Reference

1. Ignatenko, M. Wide-Band High-Frequency Antennas for Military Vehicles: Design and testing low-profile half-loop, inverted-L, and umbrella NVIS antennas / M. Ignatenko [et al.] // IEEE Antennas and Propagation Magazine. – 2016. – Vol. 58. – № 6 – P. 64–74.
2. Sanghai, S. A. Low-profile two-arm inverted-L antenna design for vehicular HF communications / S. A. Sanghai, M. Ignatenko, D. S. Filipovic // IEEE Transactions on Antennas and Propagation. – 2017. – Vol. 65, № 11. – P. 5710–5719.
3. Ignatenko, M. On the design of vehicular electrically small antennas for NVIS communications // IEEE transactions on antennas and propagation. – 2016. – Vol. 64. – № 6. – P. 2136–2145.
4. Castillo, R. F. Platform-based, electrically-small HF antenna with switchable directional radiation patterns / R. F. Castillo, R. Ma, N. Behdad // IEEE Transactions on Antennas and Propagation. – 2021. – № 8. – P. 4370–4379.
5. Bouvy, A. A heuristic study of the bandwidth potential of electrically small, platform-based antennas at the HF band / A. Bouvy, N. Behdad // IEEE Transactions on Antennas and Propagation. – 2020. – № 2. – P. 623–635.
6. Sanghai, S. Two arm offset fed inverted-L antenna for vehicular HF communications / S. A. Sanghai, M. Ignatenko, D. S. Filipovic // 2015 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting. – IEEE, 2015. – P. 1604–1605.
7. Park, Y. J. Low-profile inverted-L aircraft antenna with one folding using ground edge current / Y. J. Park [et al.] // Electronics letters. – 2014. – T. 50. – № 17. – P. 1188–1190.
8. Sarrazin, F. Radiation efficiency improvement of a balanced miniature IFA-inspired circular antenna / F. Sarrazin, S. Pflaum, C. Delaveaud // IEEE Antennas and Wireless Propagation Letters. – 2016. – T. 16. – P. 1309–1312.
9. Joshi, M. P. Design and analysis of microstrip patch antenna for WLAN and vehicular communication / M. P. Joshi, V. J. Gond // Progress In Electromagnetics Research C. – 2019. – Vol. 97. – P. 163–176.
10. Gain enhancement of a broadband symmetrical dual-loop antenna using shorting pins / J. Liu [et al.] // IEEE Antennas and Wireless Propagation Letters. – 2018. – Vol. 17. – № 8. – P. 1369–1372.

УДК 681

DISTRIBUTED ANTENNA SYSTEM IN WIRELESS IMAGING AND DIAGNOSTICS

Atul Chaudhari[1]
Professor Dr. Dipak P. Patil[2]
[1]Sandip Institute of Technology and Research Centre, Nashik, India
[2]Sandip Institute of Engineering and Management, Nashik, India

The utilization of Distributed Antenna Systems (DAS) has become increasingly significant within healthcare environments, as they provide dependable wireless communication solutions that are vital for contemporary medical imaging and diagnostic procedures. This study investigates the utilization of Decision Support Systems in facilitating wireless imaging and diagnostics in healthcare settings. The guarantees reliable and resilient wireless coverage, enabling the smooth transfer of medical imaging data from different imaging modalities to central viewing stations or Picture Archiving and Communication Systems. This allows radiologists and physicians to remotely examine imaging tests, which helps them analyze and diagnose them promptly.

In addition, the utilization of DAS facilitates instantaneous collaboration among healthcare professionals through the facilitation of wireless communication and the exchange of images during diagnostic procedures and consultations. The implementation of DAS improves telemedicine and teleradiology programs, enabling radiologists to remotely analyze pictures and offer diagnostic consultation to healthcare practitioners in remote or underserved regions. DAS technology enhances the performance of portable imaging devices, such as handheld ultrasound scanners and mobile X-ray units, by guaranteeing uniform coverage and dependable data transfer. This allows for point-of-care imaging and quick diagnostic evaluation in different clinical environments. DAS facilitates wireless access for imaging equipment utilized in critical care situations, allowing for swift diagnostic and treatment determinations for patients with severe injuries or medical emergencies in emergency rooms and trauma centers. Distributed Antenna Systems are of paramount importance in facilitating wireless imaging and diagnostic functionalities within healthcare establishments. These systems enable the transmission of im-

ages in real-time, facilitate remote collaboration, and provide access to specialized expertise. DAS improves diagnostic productivity, boosts patient outcomes, and enables smooth integration of imaging equipment into clinical processes by assuring dependable wireless communication.

