



Mitron Environment Brochure

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Mitron

Mitron is a European leading company in the field of passenger information, security and display systems for public transportation and digital signage applications. Main applications for Mitron displays are stations and stops in public transportation, public transport vehicles and digital signage. Mitron mobile systems covering display, announcement, entertainment and security systems are provided for trains, trams and metros. Mitron's offering is based on standard product solutions and open systems making flexible customization and integration with any existing systems easy. Fast and on time projects and deliveries are guaranteed by in house engineering and professional project management combined with Mitron's own production.

Mitron's customers are mainly European leading integrators, operators and vehicle manufacturers. Mitron is a flexible business partner whose main target is to provide always the best possible product based on the most suitable technology to meet the customer specific needs. Mitron has gained broad experience from stationary system projects with Finnish, Swedish, German, Lithuanian and Dutch railways as well as from city traffic in many countries worldwide. In mobile applications Mitron has been working with major European train and tram manufacturers. In the field of digital signage applications Mitron cooperates with leading integrators, network operators and content providers.

Mitron is committed to taking full responsibility for supplying the latest technology solutions to its customers including project planning, research and development, engineering, production, testing and installation. Even years after completing an installation, Mitron stays with its customers by offering comprehensive after sales service and support.

Mitron's Quality System is certified to ISO 9001 and the Environmental Management System to ISO 14001. In 2009 Mitron received the IRIS Certificate according to the International Railway Industry Standard for the international railway industry. Constant quality research, product testing and internal quality audits are an essential part of company's operation. Mitron is committed to continuous improvement of the environmental protection level in its own operations, products and services.

Additional information about Mitron is available at www.mitron.com



Mitron and the Environment

Mitron's environmental system achieved ISO 14001 certification in 2003. The environmental system concerns Mitron's own operation and products and helps manage and reduce the company's environmental impacts.

Mitron is committed to continuous improvement of the environmental protection level in its own operation, products and services. Mitron also seeks to preemptively prevent environmental pollution and burden by reducing the number of environmental impacts. The environmental impacts are taken into account in the development and production of products and services.

Mitron follows the principle of continuous improvement by being conscious of the environmental aspects in its own and its partners' operations and also by obtaining information about the available materials and equipment and their environmental impacts.

The Environmental Policy of Mitron

Mitron develops and produces environmentally friendly products. Mitron is certified according to the ISO14001:2004 standard. The operation according to that standard is put into practice as follows:

1) Operation

At Mitron, actions are carried out in conformity with an environmental program. The environmental program is based on an evaluation of the environmental aspects. The environmental aims and objectives are a result of that evaluation. Mitron follows the legislation and commits to operate in conformity with it.

2) Products

Environmental matters are taken into account in Mitron's product development and production. Products are developed to be energy saving by using environmentally friendly materials.

3) Monitoring and training

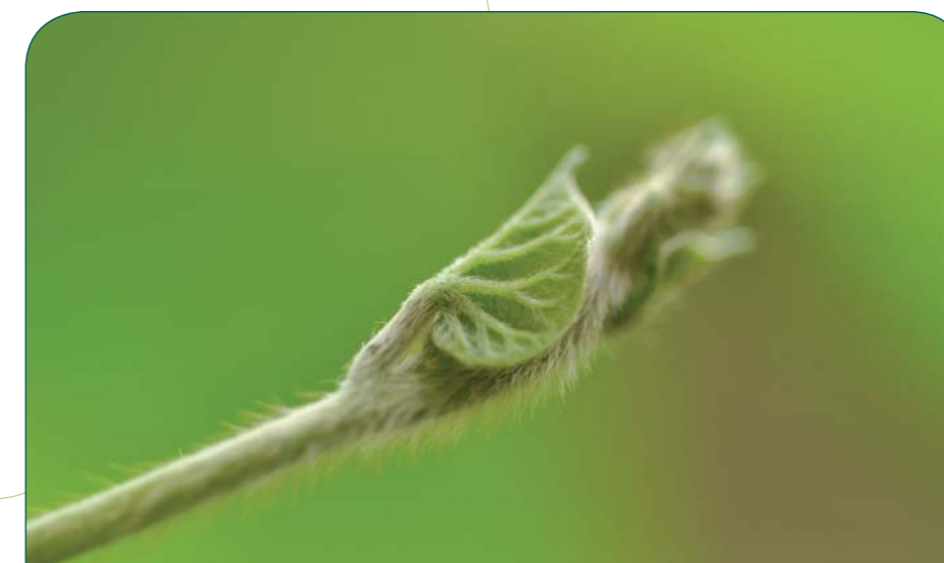
The quality level of Mitron's operation is monitored in various ways. By monitoring, problems which arise can be handled immediately. The matters that are discovered in this manner are incorporated into the training program for the relevant personnel.

