Retraction

Retraction: Design and Development of Temperature Measurement and Control System Based on Mcu under the Background of Internet of Things (J. Phys.: Conf. Ser. 2037 012060)

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The authors of the article have been given opportunity to present evidence that they were the original and genuine creators of the work, however at the time of publication of this notice, IOP Publishing has not received any response. IOP Publishing has analysed the article and agrees there are enough indicators to cause serious doubts over the legitimacy of the work and agree this article should be retracted. The authors are encouraged to contact IOP Publishing Limited if they have any comments on this retraction.

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Design and Development of Temperature Measurement and Control System Based on Mcu under the Background of Internet of Things

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Abstract. Internet of things technology is a new technology recently developed, it also belongs to an area of information technology, and its appearance makes it means more perfect and mature. At present, industrial automation is the trend of the development of the present era, and the single chip microcomputer is the core of industrial automation. It is the core system of process control, process monitoring and Mechatronics integrated control of industrial automation. With the rapid development of single chip microcomputer, especially the hardware of MCU. These changes have brought great changes to the development language of SCM software. The development of SCM control system to intelligent control gradually improves the development efficiency of the system, and also ensures the quality of products. In order to explore the application effect of Internet of things technology in the TMACS(temperature measurement and control system) design and development of single chip microcomputer, we choose h and G factories as experimental research objects, among which h factory applies Internet of things technology in its single chip microcomputer working system, and factory g still adopts conventional methods. From the experimental results, we can see that the accuracy of H plant is up to 95%, while the highest accuracy rate of plant G is only 75%, which is 20% lower than that of H plant.

Keywords: Internet of Things, Mcu, Temperature Measurement, Control System

1. Introduction
With the deepening of the research on the Internet of things technology, the technology is also constantly improving and perfecting, thus becoming mature. Therefore, it is now applied to more and more fields, and the scope involved is also more and more extensive [1]. At present, the development of temperature measurement system and control system of single chip microcomputer has encountered a bottleneck period, so we need to find a new way to break this situation [2]. The emergence of the Internet of things provides a way to solve this problem. Therefore, many professionals are trying to combine the two, so as to improve the status of single-chip TMACS. This paper is also based on this point of view to study the effect and impact of the Internet of things on the system [3].

Houliuli pointed out that temperature and humidity are very important parameters in industrial and agricultural production, which need accurate measurement and control in many cases. Using the
Internet of things technology, we can design a new temperature and humidity monitoring system. That is to say, single chip microcomputer is used to control digital temperature and humidity sensor to collect information, control liquid crystal display, and transmit temperature and humidity data to upper computer through wireless network to realize graphic display, memory and trend analysis, alarm parameter setting, which is suitable for controlling temperature and humidity in greenhouse, workshop and other occasions [4]. Since the 21st century, the application of Internet of things technology in many industrial fields has made great progress. In the intelligent management of modern greenhouse environment, how to apply the Internet of things technology to it has a milestone significance to improve the intelligent level of facility agriculture [5]. Since the advent of Internet of things technology, people's access to information has become more convenient. The intelligent management of modern greenhouse environment is a milestone of the application of Internet of things technology in the intelligent level of greenhouse environmental facilities [6]. Using the Internet of things technology, we can improve the temperature measurement of MCU, and design a more intelligent control system [7].

In recent years, China's Internet industry has developed rapidly, and the current network population base is also large, which provides a good development environment for the future of the Internet of things industry. Due to the small volume of single chip microcomputer, it can save a lot of floor space, save energy and electricity, and is relatively cost-effective [8]. Many factories use SCM temperature measurement control, which not only saves a lot of labor, but also improves the efficiency and accuracy of identification [9]. The application of Internet of things technology to the TMACS of single chip microcomputer can further improve the accuracy and efficiency of the system. As for how much can be improved and how much impact it will bring, it is the theme of this study [10].

2. Method

2.1 Internet of Things
The Internet of things is a technology that can obtain real-time monitoring and contact of objects and processes. It refers to obtaining relevant information through various devices and technologies, and then through a series of network systems in real time, including real-time monitoring information of the objects to be investigated, as well as some connection and interaction information. The Internet of things to achieve these processes requires the use of information sensors, infrared sensors and global positioning system technology. We can use the Internet of things technology to realize the ubiquitous contact between things and people, and can also intelligently manage and identify the objects to be collected and investigated. In fact, the Internet of things can also be seen as an information carrier, which is based on the Internet and traditional telecommunication network system. Internet of things technology can be seen as an extension and expansion of the Internet. People can not only communicate with each other, but also collect and identify the information they want. The emergence of Internet of things technology is undoubtedly very beneficial to today's information society, and it really brings a lot of benefits and convenience.

2.2 Application of Internet of Things
The Internet of things is the specific performance of Internet system industry using Internet of things, cloud computing and other related technologies. In the face of more and more big data access to the perception layer of the Internet of things, people's work efficiency has been improved. At the same time, each connection of their terminal equipment produces a huge amount of data. The effective control of these data is an urgent problem, and the security of data has always been a concern. Facing the security problems of Internet of things in cloud computing environment, there are many solutions. In addition, the IOT committee also has a big data security service framework, which is used to detect the abnormal behavior of IOT in the cloud computing environment. The scheme uses the key and public key to close, and the system downloads all the security operations to the nearby server, which is conducive to the security of information. Relevant personnel put forward a secure search scheme,
using authorized users to encrypt, store and access the data in cloud sharing. If the search process is complete, validation begins, in which case the published data should be called. The system ensures the integrity of shared data and search results.

