

Sustainability Network in the Mexican Automotive Supply Chain



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Editor:

Arqum, Gesellschaft für Arbeitssicherheits-,
Qualitäts- und Umweltmanagement mbH
Leonrodstraße 54, D-80636 Munich

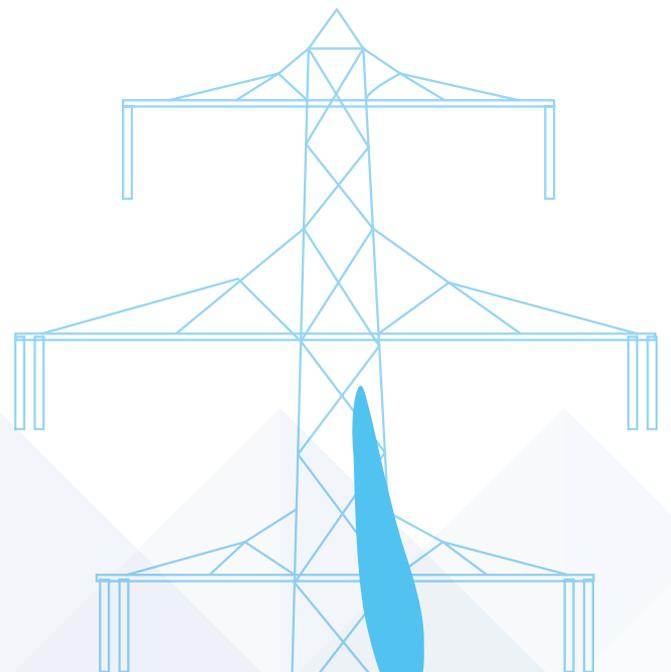
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Preface



Continental AG

Suppliers as Partners in Environmental Protection

One important factor for the implementation of the environmental strategy 2020 is the sustainability of the supply chain. Continental aims to raise awareness of environmental and energy management among its suppliers, particularly through improved networking and closer collaboration. This was Continental's aim when, for example, it launched a development partnership in Mexico, where we have more than 120 local suppliers of electronic and mechanical components and providers of surface finishing and pre-assembly services. Selected suppliers in the Mexican states of Jalisco and Guanajuato are now being given training in the areas of environmental and energy management over a two-year period. Although many environmental measures have already been implemented successfully as a result of this collaboration in the past few years, the systematic networking and collaboration is still in its early stages and is to be developed on the basis of specific projects.

Sponsored project ensures transfer of expertise

In this project, we want to promote environmentally friendly and resource-efficient business processes at our suppliers and thus make a contribution to sustainable economic growth in Mexico that goes beyond just a business relationship. For this reason, the project is supported by KfW-DEG, a development project company belonging to the state-owned KfW banking group, as part of its "develoPPP.de" support program. The resulting transfer of expertise not only benefits Continental, but can also be used by the suppliers to improve their own performance in environmental and energy management - and thus also their operating cost

structures, productivity, employee retention, and competitiveness. In six to eight full-day seminars, the suppliers' energy and environmental managers are given practical training in basic knowledge, proven methods, and technological and organizational solutions for more efficient operational use of resources and energy. In addition, possibilities for improving the collaboration with Continental in the field of environmental and energy management are also developed. The topics and proposed measures developed together in the seminars are then implemented at the respective production sites in three-day consulting modules for each supplier.

Findings to be applied internationally

In addition to the project's development policy plans, which are particularly important to our project partners, we also aim to apply effective solutions and best practices to other company locations and other regions as part of our corporation-wide environmental and climate protection strategy. In this way, we want to improve our joint environmental performance and operational efficiency in the Continental Corporation while also making an effective contribution to reducing the environmental impact.



*Thomas Sewald,
Head of Corporate Environment*

The Network

One important factor for the implementation of Continental's environmental strategy 2020 "creating sustainable solutions" is improving the sustainability performance of its global supply chain. Continental therefore entered into a collaborative partnership with a group of suppliers in Mexico. Together with Arqum GmbH, an international consultancy for sustainability, the project "Sustainability Network in the Mexican Supply Chain" was launched in 2016.

The key idea of this network is to jointly identify and tackle challenges for practically implementing environmental protection and energy efficiency on the basis of integrated approach to knowledge and best-practice sharing, onsite consultancy and tailor-made training.

Going beyond current practice of customer-supplier cooperation, the network hence not only provides a communication forum but also allows concrete solutions to be jointly discussed, identified and operationalized and for them to be implemented into their operations. For this reason, the project is supported by DEG, the German Investment and Development Corporation, member of the state-owned KfW Banking Group, as part of its "develoPPP.de" support program.

