition, it is impossible to concentrate resources to solve the production problem.

Solutions:

The production capacity status of each production line, equipment OEE production trend warning, abnormal shutdown and production abnormality classification statistics are aggregated on the production execution billboard. Through the visual management based on production management billboard, the patrol personnel present temporary countermeasures on the production problems in a quick and real-time mode to improve production efficiency and reduce the production of defective products.



Figure 2. iMF 4.0 system structure

Summary

Different from the general remote monitoring system, the iMF 4.0 intelligent manufactory system not just monitors and records the injection molding actuation parameters (machine parameters). Instead, it extends the view angle to the monitoring and recording of molding process parameters (material parameters), and strengthens the effectiveness of molding parameter monitoring. In addition, statistics, variable analysis and artificial intelligence (AI) methods are applied to perform numerical classification and analysis, which improves the real-time properties of the formulation and implementation of abnormal elimination countermeasures, and greatly increases the added value of data reutilization, simplifies the production management, and reduces the management labor costs.

Compared with the traditional manufacturing execution systems (MES), the iMF 4.0 intelligent manufactory system effectively integrates the Operation Technology (OT), Information Technology (IT) and Communication Technology (CT) for the planning of injection field, which means to extract the field production characteristics by means of OT, and connect the information of equipment by virtue of IT and CT. The system is featured by a simple and practical framework, convenient maintenance and low cost. It is suitable for the management applications of small and medium-sized enterprises, and also retains the data exchange interface for large-scale enterprises by quickly linking with its MES system under operation.

2019 FCS Global Exhibition Plan / Reported by MPO

Based on the principle of being "Fast Response, Customer Oriented and Service Differentiation", FCS not only constant pursuit of excellence in innovation, but also construct a comprehensive global marketing service network (e.g., set the global headquarter in Taiwan and three factories in Dongguan, Ningbo and Indonesia) to head towards the goal of "Top 10 in the world & NTD 10 billion in 10 years."

Taking one big step further this 2018, with the strategy of globalization and diversification, FCS has been actively reaching out to the world, expanding more branches and giving in-depth service to more customers. Moreover, with the prescient thought, FCS participates positively in the global exhibitions of plastic machinery and sincerely invites you to visit our stand.

Taiwan & Overseas

Exhibition	IPF	Koplas	Plastico Brasil	Plastimagen	Interplas Thailand	Taichung Plastics & Rubber Industry Show	Plascom Taiwan
Location	Bengal	Korea	Brasil	Mexico	Thailand	Taiwan	Taiwan
Duration	17~20, Jan.	12~16, Mar.	25~29, Mar.	2~5, Apr.	19~22, Jun.	11~15, Jul.	21~24, Aug.
Exhibition	Taimold	Iranplast	Vietnamplas	Pack Print Plas Philippines	K show	Plastics & Rubber	Myanmar Plas
Location	Taiwan	Iran	Vietnam	Philippines	Germany	Indonesia	Myanmar
Duration	21~24, Aug.	24~27, Sep.	3~6 Oct.	10~12, Oct.	16~23, Oct.	20~23, Nov.	27~30, Nov.

China

Exhibition	Sino-Plas	Chinaplas	Daily-Use Articles Trade Fair	CIBE	Yuyao International Plastics EXPO	DMP
Location	Zhengzhou	Guangzhou	Shanghai	Guangzhou	Yuyao	Dongguan
Duration	26~28, Mar.	21~24, May.	25~27, Jul.	5~7, Sep.	6~9, Nov.	27~30, Nov.

※ If you want to know the corresponding dates of our exhibitions, please check our website.

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