



Feature

Past and Future Environmental Businesses

While responding to the requests of society, the Furukawa Electric Group has over many years continued to develop technologies, products and services that contribute to the protection of the global environment.

We are today accelerating the pace of new technology development guided by the medium-term management plan “New Frontier 2012” that positions the creation of new eco businesses as a key priority.

Focus 1 **Developing Easy-to-Recycle Optical Fiber Cables**

Focus 2 **Creating New Eco Businesses That Take Full Advantage of Material Technologies**

Responding to Environmental Issues Caused by the Growing Prevalence of Broadband Networks

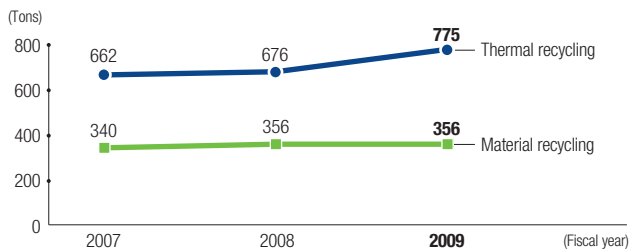
Promoting the Recycling of Materials From Discarded Optical Fiber Cables

The installation and renewal of optical fiber cables results in considerable waste due to the removal of existing electric wires and cables, ducts and distribution boards. Amid explosive growth in broadband networks, telecommunication carriers and construction companies are being increasingly confronted by the problem of waste disposal as one of several key environmental issues. Playing a leading role in the Group's recycling business activities, Furukawa Electric Ecotec Co., Ltd. (FETEC: please refer to the column below) serves to address this problem by collecting and recycling much of the aforementioned waste.

FETEC currently collects over 1,000 tons of discarded optical fiber cables each year, all of which is recycled. In specific terms, approximately 70% is incinerated and recovered as thermal energy, while around 30% is recycled as materials. From a recycling-oriented society perspective, the goal is naturally to secure a material recycling rate as close to 100% as is possible. Lifting the

material recycling rate is not of itself a difficult task. Depending on the method used, however, an unwanted by-product is the increase in CO₂ emissions and the adverse effect of a higher environmental load. With this in mind, Furukawa Electric has developed an easy-to-recycle optical fiber cable as one initiative to lift the material recycling rate while at the same time reducing CO₂ emission.

Performance in the Handling of Discarded Optical Fiber Cables



Material Recycling Flow (Example: Optical Fiber Cables)



Column

Recycling Plant of the Furukawa Electric Group (FETEC)

FETEC was established in 1971 as a company specializing in the recycling of discarded electrical wires. Since acquiring ISO14001 accreditation in 1998 (including the Company's Chiba Works and the adjoining facilities of affiliated companies), the company has taken steps to promote zero emissions and to reduce the amount of landfill waste generated during the recycling process. Based on these endeavors, FETEC achieved zero emissions in 2005.

In recent years, calls from customers to collect the duct and distribution board waste resulting from the removal of electric wires and cables have steadily increased. Working to address the needs of its customers, FETEC has acquired the necessary approvals to collect and haul industrial waste from 33 local municipalities, complementing its existing qualification (Chiba and Kyushu plants) as an industrial waste disposal contractor.



Discarded distribution boards



Discarded electrical ducts (product name: EFLEX)

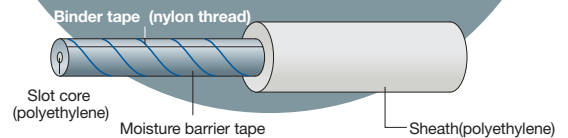
Developing a Breakthrough Optical Fiber Cable That Resolves the Issue of Recycling Costs

Unlike the copper and aluminum used as conductors in both electrical and telecommunications metal cables, optical fiber cables do not contain highly valued materials that can be collected, recycled or sold as items of worth. Rather than incur the cost of recycling, it was therefore considered more economical to dispose of industrial waste via incineration and landfill sites. Commensurate with the shift from metal to optical fiber telecommunication cables, and the growing incidence of optical fiber cable waste, however, demand for their recycling steadily increased. In response, Furukawa Electric in conjunction with Tokyo Electric Power Company commenced development of the recycling technology. While taking into consideration dismantling and separation methods, the companies took steps to review the raw materials that comprise cables as well as their configuration. Focusing on ease of dismantling, Furukawa Electric successfully developed an easy-to-recycle optical fiber cable.

Compared with conventional optical fibers, which use nylon thread as the base material for binder tapes, the newly developed product employs the same polyethylene material applied to the cable sheath. By using polyethylene for the binder tape, the sheath and the binder tape melt together during sheathing as part of the manufacturing process and become integrated with one another. Consequently, when the sheath is removed, the cable can be dismantled with ease as if there were no binder tape. As a result, dismantling and separation expenditure is reduced by approximately 50% compared with Furukawa Electric's existing products. In resolving the longstanding issue of recycling costs, it is possible to dismantle and separate cables for the same cost as industrial waste disposal via landfill sites or incineration.

