ISSN: 2472-3703 DOI: 10.6911/WSRJ.201908_5(8).0006

Prospects of the Fifth Generation Mobile Communication System Applying to Electric Power System

Hai Xiao[1, a]

[1]School of North China Electric Power University, Baoding 071000, China

[a]1525893608@qq.com

Abstract

The fifth generation mobile communication standard (5th-Generation) is also known as the fifth generation mobile communication technology. The theoretical downlink speed of the 5G network is 10Gb/s. Compared with the 4G network we widely use nowadays, 5G network is not a relatively independent, brand-new creation and invention. Its essence is the extension of 2, 3, 4G networks. By making some improvement based on the existing technology, 5G network can enhance users' experience [1]. The mobile Internet and the mobile Internet of Things are the two driving forces for the development of 5G. In order to meet the rapid development of mobile Internet and Internet for things after 2020, 5G systems are facing a huge challenge of high demand. At the same time, with the evolvement of 5G technology, it has been applied much to the electric power system.

Keywords

5G, transmission, network, electric power system.

1. INTRODUCTION

With the popularization of smart terminals and the vigorous development of mobile business applications in the twentieth century, the mobile Internet has shown an explosive development trend. Wireless service traffic is growing at a rate close to 100% per year. After 2020, 4G technologies deployed at this stage will not be able to meet the growing demand for mobile Internet and IOT (Internet of Things) services. Therefore, new research and development must be carried out on 5G. At the same time, people's level of living and the demand for service experience are both increasing. In the future, people's daily work and study will require 5G network technology.

2. CURRENT SITUATION OF 5G INDUSTRY

Many Countries are speeding up the commercialization of 5G. The year of 2019 is called the first year of 5G in the world, and the development of 5G in China has also entered a sprint stage. With the maturity of 5G technology, many emerging industries, such as intelligent security, unmanned driving, VR/AR, smart city, smart home and so on, will be greatly transformed. 5G will change our life and work style and lead more new application scenarios and business models. Many innovations of electronic information technology in the future will mainly rely on 5G. Communication technology, with the unified development of 5G standard and spectrum ecological environment, countries have accelerated the commercialization process of 5G, and competed in the development of 5G technology.

The United States, Japan and South Korea deployed 5G test networks in 2017-2018, and equipment meeting 5G international unified standards will be deployed in 2019. Trump

ISSN: 2472-3703 DOI: 10.6911/WSRJ.201908_5(8).0006

recently announced a series of initiatives to stimulate the development of 5G networks in the United States. Trump stressed that 92 commercial 5G networks will be ready in the United States by the end of 2019. The wireless communication industry plans to invest $275 billion in 5G networks, which can quickly create 3 million jobs in the United States and inject $500 billion into the economy. In preparation for the launch of 5G iPhone, Tai-optic, Zhding KY and Tai-jun became the first manufacturers to get PCB orders. The EU began its 5G test in 2017 and plans to fully deploy 5G by 2025. European regulators are co-ordinating 5G frequencies, with the fastest progress in 3.4-3.8 GHz; Switzerland is likely to become one of the first countries to launch 5G commercial services; Ericsson and Spain Telecom upgraded the famous Nou Camp Stadium to 5G Stadium. Korea LG U + has deployed 15,000 5G base stations, with Huawei equipment accounting for 95%; Samsung is pursuing 5G business acquisition target to occupy 20% of the equipment market share in 2022; Korea Telecom giant SK launched 5G edge computing open platform to open to third parties to promote 5G commercialization.

5G development in China has entered the first battalion of 5G research and development in the world. China and many other countries are leading the way in providing key IF spectrum for 5G. Huawei has taken the lead in completing 5G radio frequency conformance testing in the industry in collaboration with Anli. Due to the remarkable advantages of wireless infrastructure, China's wireless operators are conducting nationwide radio conformity testing. Hundreds of large-scale 5G testing: Huawei took the lead in completing the 5G mobile phone interoperability testing of different manufacturers of China Unicom, Huawei took the lead in completing the first phase of in-field testing of China Unicom 5G independent network core network, and Huawei cooperated with China Unicom to complete the first business application verification based on 5G terminal chip Baron 5000.

