

to form  $\text{La}_2(\text{SO}_4)_3 \cdot \text{Na}_2\text{SO}_4 \cdot 2\text{H}_2\text{O}$  double salt precipitation. The equation of extraction rate of lanthanum element is as follows:

$$\varphi(\%) = \frac{\alpha}{\beta} \times 100\% \quad (2)$$

$\varphi$  – Extraction rate of lanthanum element;  $\beta$  – Mass of lanthanum element in the leaching solution;  $\alpha$  – Mass of lanthanum element in the dried sodium lanthanum sulfate double salt.

The precipitation method was employed to recover the zirconium element from the above filtrate. The equations of extraction rate of zirconium, and lithium elements are as follows, respectively:

$$\gamma(\%) = \frac{a}{b} \times 100\% \quad (3)$$

$\gamma$  – Extraction rate of zirconium element,  $a$  – Mass of zirconium element in zirconium carbonate,  $b$  – Mass of zirconium element in the filtrate recovered lanthanum.

$$\delta(\%) = \frac{c}{d} \times 100\% \quad (4)$$

$\delta$  – Extraction rate of lithium element,  $c$  – Mass of lithium element in lithium carbonate,  $d$  – Mass of lithium element in the purified filtrate.

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### УДК 69.04

#### 21 世纪海上丝绸之路”建设面临的挑战与对策

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**Summary.** *In the 21st century, the change of the international marine strategic situation provides both opportunities and challenges for China's strategy of building a powerful marine country. Against this background, China has implemented the strategy of the “21st Century Maritime Silk Road”. Focuses on the analysis of the achievements and challenges of China's “21st Century Maritime Silk Road” construction, and puts forward corresponding countermeasures based on the analysis.*

为努力走出一条具有中国特色与全球视野的海洋发展道路，中国实施了“21 世纪海上丝绸之路”战略。将这一宏大的国家建设规划从单一性的理论倡议过渡至更为有效的实践运作，有利于更好地利用海洋资源提高发展速度。

“21 世纪海上丝绸之路”涉及地域之广，人口数量之多，在提高各参与国经济总量的同时，其在世界发展中的积极作用所占比例也大幅提高。自“21 世纪海上丝绸之路”倡议提出以来，中国积极推进海洋治理体系和治理能力现代化，全面推动海洋管理体制创新、海洋权益维护、海洋生态文明建设和海洋法律法规制定，开发海洋、利用海洋、保护海洋、管控海洋能力得到显著提升。同时，国际海洋合作尤其是同沿线国家之间的海洋合作空间不断拓展，合作成效日益显著。根据 2021 年，中国国内生产总值 1143670 亿元，比上年增长 8.1 % [1]。据自然资源部数据显示，2021 年中国海洋生产总值首次突破 9 万亿元，对国民经济增长的贡献率为 8 % [2]。

“21 世纪海上丝绸之路”沿线相关国家所产生的猜忌和不信任感主要来源于以下两个方面：首先，该战略建设区域内地区热点复杂性高，解决难度大，而囿于多处于次大陆这一独特的地理位置、中国的现实国家实力也很难在短时间内得以解决以及相关参与国对所谓“中国威胁论”的先行认知，导致相关参与国始终无法消除中国的影响，害怕担心中国的战略进入是否会挤压其本来就狭小的国家自主空间，并与其国家影响力产生抵触；另一方面，该战略沿线诸国多与世界上其他国家，诸如南亚地区的印度、世界强国美国的战略利益产生重合之处，大国利益在这些参与国所在国家或者地区交汇，加深了中国与诸国的关系的复杂性。

美国作为一直以来的国际强权，在世界各地为自己争取尽可能多的国家利益。“21 世纪海上丝绸之路”沿线诸国对美国的离心力和对中国的向心力的差异对待愈发明显，这让强国美国感受到了其霸主地位受到的威胁。而包括“21 世纪海上丝绸之路”在内的“一带一路”国家战略本身就是中国为了摆脱美国在印太地区对中国所设置的包围圈而采取的应对之策，所以美国必定会插手。美国的干预使得原本就地区局势不稳、热点频发的沿线区域、国家之间关系也更加复杂，中国积极谋求与沿线诸国发展互利合作的双边、多边关系，更甚于建设合理性的海外战略支撑点以保证本国的合法权益毫无疑问也会受到美国的干涉遏制。美国通过“国际军事教育和培训”、“对外军事销售”以及“对外军事资助”等项目不断支援盟友与伙伴国的海上能力建设以加强对中国的战略围堵。作为美国坚定的战略同盟，日本也不断积极的推进其所谓的“安保钻石”构想，以扩大在南亚影响力。