In addition to the bobbin and drum that reel in the cable, the recycled materials of this optical fiber cable are applied as materials for such items as the optical closure (the optical fiber cable connection and diversion box).

A Conventional Optical Fiber Cable



● Hard to dismantle and separate

● Binder tape is threadlike

Tendency for binder tape to knot when optical fiber cables are dismantled. This significantly extends the time required for removal

● Binder tape and sheaths use different materials

Separation and treatment are required for reuse



A conventional optical fiber cable with the sheath removed. When attempting to pull out the nylon thread, it tangles into a ball making removal difficult.



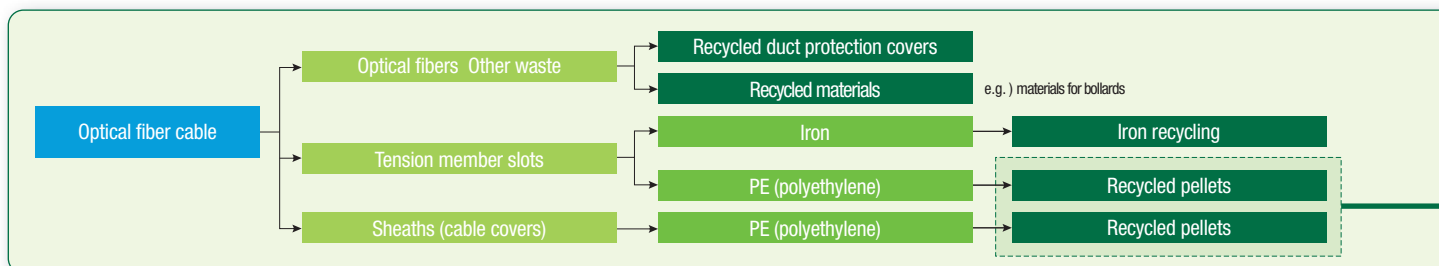
Fine strands of the nylon thread remain even after the sheath has been peeled away. This raises the issue of impurities making recycling problematic.

● Recycling costs are high

● Dismantling and separation require considerable effort

With recycling costs high, disposal as industrial waste is economical

Materials and Products Made From Recycled Optical Fiber Cables



Focusing on Other Recycling and Environmental Technologies as well as Environmentally Sound Products

The Furukawa Electric Group is engaged in other cable and wire material recycling activities from a wide range of perspectives.

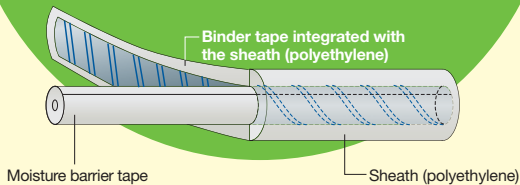
Reuse of the cross-linked polyethylene XLPE* is a prime example. Among sheathing materials used for electric cables, polyethylene and polyvinyl chloride (PVC) were commonly used due to their ease of recycling. With a cross-linked structure, the XLPE was considered difficult to recycle, lacking fluidity even when heated. Utilizing a proprietary technology for thermoplasticity by lowering molecular weight, Furukawa Electric took successful steps toward reuse as an insulating material.

Building on this success, the Company has promoted the application of XLPE beyond its reuse as a sheathing material to develop cable and electric wire-related products employing plastic waste. The plastic drum, developed as a replacement for wooden drums in particular, is attracting high praise for its contributions to the conservation of forest resources as well as the reduction of waste. Furthermore, plastic troughs are drawing considerable attention as an alternative to the reinforced concrete cable troughs that are used to preserve the opening and closing cables laid along railway lines and roadways. Unlike existing products, plastic troughs are lighter, less susceptible to cracking and corrosion and can be recycled after use.

The Group will continue to emphasize the development of recycling technologies. At the same time, we will work diligently to create new environmental technologies and environmentally sound products focusing on the three eco businesses identified in our medium-term management plan “New Frontier 2012” announced in April 2010.

* Furukawa Electric has commenced the licensing of its cross-linked polyethylene waste material recycling technology, which contributes to the reduction of both CO₂ emissions and industrial waste.

An Easy-to-Recycle Optical Fiber Cable

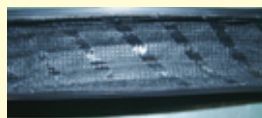


Easy to dismantle and separate

- **Binder tape and sheath are integrated**
 Easy to dismantle. The time required for removal is one-fifth that of the Company's existing products
- **The material used in both binder tape and sheath are the same polyethylene**
 Material recycling is simple due to a lack of impurities



An easy-to-recycle optical fiber cable. The sheath is peeled back together with binder tape.