China Mobile, China Unicom and China Telecom have successively sent out the news of enhancing 5G network band by withdrawing 2G and 3G networks. At present, although none of the three major telecom operators has launched 5G-related packages and services, the three operators have been fully prepared for the application of 5G network. The three major domestic operators are actively promoting the process of 5G commercialization, and have determined the detailed implementation plan. China Mobile plans to launch large-scale network testing in the next three years, and joint ventures will conduct application tests to achieve 5G network commercialization by 2020. China Unicom announced that it will speed up the research of 5G key technologies, lay out the strategic planning of 5G network evolution, and continuously deepen the technology accumulation of the Internet of Things to meet its commercial target of 5G network in 2020. China Telecom has proposed a transformation of 3.0. It plans to deploy 5G in three steps in the next 10 years, and carry out 5G related research and test verification in an all-round way, aiming to launch 5G below 6GHz in 2025. At the end of March this year, the first 5G telephone in China was dialed up in Shanghai. This phone is the trial of China Mobile for 5G. At present, China Mobile has established more than 200 5G base stations in Shanghai. Shanghai is very likely to become the first city in China to open 5G network. The opening date is expected to be at the end of this year. At present, the three major domestic telecommunication operators are waiting for the issuance of 5G commercial licenses, which will greatly accelerate the pace of 5G commercial.

3. PROSPECT OF 5G TECHNOLOGY APPLYING TO ELECTRIC POWER SYSTEM

At present,Policy supports China's 5G strategic position.The Chinese government attaches great importance to the development of the 5G industry, and points out the direction for the development of the 5G industry in terms of relevant key policies. "Made in China 2025" points out that the fifth generation of mobile communication (5G) technology should be comprehensively broken; the "National Informatization Development Strategy Outline" points

ISSN: 2472-3703 DOI: 10.6911/WSRJ.201908_5(8).0006

out 5G should make breakthrough progress in 2020; The Outline of the Thirteenth Five-Year Plan for National Economic and Social Development of the People's Republic of China requires speeding up the construction of a new generation of high-speed, mobile, secure and ubiquitous information infrastructure, and actively promoting 5G commercialization; "Guiding Opinions on Further Expanding and Upgrading the Potential Consumption of Information Consumption to Continue to Release Domestic Demand" requires further expansion and upgrading of information consumption and strive to launch 5G commercial business in 2020

The research on 5G demand and its spectrum and technical points is progressing steadily. The key is to achieve the IMT-2020 standard and put it into daily use [2]. 4G technology adheres to the “service-centered” concept. Compared with the previous technology, 5G pays attention to service improvement and technical change, adhering to the “user-centered” concept. In short, 5G can not only make more practical benefits, but also achieve higher mobility. Since its data transmission rate can reach 10GB/S, 5G has broad application prospects and potential. According to the current research, the key issues to be solved include how to effectively use cloud computing, how to take appropriate methods to maintain data and procedures, how to further improve the system performance and ensure the service quality.

In the first half of this year, the whole country has been actively deploying 5G links, such as 5G mobile communication, 5G live network broadcasting, 5G online education, etc. After all, we all know that the emergence of 5G has more obvious advantages than 4G, especially in transmission speed, transmission delay and so on. Lift. In addition to communication services, 5G also has great application prospects in smart power construction.

Most of the time, 5G technology is used in transportation, industrial manufacturing and other fields. But in fact, 5G is also used in the electric power and water industry, and strives to be popularized nationwide, so as to achieve large-scale popularization.

Relevant people believe that the sub-scenarios of 5G technology in the power industry are mainly intelligent distributed FA, low-voltage power information acquisition, millisecond precision load control and distributed power supply of energy Internet. These application scenarios can be said to be just needed by the power industry, and 5G network's ultra-low delay, ultra-low energy consumption, ultra-low cost, high mobility, high bandwidth and other network capabilities can meet the actual needs of power business. In addition to the general civil power field, 5G has also achieved good results in UHV transmission projects.

4. CONCLUSION

5G is a complex system. The network established on the basis of 5G needs not only to improve the speed of the network, but also to achieve more requirements. In the future, terminals in 5G networks are not only mobile phones, but also a variety of devices such as cars, unmanned aircraft, home appliances, and public service equipment. 4G changes life, 5G changes society. 5G will be an important propeller for social progress, industry promotion and economic development.

Generally speaking, the emergence of 5G technology has a profound and lasting impact on the development of the power industry. The construction of 5G power transmission base station, the introduction and application of 5G technology, and the opening of 5G power data platform have gradually changed the original single development of the power industry. What we need to do is to face up to the changes brought about by 5G. At the same time, we should actively explore new possibilities to promote the development of 5G in the power industry, which will transform the traditional power industry into a new mode of operation, and form a new system structure.

ISSN: 2472-3703 DOI: 10.6911/WSRJ.201908_5(8).0006

REFERENCES

[1] Yao Yue. The Key Technology Prospect of the Fifth Generation Mobile Communication System [J]. Telecommunications Technology, 2015 (01): 18-21+26.

[2] Zhang Ran. Research on Key Technologies of 5G Mobile Communication Network [J]. Information and Computer (Theoretical Edition), 2018 (23): 168-169.