"Closer networking and a more intensive exchange of experiences between our suppliers in Mexico are aimed at improving the environmental performance of all project partners, including Continental itself. In the end, it is primarily about making a joint contribution to sustainable development."

Jim Egner, Environmental Manager for NAFTA

The Objectives

The overall aim of the network is to foster sustainability in the Mexican automotive industry through improved environmental and energy performance. Following aims are therefore targeted:

- ▶ Exchanging of experiences, know-how and best-practices
- ▶ Developing capacities for sustainability and environmental management
- ▶ Implementing concrete improvement actions
- ▶ Facilitation of continuous improvement processes
- ▶ Establishing foundations for systematic environmental and energy management
- ▶ Demonstrating the benefits of investments into green technology and solutions

The results help all participating companies to not only improve their environmental and energy performance - but also reduce their operating costs, while at the same time increasing productivity, employee retention, and competitiveness.



The Process

Going beyond current practices of collaboration between suppliers and customers, the Network follows an integrated approach. It consists of three working modules which are implemented in parallel during a year: collaborative workshops, onsite consultancy and tailor-made training.

In a series of 6 full-day professionally moderated workshops, the energy and environmental managers of the participating supplier companies and Continental sites exchange experiences and know-how on proven methods, technological and organizational solutions for more efficient operational use of resources and energy. Besides best-practices presented by the managers themselves, experts contribute presentations on the related topics. The topics are selected jointly by the suppliers and Continental and include:

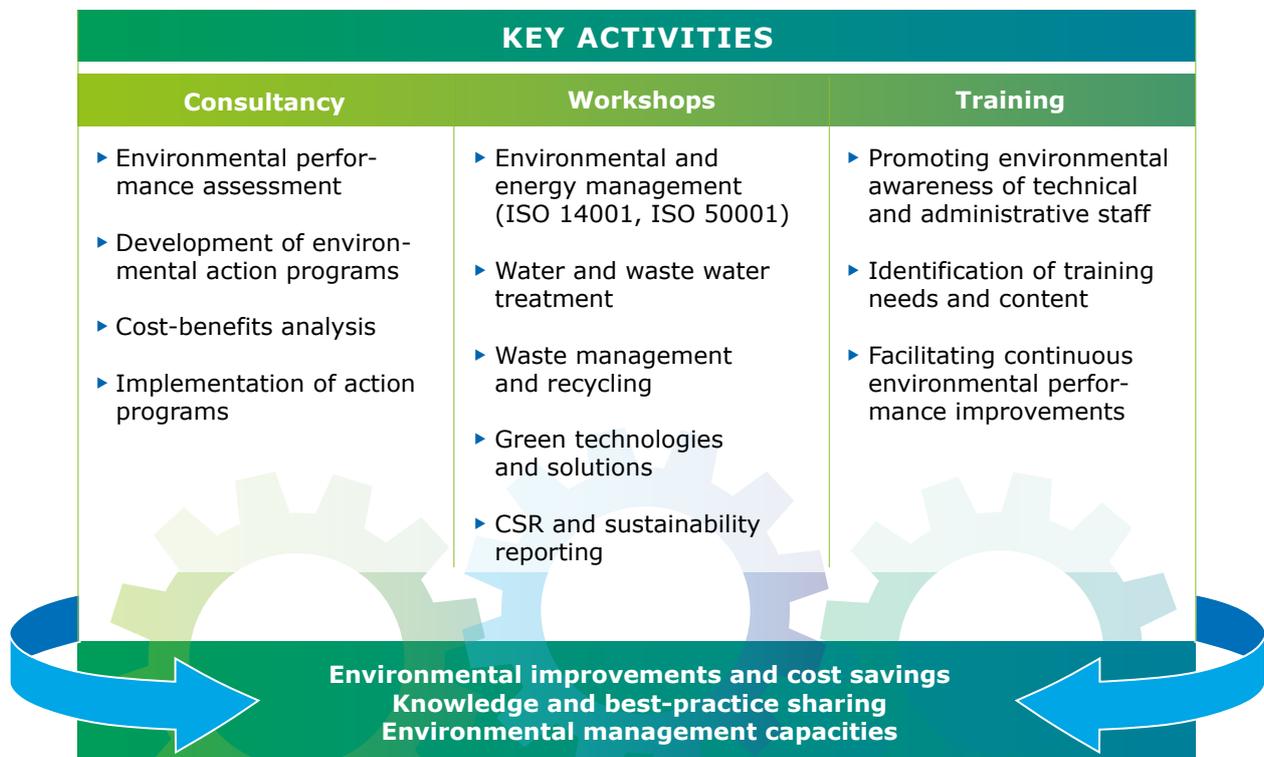
- ▶ Environmental management and the transition to ISO 14001:2015, energy management according to ISO 50001, lighting, staff motivation, waste water treatment and water management, data collection and data analysis

- ▶ Operation and reduction of hazardous substances, calculation of economic viability, CO₂ emissions, hazardous waste and waste reduction
- ▶ PV and ventilation

In addition, possibilities for improving the collaboration with Continental in the field of environmental and energy management are also developed.