2.3 The Working System of Single Chip Microcomputer
When single chip microcomputer is used to measure temperature, it needs to convert relevant information into voltage signal by using sensor, so as to transmit information. If the voltage model is located in the processing area of MCU, the voltage signal is amplified to enable the microprocessor to control in the processing area. The MCU turns off the temperature scale conversion and displays the temperature value information through the digital filtering of the temperature related signal. The single chip microcomputer temperature measurement system can not only measure and record the temperature information, but also optimize the control time and heating power. The TMACS of single chip microcomputer can set the temperature change according to the initial control value. In the process of temperature measurement and control, the temperature value can be determined in real time and the test results can be controlled.

2.4 Some Algorithm Formulas Involved in This Experiment
We want to calculate the accuracy of the experiment, and the objectivity of the data results, and also to calculate and predict the probability distribution of some experimental data indicators, so we use the probability density function and some distribution functions, such as Poisson distribution and uniform distribution.

\[ \int_{x}^{\infty} f(x)dx = 1 \]  \hspace{1cm} (1)

\[ P(X = k) = \frac{\lambda^k}{k!} e^{-\lambda}, (k = 0,1,...) \]  \hspace{1cm} (2)

\[ f(x) = \frac{1}{b-a} (a \leq x \leq b) \]  \hspace{1cm} (3)

3. Experiment

3.1 Research Objects
In this paper, two power units h and G are selected as the experimental research objects, and then the TMACS design of their single-chip microcomputer are studied respectively. Among them, H company uses the Internet of things technology in the operation of its single-chip microcomputer, while G company still works according to the traditional technical methods. Then we take this as the variable, set H company as the experimental group, and G company as the control group, so as to study the effect of applying the Internet of things technology to the TMACS of single-chip microcomputer. Then we randomly selected 200 staff members from two universities as the experimental subjects to investigate their attitudes towards the technology used in their current work.

3.2 Research Steps
We take the accuracy of TMACS of single-chip microcomputer of two companies as the experimental investigation index, and make a survey of the employees' views on the current working technology of two companies, so as to roughly explore people's views on the Internet of things technology and investigate whether people support this new technology.

4. Discussion

4.1 Survey on the Accuracy of TMACS of Single Chip Microcomputer of Two Companies
We have carried out five tests on the two companies to investigate the accuracy of the TMACS of the two companies’ single-chip microcomputer, and then recorded the final accuracy and arranged it into a chart. The results of the chart are as follows:

**Table 1.** Information and data survey on two factories

| Test   | Company H | Company G |
|--------|-----------|-----------|
| Test one | 81%       | 68%       |
| Test two | 85%       | 75%       |
| Test three | 82%       | 66%       |
| Test four | 88%       | 72%       |
| Test five | 95%       | 69%       |

**Figure 1.** Information and data survey on two factories

First of all, we can clearly see from the above chart that the accuracy rate of TMACS of H company is higher than that of G company. We can see that in the five groups of accuracy tests, the accuracy rate of H company is above 81%, and the lowest is 81%, while the highest accuracy rate is 95%, which can be said to be very high. The accuracy rates of Germany and Germany are 85%, 82% and 88% respectively. Although there is a slight fluctuation, the fluctuation is not big, and they all remain above 80%. The accuracy rate of G company can be known from the above chart is relatively low, and basically below 75%, and its accuracy rate fluctuates greatly, the stability is poor, and even its accuracy rate is the lowest 66%, which indicates that the company's single-chip TMACS is not mature and perfect, there are still many disadvantages in the current technology, and these problems are the influence factors. It is a crucial factor to determine the accuracy. We can see that the use of Internet of things technology can effectively improve the accuracy of MCUTMACS, so as to provide a certain guarantee for the quality of work, and greatly improve the productivity, so as to reduce the production cost to a certain extent.

### 4.2 Survey Results of Attitude of Employees in the Two Units

**Table 2.** Survey results of attitude of employees in two units

| Attitude       | Company H | Company G |
|----------------|-----------|-----------|
| Very supportive | 50        | 15        |
| Supportive     | 120       | 65        |
| General        | 20        | 50        |
| Opposed        | 10        | 70        |
Figure 2. Survey results of attitude of employees in two units

Looking at the chart above, we can find that H company is generally supportive of the Internet of things technology. The employees interviewed in H company support 50 people who are very supportive of the technology adopted in the current work, 120 support, 20 people in general and 10 people who are dissatisfied with it. Therefore, we can see that the number of companies a that support the above plus 170, accounting for 85% of the total number of respondents. This proportion can show to some extent that the employees of H company are satisfied with the new technology and confirm the new technology. But we can see clearly in Figure 2 that the number of employees in company G is very small, and the number of people who express no feelings and objections accounts for the majority. Among them, 70 people are opposed, which is the largest among the four categories. We can see that only 15 people in G company show strong support, and 65 support people, both of which The total number of people is 80, together accounting for 40 per cent of the total number of respondents, less than half of the total. The above data show that the employees of H company are dissatisfied with the technology adopted in the current work. This shows that the traditional technology is no longer applicable to the current single chip microcomputer temperature. The traditional working system and design thinking need to be improved and flexible.

5. Conclusions
From this paper, we can see that the Internet of things has many advantages, and its application scope is also more and more extensive. We can predict that its future development prospects will be very broad. The temperature measurement control system of single chip microcomputer can improve the production efficiency of the society, and has a great positive impact on the improvement of the productivity of the whole society. The measure of applying Internet of things to the TMACS of MCU greatly improves the accuracy of the measurement and control of the system, thus ensuring the quality to a certain extent, and further improving the production efficiency of the society. We also look forward to the future, with the continuous improvement and improvement of Internet of things technology, the combination of the two will bring better effects and effects.

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