A DAS's antennas may need to be omnidirectional to offer coverage in all directions, or they may need to be directional to concentrate signal coverage in particular locations. Antennas should be able to cover the intended region with enough gain to offset signal loss in the distribution system. Depending on the particular deployment scenario, different gain requirements may vary. Proposed distributed antenna system of three monopoles improves the bandwidth. The efficiency in free-space settings exhibits greater resilience, compared to a single monopole solution and a distributed system consisting of two monopoles.

Reference

1. Distributed antenna systems for wireless handheld devices robust to hand loading / A. Andujar [et al.] // IEEE Transactions on Antennas and Propagation. – 2012. – Vol. 60. – № 10. – P. 4830–4837.

2. Kim, J. Implanted antennas inside a human body: Simulations, designs, and characterizations / J. Kim, Y. Rahmat-Samii // IEEE Transactions on microwave theory and techniques. – 2004. – № 8. – P. 1934–1943.

3. Wearable electromagnetic head imaging system using flexible wideband antenna array based on polymer technology for brain stroke diagnosis / A. S. M. Alqadami [et al.] // IEEE transactions on biomedical circuits and systems. – 2018. – Vol. 13. – № 1. – P. 124–134.

4. Pastorino, M. Microwave imaging. – John Wiley & Sons, 2010.

5. Gupta, A. A survey and classification on applications of antenna in health care domain: data transmission, diagnosis and treatment / A. Gupta, A. Kansal, P. Chawla // Sādhanā. – 2021. – Vol. 46, № 2. – P. 68.

6. Tsai, C. L. Implantable wideband low-specific-absorption-rate antenna on a thin flexible substrate / C. L. Tsai, K. W. Chen, C. L. Yang // IEEE Antennas and Wireless Propagation Letters. – 2015. – Vol. 15. – P. 1048–1052.

7. International Commission on Non-Ionizing Radiation Protection. Guidelines for limiting exposure to electromagnetic fields (100 kHz to 300 GHz) // Health physics. – 2020. – Vol. 118, № 5. – P. 483–524.

8. Manjunath, K. A. ISM band integrated distributed antenna systems for industry 4.0: A techno-economic analysis / K. A. Manjunath, V. Agarwal // GLOBECOM 2020–2020 IEEE Global Communications Conference. – IEEE, 2020. – P. 1–6.

9. Mazloum, T. Impact of Indoor Distributed Antenna System on RF-EMF Global Exposure / T. Mazloum, S. Wang, J. Wiart // IEEE Access. – 2023.

10. Saleh, A. A. M. Distributed antennas for indoor radio communications / A. A. M. Saleh, A. J. Rustako, R. Roman // IEEE Transactions on Communications. – 1987. – Vol. 35, № 12. – P. 1245–1251.

11. Hoglund, D. H. Distributed antenna systems for healthcare // White Paper IT Horizons. – 2010. – P. 32–38.

12. Distributed Antenna System in 3GPP Specified Industrial Environment / M. U. Sheikh [et al.] // 2021 IEEE 93rd Vehicular Technology Conference. – IEEE, 2021. – P. 1–6.

УДК 681

CORROSION RADAR DEVICE

Student master degree Sharopov H. N.
Associate Professor Abdukarimov M. M.
Tashkent State Technical University named after Islam Karimov, Tashkent, Uzbekistan

Corrosion is a significant problem in the oil and gas industry that can cause equipment failure and environmental hazards. There are several factors that emphasize the seriousness of the corrosion problem in this direction. Based on the statistics of the world, it was announced that the annual cost of corrosion in industrial organizations is 2.5 trillion dollars.

There are several types of corrosion, including: Corrosion caused by liquid fuels is also included in chemical corrosion. The main components of liquid fuel do not corrode metals, but corrosion occurs as a result of the effect of sulfur, hydrogen sulfide and sulfur-containing organic substances contained in petroleum and lubricating oils on metals. This effect is manifested only in waterless conditions. Converts to electrochemical corrosion in water.

Of course! Prevention of corrosion in process pipelines in mines is essential to maintain their integrity and ensure safe and efficient operation. There are several common methods used to prevent corrosion. One of the devices being implemented today through innovative technologies is the