Concurrently, an individual consultancy is conducted at each participating company. The consultancy module aims at developing and implementing concrete and measurable action programs for improving energy efficiency and environmental management. Therefore, the topics presented and discussed in the workshops are operationalized in the context of each individual company in line with a systematic procedure.

As a third pillar of the project, tailor-made training will be conducted in the participating companies in order to further raise environmental awareness and instruct experts of the respective company on individual chosen topics.



The Network partners



DEG

More than finance

For 55 years DEG – Deutsche Investitions- und Entwicklungsgesellschaft has been a reliable partner to private-sector enterprises operating in developing and emerging-market countries. We provide our customers with tailor-made solutions, including financing, promotional programmes and advice tailored to individual needs.

People, companies and countries benefit from DEG's work. We ensure our customers can maximize opportunities, open up new markets and compete successfully. In doing so, they create qualified jobs and income and contribute to economic growth and local added value. Entrepreneurial initiative is thus a key driver of development.

Tailor-made solutions for our customers

Our customers are based in developing and emerging-market countries, Germany and other industrialized nations. We develop solutions that go beyond supplying capital through maintaining dialogue with them. We advise and support our customers at every stage and remain a reliable partner even in difficult times.

Besides direct financing for companies and project financing for private infrastructure projects, we provide long-term financing to banks and funds that supply capital to local companies. That enables specifically small and medium-sized enterprises in developing countries to implement their business ideas and to invest.

International experience and promotional programmes

Customers can rely on our expertise and benefit from our market knowledge, our 14 locations worldwide and our international network. We also use this network to involve other financiers and arrange larger volumes for our customers, if required. Our "Business Support Services" and range of promotional programmes also contribute to lasting entrepreneurial success. For example, companies aiming to implement a project with development effects such as a pilot project or an environmental or qualifying measure can be co-financed by the BMZ's develoPPP.de programme.

Four times a year a develoPPP.de ideas competition is held for companies to submit their proposals. A total of up to EUR 200,000 can be provided towards each project. These development partnerships with the private sector may last up to a maximum of three years and cover a wide variety of areas and topics.

With a portfolio of around EUR 8.6 billion in over 80 countries DEG is one of the world's largest private-sector development financiers. Mexico is one of its priority countries. DEG set up its own office there in 2003. Around EUR 128 million of new commitments were destined for the Central American country in 2016 alone.

More information: www.deginvest.de



Continental AG

Our goals are set

Our environmental strategy covers the entire value chain in production as well as the lifecycles of our products. At all stages of the value chain, we strive to optimize our use of raw materials and ensure that our business activities are as efficient as possible. We have set ourselves ambitious targets here.

By 2020, we aim to reduce CO₂ emissions, energy and water consumption, and the quantity of waste in relation to the business volume by 20 percent at all Continental plants as compared to the base year 2013. In addition, we aim to improve the waste recycling rate by two percent per year and ensure that our strategic suppliers are certified in accordance with the environmental management standard ISO 14001.

Divisions:
Automotive Group; Tires; ContiTech

Locations: Juárez, Cuautla, Guadalajara, Las Colinas, Mexico City, Montemorelos, Monterrey, Nogales, Puebla, San Luis Potosí, Silao

Employees: approx.: 20,000

Participating Continental plants in Mexico



- ▶ **Continental AG Carretera Silao Plant**
Paseo de los Industriales, Oriente 700, Carretera Silao Irapuato Km. 5,3 36270 Silao Mexico
Phone: +52 472 722 77 00



- ▶ **Continental AG Guadalajara Tijera Plant**
Camino a la Tijera 3
45640 Tlajomulco de Zúñiga Jalisco, Guadalajara Mexico
Phone: +52 333818 2000



- ▶ **Continental AG Guadalajara Periférico Plant**
Anillo Periférico Sur 7999-D
45601 Santa María Tequepexpan, San Pedro Tlaquepaque, Jalisco Mexico
Phone: +5233 3283 1100



- ▶ **Continental AG Cuautla Plant**
Avenida Ignacio Allende 20
62743 Ayala Morelos-Cuautla Mexico
Phone: +52 735 354 8300



- ▶ **Continental AG Juárez Blieriot Plant**
Luis Blieriot 6720, Parque Industrial Panamericano, 32695 Ciudad-Juárez Mexico
Phone: +52 656629 8200

Arqum

Arqum stands for work safety, quality and environmental management.