4) Safety

Mitron's products are designed taking safety aspects into account. Safety is also taken into account in working conditions. There is a rescue plan in each place of business.

Forssa, 1.1.2009

Juha Siitonen
Managing director



The Environmental Program of Mitron

At Mitron, environmental matters are managed in a planned way and in conformity with the environmental program of the company. The environmental program serves as a permanent part of Mitron's environmental system. The yearly environmental aims and objectives and the measures needed to implement them are determined by the environmental program. Also the time schedules and persons responsible for the aims are stated in the environmental program. The entire environmental program is updated once every two years or more often when needed. The environmental program is reviewed yearly by the company's management.

The environmental program includes:

- the list of environmental policy requirements
- the environmental aims and objectives
- the means and measures to obtain those aims and objectives
- the other development measures needed to fulfil environmental policy commitments.

The environmental program determines:

- responsibilities for obtaining aims and objectives
- time schedule and responsibilities for executing the measures mentioned in the program.

The implementation of the environmental program is monitored and reported regularly. When needed, the environmental program is reviewed and updated where applicable:

- in connection with significant undertakings
- when initiating new activities
- in connection with significant changes in operation
- when external circumstances change.

The development aims and objectives to be entered in the environmental program emerge during the continuous improvement of activities, and with the evaluation of the environmental aspects. The evaluation of the environmental aspects means assessing the environmental impacts caused by the environmental aspects and identifying the most significant environmental impacts. The environmental aims and objectives that will be entered to the environmental program will be based on the evaluation of the environmental aspects.



At Mitron, the evaluation of the environmental aspects is accomplished by reviewing processes in order to identify their environmental impacts and evaluate them. The environmental aspects are assessed and the significant aspects among them are identified once every two years. The environmental aspects will be reassessed immediately if:

- there has been more than a 50% change in the product amounts in business operations
- emission amounts have grown more than 20%
- there are, or are expected to be, new statutory requirements.

The following are the assessment criteria used in evaluating the environmental aspects:

- the severity of the environmental impacts
- the statutory compliance of the operations
- the amount of material used or the waste generated
- interest groups expectations
- cost-effectiveness
- probability of damages
- possibility to control.



Legislation

According to the ISO 14001 standard, a company must follow the new statutes and determine which statutes apply to its own operation. New statutes and their impacts on the operation of Mitron are reviewed regularly and their impacts on the operation are taken into account immediately.

The most important EU Environmental Directives that direct the operation of Mitron are: RoHS, WEEE and Eco-design directives. Mitron is committed to complying with all local, international and EU environmental regulations that apply to it. In addition, Mitron also takes into account the environmental requirements of its customers.

RoHS

RoHS directive (The Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment) is an EU regulation that limits the use of certain hazardous substances in electric and electronics devices. The substances include mercury, cadmium, lead, hexavalent chromium and fire-retardant substances PBB (polybrominated biphenyls) and PBDE (polybrominated diphenyl ethers). The directive has been in force since 1 June 2006.

The purpose of the directive is to decrease the amount and hazardousness of the waste originating from electric and electronic devices and to protect health of people. The purpose of the directive is also to promote the use and handling of electric and electronic devices in an environmentally friendly way.

