

It is important to secure a safe communication network for railroad operation. As railways become faster and more intelligent, it is necessary to establish a safe and fast network.

The construction of fiber optic networks is essential for the **modernization of railway communication networks**. It is also easy to build a backbone network as it can reduce the cost of civil works, etc. when installing optical cables through the railway route.

Knet's microduct solution can be installed over a long distance by an air blown solution. Its installation space is small, so it can be easily installed using existing pipelines and facilities. You can save some tubes for future expansion and install or replace new cables easily without other civil work.



Microduct - Direct Buried, Direct Installed Duct  
Example ) 14/10mm 7way + Micro cable 144 Core \* 7 tubes (1,008 Core)  
16/12mm 7way X Micro cable 432 core \* 7 tubes ( 3,024 core)



The Hungarian railway company MAV adopted the GSM-R system to modernize the existing railway network and adopted Knet's microduct solution to build an optical cable network to connect GSM-R base stations.

\*GSM-R, Global System for Mobile Communications – Railway or GSM-Railway is an international wireless communications standard for railway communication and applications.



## Transportation- Rail Application

The construction of fiber optic networks is essential for the modernization of railway communication networks.



The fibers, which will serve the automation, telephone and internet systems of the new mine, are being installed by means of micro ducts. A rigid cable formed by small grouped ducts, through which the optical microfibers pass. The network can be both aerial and underground.



## Mining Industry

Building or Upgrading communication, monitoring, and automation infrastructure in mining needs safety, speed, low maintenance cost, and easy expansion . These requirements are also the benefits of using Microduct solution.

- Underground tunnel - LSZH microduct (LSZH microduct is surrounded with a sheath of LSZH material, giving excellent performance in a fire. The lightweight, metal-free, flexible LSZH microduct is intended for indoor installation)
- On rail moving the raw materials from underground to the seaport - Aerial microduct. Direct Install
- Data Center – LSZH and Direct Install Microduct



Global Mining Company  
Knet Aerial Microduct  
Installation-Brazil



On Rail – Direct Install



Monitoring infrastructure ( Fiber optic )  
Underground Tunnel – LSZH Microduct

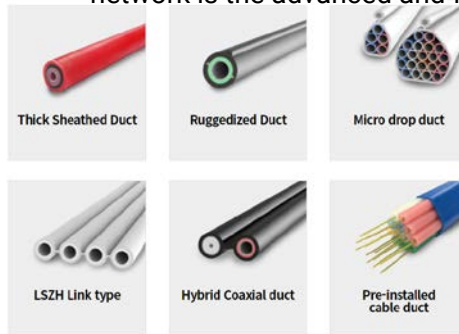
# KNET Blulight Solution- Smart City

The Smart city concept is becoming more popular, using an IoT network to optimize the efficiency of city operations and services and connect to citizens. Smart city technology allows city officials to interact directly with both community and city infrastructure and to monitor what is happening in the city and how the city is evolving while enhancing quality, performance and interactivity of urban services. A Smart city is more prepared to respond to challenges than a traditional city

FTTH- Fiber to The Home is the most powerful and advanced fiber network currently operating in the world especially when you build Smart City Security camera, Traffic control, lighting etc. All IoT network needs the connection and fiber optic network is the advanced and fast method.

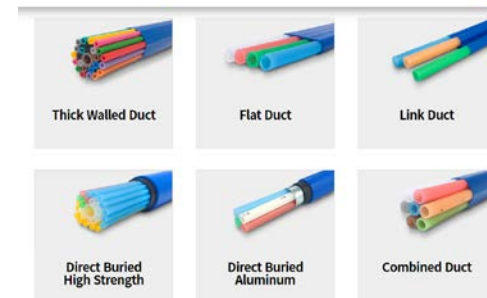


One of Ubiquitous City, Songdo in Korea- Provisioning of Smart-Transportation, Smart-Patrol, and public information service are key targets for building this infrastructure. Thus, the developer can implement the application and service into the advanced passive network built with Microduct solutions contractor needed a high resistance product and finishing their job in a short period



Special Duct for FTTH

## Smart City



High Resistance product for Direct Buried