Binder tape adheres to the sheath's inner surface when peeled away. Made from the same material, easily recycled without additional treatment or effort.

Recycling costs are low

- **Dismantling and separation are easily completed**
 Material recycling is possible for the same cost as industrial waste disposal

Examples of final products



Recycled bobbin



Recycled drum



Recycled optical closure



Toward Realizing a Low-Carbon Society for a Sustainable Global Environment

Next-Generation Vehicles

Material Technologies Contributing to the Advance of Ecology Cars

The Furukawa Electric Group is taking considerable interest in next-generation vehicles, which are expected to make substantial contributions toward resolving transportation equipment-related energy and global environmental issues. Driven by a commitment to achieve specific key concepts including “increased fuel efficiency and reduced CO₂ emissions,” “improved electric and hybrid vehicle performance” as well as “the provision of greater safety and comfort,” we are supporting the further spread of next-generation vehicles through the development of a wide spectrum of automotive components.

Our high strength, high-heat conductive aluminum alloys, manufactured using metal composition

development and molding process technologies, for vehicle bodies, together with our high conductive, high intensity aluminum wire harnesses reduce the weight of vehicles improving fuel efficiency while reducing CO₂ emissions. The Group’s small-sized, high integrity magnet wires, manufactured utilizing plastic design and thinning fabrication technologies, contribute to more compact, technologically advanced alternators (generators), which in turn improve the performance of electric and hybrid vehicles. Furukawa Electric’s compact, high performance antenna technology provides the backbone for its advanced automobile communication and ultra-wideband wireless radar, which helps to ensure vehicle safety.

Energy / Smart Grids

Continuing to Support an Energy Efficient Society

The Furukawa Electric Group boasts a long history in the development of advanced power transmission and telecommunication technologies that provide the basic infrastructure for today’s society. In electric power systems, the Group provides an extensive range of ultra-high voltage through medium to low voltage cables as well as mechanical parts that contribute to the efficient supply of electricity. Amid a renewed awareness toward the importance of developing a highly efficient cable network that includes yttrium superconducting power cables with the potential to substantially reduce power loss during transmission as well as the need for electric power conditioning utilizing storage cells for increased efficiencies in energy use, the Group is addressing these requirements by producing long-life, highly efficient secondary batteries

to the highest global standards. In telecommunications, the Group delivers a broad menu of products from hardware to systems including the optical fiber and optical transmission equipment necessary to realize a high-density, long-distance fiber-optic telecommunications system.

Through its business activities, the Furukawa Electric Group is developing the varied technologies required to ensure the effective application of natural energy provided through photovoltaic and wind power generation. In this manner, the Group is working to reduce power transmission loss and to secure a stable supply of power. By providing the optical fiber cables and optical transmission equipment that underpin basic infrastructure, we continue to support an energy efficient society.

High-Density Optical Telecommunications

Contributing Through Telecommunications and Energy Efficient Technologies

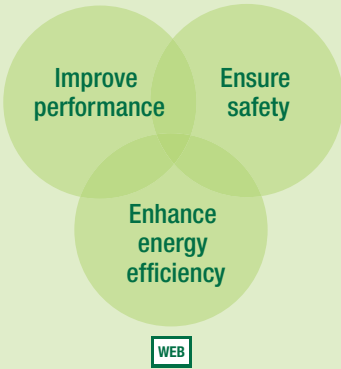
The volume of data traffic is projected to increase at any annual rate of 40%. Quite naturally this highlights the critical need for high-density telecommunication networks that continue to take full advantage of advances in optical communication technology development. Leveraging its world-class expertise, Furukawa Electric supplies such optical parts as optical fiber cables, semiconductor lasers, waveguides and switches, optical transmission equipment including optical fiber amplifiers and routers and optical communication systems to realize high-density optical telecommunication.

Commensurate with the increase in the amount of data, the consumption of power by IT devices as a percentage of