According to the directive, new electric and electronic devices are not allowed to include more than 0.1% by weight in any homogenous substance of:

- lead
- mercury
- hexavalent chromium
- polybrominated biphenyls (PBB)
- polybrominated diphenyl ethers (PBDE)

and not more than 0.01% by weight of:

- cadmium.

For Mitron the commitment to the RoHS directive means primarily the leadless production of electronic products. Mitron uses only RoHS approved components and leadless soldering materials. Mitron requires that its sub-contractors also commit to carry on their operations according to the RoHS directive.

WEEE

WEEE is an EU directive relating to the manufacturer's liability for electric and electronic device

waste. Manufacturer's waste management liability for electric and electronic devices that are removed from use came into force 13 August 2005. Manufacturer's liability means the manufacturer's responsibility to care for the organisation of the reuse, utilisation and other waste management of the products that it has brought to the markets, and any waste from those products, and the liability for the costs which arise from the aforesaid.

All Mitron products have labels that explain their means of disposal and recyclability. Mitron has a contract with a Finnish company Elker Oy concerning the manufacturer's liability. The recyclability of the materials used in Mitron's products is also inspected. For example the recycling efficiency ratio of Mitron's display products materials is more than 90 percent.

EuP & Ecodesign

The EuP directive which frames the requirements set for the ecological design of energy-using products (2005/32/EY) was given 6 July 2005. This directive is commonly called EuP directive (EuP = Energy-using Products). The EuP directive defines the ecological requirements for design and development of energy-using products. The intention is the integration of the environmental aspects and life cycle thinking in the product design stage. The directive promotes sustainable development by improving energy efficiency and environmental protection levels and also promotes energy-supply security. The directive implements the strategy concerning the integrated product policy of the EU (Integrated Product Policy, IIP). The EuP directive is a framework directive through which the Commission of the European Communities gives product group specific implementation measures. This then defines the environmental requirements of product design for each product group.

A new Ecodesign directive (2009/125/EC) was passed in October 2009. That directive repealed the EuP directive (2005/32/EC) whose requirements came into force 11 August 2007. The requirements are directed to product design and to the observation of the environmental impacts of a product during its whole life cycle. It is a framework directive on the basis of which the product group specific implementation regulations are given. This then defines in detail the environmental requirements of product design for the concerned groups. The requirements involve the improvement of material content, energy efficiency and recyclability of products. The Ecodesign directive is also a harmonisation directive, that is, the EU member states can not deviate from its requirements in the national implementation.

In Mitron's operation the central cornerstone of ecological design is the environmental review in which, as a part of each product development process, the environmental impacts are reviewed and all efforts are made to minimise them. The environmental review covers requirements for ecological design set by the EuP and Ecodesign directives and is supplemented by Mitron's own environmental objectives.

Product development

One of the most important starting points in Mitron's product design is environmental friendliness. Mitron develops its products, production processes and methods such that the environmental impacts of the products are taken into account during their whole life cycle. Improving the environmental features of products and services is taken into account at all stages starting from design, raw materials purchases and production of the products to the utilisation and disposal of the products after their use.

The aim of environmentally friendly product development is to fulfil the new statutory environmental requirements, improve the energy efficiency of products, reduce raw material consumption, extend the life cycle of products and increase the recyclability of the materials used in the products.

The aim of environmentally friendly product design is to reduce quantity and improve quality:

The quantity aspect includes:

- using materials effectively
- reducing energy consumption
- extending the life cycle of products
- improving the usability of products.

The quality aspect includes:

- the quality of the inputs (materials and energy)
- the quality of the emissions (production, use, waste processing).

The entire life cycle of the product and materials are considered when making decisions. When thinking about the life cycle it is especially taken into account that the environment should be burdened as little as possible. Harmlessness means that the material choices and production processes are taken into account. In the production process, attention is paid to the energy requirements and possible emissions.