由于中国政府在推行战略倡议的过程中还没有形成正确且具有引导性的支点国家合作范例，因而，中国与部分参与国间的战略不信任感不断加剧，且对双方的经贸、安全防务等多维合作都产生了严重的约束和影响。因而，以价值观外交引领政府间互信沟通机制的建立作为一项关键举措，从中国与沿线国家双边政府层面而言，能够行之有效的促进各国间的互利合作与共同发展。

从全球战略发展态势来看，打造“21 世纪海上丝绸之路”战略支撑点是中国现今乃至未来在国家建设层面另辟蹊径且最为理性的战略选择<sup>[3]</sup>。凭借其完备的同盟体系网络，辅之以“亚太再平衡”等战略的全球开展，美国作为世界强国更加卖力的充当着“离岸平衡者”的战略角色，针对遏制中国的战略意图再明显不过。面对中国不断拓展的海洋版图，美国一方面加紧喧嚣“中国威胁论”等不实论断，加剧中国与沿线诸国间岌岌可危的战略联系；另一方面，进一步深化与诸战略同盟之间的军事合作，在中国利益重合区内加剧对中国的战略挤压。美国以遏制中国为目的的“重返亚太”给地区秩序带来的更多是不稳定与失范。建设海外战略支撑点成为中国应对美国亚太政策 2.0 版的一项极为有效的战略举措，能够行之有效的保证海上能源通道的安全，提高海上能源安全指数，综合国家安全、国家利益、外交战略等方面考虑，以“21 世纪海上丝绸之路”为战略载体，在其战略沿线设立“战略支撑点”有利于推进中国与世界建立更加紧密利益联系的举措。

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## УДК 69.04

### DESIGN AND IMPLEMENTATION OF AN INTELLIGENT CIRCUIT ANALYZER

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*Summary. This paper designs a smart socket based on microcontroller and WIFI module. The socket can measure the voltage information and grounding of the connected circuit, display the measurement results and voice broadcast, and the user can also view the measurement results in real time through the cell phone APP, and design a transparent waterproof box for it to enhance its waterproof performance, which has certain significance to the safe use of electricity.*

In recent years, electrical fires have occurred frequently in China, and it is difficult to detect various hidden dangers of electrical circuits in time by traditional detection means, making it difficult to implement the prevention of electrical fires in place. With the widespread use of WIFI technology in life, intelligent WIFI sockets have been widely studied for the advantages of reliable detection, convenient control and flexible application.

For this reason, it is imperative to design an instrument with circuit information collection function, which can voice broadcast relevant information and upload the detection results to the network side for managers to view and manage. The use of wireless networks to unify the management of circuit system information is conducive to the construction of circuit system safety platform, which can eliminate potential electrical fire safety hazards and avoid unnecessary economic losses, and can achieve prevention before it happens.

Based on this, this paper designs an intelligent instrument that can measure the line voltage and detect whether it is grounded, display and voice broadcast the measurement results, and allow users to view the detected circuit information in real time through a cell phone app. This design can be networked to meet the current pace of the times and market-oriented.

The multi-functional WIFI smart socket designed in this paper consists of four parts: power module, data acquisition, broadcast display and APP view. The whole circuit system is based on the microcontroller module as the core, the microcontroller processing the collected circuit data and then the display module and voice module display and broadcast the corresponding results. the WIFI module can connect the circuit data information processed by the microcontroller to the WIFI wireless network for users to view the socket circuit information in the cell phone APP terminal. The power supply module provides power for the whole circuit system.

In this paper, the system software is designed in a functional modular way, including data acquisition module, voice module, display module and wireless communication module. The main software program regulates each module to realize various functions of the smart socket. After the socket is started, the smart socket system terminal will be initialized, then the data acquisition module will collect data from the circuit connected to the socket, and the microcontroller will broadcast the corresponding voice information through the voice module, the display module will display the corresponding voltage value, and the WIFI module will make the WIFI connection between the cell