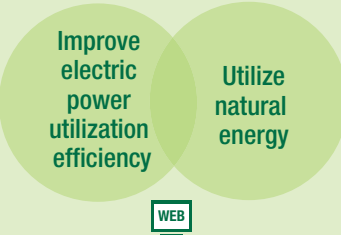
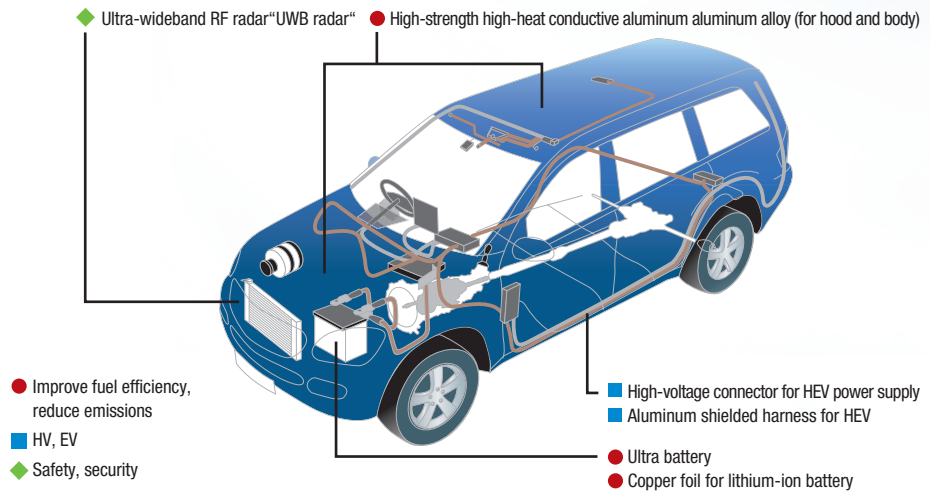
Japan’s total power generation is estimated to reach 20% in 2025. Positioning cutbacks in energy consumption as an important goal of development, steps are being taken to not only reduce the size and weight of products as indirect measures to curtail the use of energy, but also to develop light emitting elements that efficiently convert electrical energy into light as well as devices and systems distinguished by their minimal energy loss. In fields where energy consumption can be reduced through the changeover from existing electric-powered to optical transmission, we are pushing forward with efforts to enhance the economic efficiency of transmission devices.

Product Development Themes

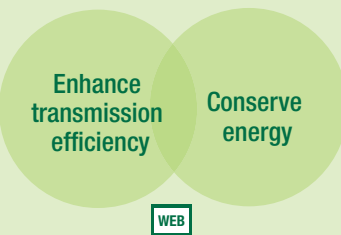
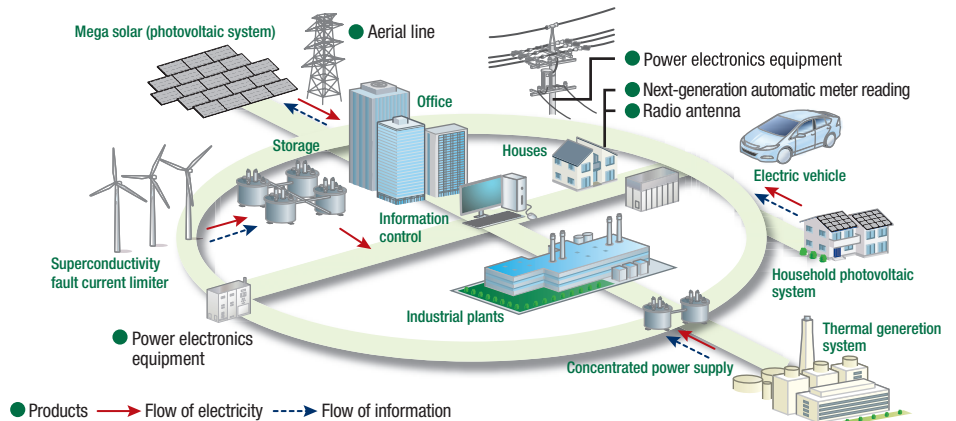
Major Products



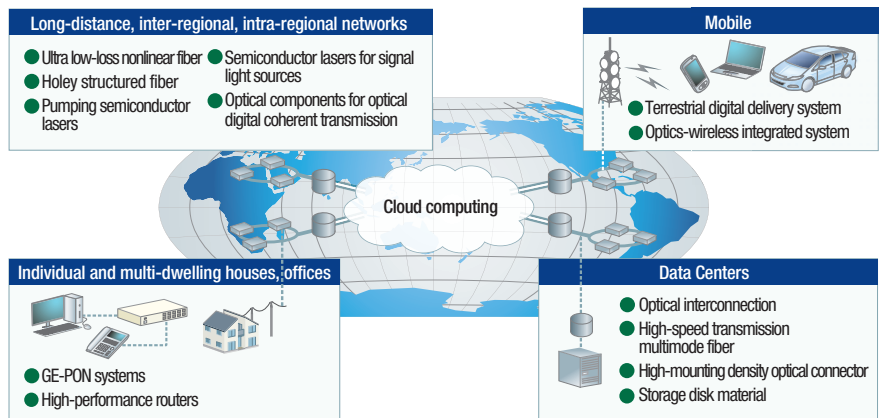
Please refer to the following website for more details:
http://www.furukawa.co.jp/english/museum/floor3/03_01.htm



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● Products — Inter-regional network — Intra-regional network