The most significant tool for environmental control during a product development project is the environmental review. The environmental review is a part of every product development project at Mitron. The aim of the environmental review is to:

- optimise the use of the materials
- minimise energy consumption
- extend the life cycle of the product
- enhance recyclability
- reduce the use of hazardous substances.

In the environmental review attention is paid especially to material choices to minimise the use of hazardous substances and to prefer materials for which there exist efficient material recovery or recycling methods. Another central concern in the environmental review is to minimise energy consumption of the product, including monitoring of the operating voltage of the components used and the overall power consumption of the product. The energy consumption can be minimised by using automatic current saving functions (sleep mode) whenever possible. The environmental review also assesses the service life of the product and possibilities of extending it, and the maintainability and recyclability of the product. The review aims to minimize the use of hazardous substances relating to the product and production process.





Production

In Mitron's production the environmental orientation comes first in the planning of product production processes. The environmental impacts related to the production process are minimised by, among other things, using environmentally friendly accessory agents and materials. The energy consumption of the production process itself is minimised by optimizing the throughput and by centralizing and combining work stages. The energy consumption of tools and machines used in the production process is also taken into account. Mitron actively monitors the total energy consumption of its production facilities and aims to improve energy efficiency through continuous development of the operation.

The results of the environmental review are seen concretely in production. The standardisation of the materials, and the minimisation of the material amount used, enables the standardisation of production processes, and the use of the same production methods and equipment in production of many different products.

In Mitron's production the main emphasis is on the final assembly of the products. This highlights the role of Mitron's sub-contractors in adhering to the minimisation of the environmental impacts related to production. Mitron regularly monitors the operation of its subcontractors so as to ensure their commitment to Mitron's environmental aims and objectives. Sub-contractor co-operation produces positive results when both Mitron and its sub-contractor achieve the environmental aims set. The key to sub-contractor co-operation is continuous improvement through which environmentally oriented operation develops, as the co-operation moves forward.



Energy saving

The energy consumption of electric and electronic devices is one of the most significant factors that affect the environment. The less a device consumes energy, the more environmentally friendly it is. By decreasing the energy consumption of the device, its environmental impact during its entire life cycle can be significantly influenced. Energy efficiency and the reduction of energy consumption are among the major factors at Mitron regarding environmental protection.

The energy consumption of products is reduced by selecting components whose operating voltage range is low and by low total power consumption of the final products. Whenever possible, products also use an automatic current saving function (sleep-mode), which can result in a significant energy savings in some products. In some products minimizing the weight of the product can effect to the energy consumption of the final product.

In display products improving the energy efficiency can significantly decrease the environmental impact of the product. More than 90% of the energy consumption of a display is caused by the light radiation and backlight of the display. Mitron uses reflective display technologies in its displays which significantly improve the visibility of the display and reduces the amount of needed backlight. Thanks to the maximal utilisation of sunlight, certain display technologies such as LCD displays do not necessarily need backlight in day time. This significantly reduces the energy consumption of the device. The small energy consumption of the display also enables the use of alternative energy sources. The energy needed for the display can be generated, for example, by solar panels. The use of an alternative energy source allows the installation of the display in an environment where it is not possible to connect the device to the electricity grid.

As backlight of Mitron's displays had traditionally used cold cathode fluorescent lamps (CCFL). The service life of cold cathode fluorescent lamps is typically about five to six years. By moving to the significantly less energy consuming LED backlight solution, the energy efficiency of the display can be improved. The LED backlight solution provides 10 years of maintenance-free operation which significantly reduces both the service life cost of the product and the environmental impact of the product during its entire life cycle. LED backlight is available in all of the different display technology options offered by Mitron.

Mitron is also continually researching new display technology options. Product energy consumption is one of the major factors in selecting and implementing new display technologies.





Packaging

In packaging and delivering products Mitron tries to use recyclable materials and re-usable boxes that can be returned to Mitron by customers.

