

Intelligent energy management network Lab

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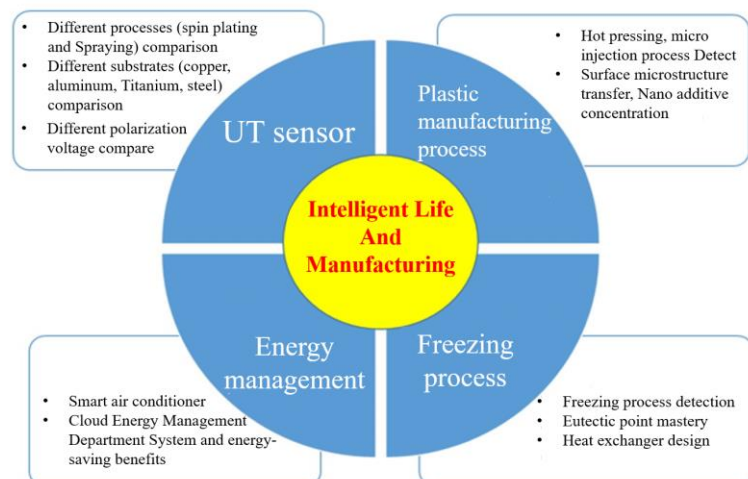
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Laboratory Introduction:

At present, the research scope is: process diagnosis can provide important information for the setting and control of manufacturing parameters, the change of material properties, the yield of finished products and energy consumption, but appropriate sensors and systems can make the detection process go smoothly; Ultrasound is sensitive to temperature and pressure, and is often used for process detection, such as abdominal examination in hospitals. However, the traditional ultrasonic sensor is only suitable for operation at room temperature. The newly developed **Integrated ultrasonic sensor** can work at the highest temperature ($<500\text{ }^{\circ}\text{C}$) the lowest temperature ($>-100\text{ }^{\circ}\text{C}$), complex surface (concave and convex) and vacuum; plastic material has high plasticity, ductility and corrosion resistance, and has become one of the important materials for people's livelihood and industry. However, in the manufacturing process, there will be uneven melting of plastic particles, incomplete filling of plastic in the mold, poor transfer of microstructure on the surface of finished products, and uneven density of plastic materials; **Lyophilization or freeze drying** has the most stable preservation effect on biomedical, pharmaceutical, food and other products, and is widely used in related industries. However, the mastery of eutectic point and ice crystal particle size will affect the quality of products; The deployment of intelligent sensors is the basis of the Internet of things. The information of the case field is transmitted back to the cloud through the network. It becomes available information through cloud computing and big data analysis. It can optimize air conditioning and energy management and realize intelligent life and manufacturing.

Main research project:

1. Process improvement and performance enhancement of integrated ultrasonic sensor.
2. Development of RFID wireless transmission technology for plastic hot pressing/micro injection process detection.
3. Freezing process detection and design.
4. Smart air-conditioning, cloud energy management.



Relevance of research projects