Mitron pays attention to the utilisation of packaging that it has delivered to the markets. This is carried out by being a member of The Environmental Register of Packaging PYR Ltd. which has granted Mitron a certificate for observing the requirements related to the utilisation of the packaging. The amount of packaging material used is reported yearly to the PYR register.

For packaging the following objectives are set:

- Preference for packaging made of recyclable materials.
- Minimising the amount of the packaging used.
- Different kinds of materials should be easily separable, for example plastic and cardboard.
- Marking of materials used to facilitate the sorting of the wastes.
- When possible, the use of re-usable boxes with suppliers and customers.

Waste handling

Waste sorting is taken into account at Mitron in all departments and in all operations. There are separate containers for different kinds of waste with clear waste sorting instructions. Mitron's personnel are trained regularly to ensure appropriate waste sorting.

The utilisation and the sorting of waste in Mitron include the following types: energy waste, metal waste, electric and electronic scrap, hazardous waste, paper waste and mixed waste.

The amount of waste generated is significantly influenced by the product development process. In that process, material choices are made which impact the recyclability and re-usability of materials. Minimising the amount of waste generated and the recyclability of the materials plays a significant role in planning the production process of a product.

At Mitron the amount of waste generated by the operations of the entire company is actively monitored. Mitron aims to minimise the amount of waste generated by searching for alternative ways of operation. With all waste types, the amount of waste is minimised by recycling and reusing the raw materials.

Terminology

RoHS

RoHS directive (The Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment) is an EU statute that limits the use of certain hazardous substances in electric and electronic devices.

WEEE

The WEEE directive of the European Union (Waste Electrical and Electronic Equipment) is for the purpose of protecting the environment and public health by using natural resources reasonably and implementing waste management strategies that concentrate on recycling and utilisation.

Ecodesign directive

Ecodesign directive defines the ecological requirements for the design and development of energy-using products. The intention is the integration of the environmental aspects and life cycle thinking in the design stage of products.

REACH

REACH is the European Community Regulation on chemicals and their safe use. It deals with the Registration, Evaluation, Authorisation and Restriction of chemical substances.

Environment system

The environment system is a part of the general management system of the company that includes organisation structures, planning operations, responsibilities, practices, courses of action, processes and resources to develop, implement, achieve, review and maintain the environmental policy.

Environmental aspect

An environmental aspect is a part of the operations, products or services of the company that interacts with the environment and causes or may cause environmental changes.

Evaluation of the environmental aspects

The evaluation of the environmental aspects means assessing the environmental impacts caused by the environmental aspects and identifying the most significant environmental impacts.

Environmental policy

Then environmental policy is a declaration of the intentions and principles of the organisation that relate to the all-inclusive level of environmental protection and gives the guidelines for operation and setting environmental aims and objectives.

Environmental objective

Environmental objective is a general environmental aim whose basis is the environmental policy that an organisation sets for itself. It is quantified when it is possible to do so.

Environmental impact

An environmental impact is whatever hazardous or helpful environmental change is wholly or partly caused by the operations, products or services of an organisation.

EU environmental legislation applicable to Mitron

Name of the directive or regulation

Additional information

RoHS

The Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment

RoHS → a maximum concentration value of 0.1% by weight in homogeneous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) and of 0.01% by weight in homogeneous materials for cadmium shall be tolerated.

WEEE

Waste Electrical and Electronic Equipment

Waste management liability from delivered products.

Ecodesign directive

Ecodesign requirements for Energy-using Products

Defines the ecological requirements for the design and development of energy-using products. Environmental review.

Directive on batteries and accumulators and waste batteries and accumulators

The Directive aims to avoid the final disposal of batteries and accumulators by enhancing their collection and recycling. The Directive also contains restrictions on the substances used in batteries and accumulators.

REACH

Registration, Evaluation, Authorization and Restriction of chemicals

European Community Regulation on chemicals and their safe use. It deals with the Registration, Evaluation, Authorisation and Restriction of chemical substances.