We advise companies, municipalities and rural districts, as well as government agencies in Germany and abroad on their way to a sustainable economy. To this end, we develop practical management concepts and innovative solutions in the areas of environmental and climate protection, sustainability, resource and energy efficiency, work safety, quality, and international cooperation.

We provide support to our customers based on trust and collaboration with great personal commitment, professional world-class services and a tailor-made project management that is oriented towards what is feasible. With our enthusiasm for sustainability issues, and a comprehensive consulting track record in almost all sectors and industries, we have committed ourselves to the lasting improvement of the competitiveness of our customers. The starting points for this are increased efficiency and productivity on the basis of economically attractive, as well as technically and organizationally feasible measures. In this way, we create sustainable added value for our customers. We work in the following areas:

- ▶ EHSQ advisory services for private and public clients (e.g. ISO 14001, ISO 9001, OHSAS 18001)
- ▶ Energy auditing and management (e.g. DIN EN 16247, ISO 50001)
- ▶ Sustainability management and reporting (e.g. ISO 26000, GRI, DNK)
- ▶ Carbon management and climate mitigation
- ▶ Training and capacity development
- ▶ Inter-sectoral consulting expertise (> 3,000 private and public clients)
- ▶ International development cooperation (e.g. China, India, Brazil, South Africa, Mexico)

We develop solutions tailored to the individual needs of our customers that allow their staff to fulfil their daily tasks easier and better. In doing so, people's individual experience and motivation are very important aspects for us – because even the best strategies are only effective when they are understood and actively supported by the staff.

Our work therefore aims to develop in-house expertise for a constant and independent continuation of our consultation results. But even after a job has been completed, we can monitor our customers in the implementation of the developed measures and the selection of suitable implementation partners. We thereby access our extensive network of companies and experts from a wide range of areas - from environmental technology to project financing.

Contact:
 Arqum GmbH
 Leonrodstraße 54
 80636 Munich

Phone: +49 89 1210994-0
 E-mail: arqum@arqum.de
 Website: www.arqum.de



Jens Haubensak, Managing Director



Philipp Pofert, Project Manager



Thilo Baar, Project Manager

CCL Design Mexico
 Carretera Base Área No. 5850 Km
 Módulo 5
 Primer Piso Zapopan
 Jalisco CP45136

Contact Person: Claudia Montaña Espinoza
 Quality Manager
 Phone: +52 (1)33 5000 8000
 E-mail: CMontano@cclind.com
 Website: www.ccldesign.mx
 Founding year: 1979
 Employees on site: 265
 Sector: printing industry



Production equipment Sysco

Description

CCL Design was founded in 1979 as a Donprint Product Identification in East Kilbride, Scotland. CCL Design Electronics has evolved from a labelling solutions business for the Scottish electronics industry to a global business that supports many of the global brand owners in the IT and telecommunications markets in the design and manufacture of highly differentiated products and solutions to meet the rapidly evolving needs of consumers around the world.

„Important for us was to exchange ideas with other companies and to learn from them.“
 Claudia Montaña

Our motivation to participate in this initiative

Our motivation to participate in this initiative was to exchange experiences with other companies as well as to learn from them. It also helps us to understand what our current position is and where we need to focus on in future.

As participants in this project we also want to know the needs and interests of our clients so that we can pay more attention to their needs in our daily processes.



Sagrario Contreras Rodríguez and Claudia Montaña Espinoza

Environmental Program

Description of the measure	Investment	Environmental saving			Economical savings per year	Status
		Type	Amount	Unit		
Reduction of chemical substances consumption (T39) by adding a control for chemical usage at shop floor (monitored daily by the Environmental Team)	–	Chemicals	351	Liters	10,188 MXN	Implemented
Oil-attached cloth (used to remove redundant chemicals during the production process) is cleaned (by a certified third party company) and thereafter reused	2,000 MXN	Hazardous waste	1,733	kg	300,000 MXN	Implemented
Adapting production patterns in order to reuse ink for a full product family	–	Chemicals	2% per job	kg	Relative - Depends on the orders produced in the year	Implemented
Reduction of ink-consumption (and thus reduction of hazardous waste) through the usage of photometric analysis to avoid losses due to matching	–	Chemicals	70% per job	kg	Relative - Depends on the orders produced in the year	Implemented
		Hazardous waste	0.25% per job	kg		
Awareness creation campaigns for efficient electricity and water usage as well as separation and reduction of hazardous waste were conducted	–	Electricity				Implemented
		Freshwater				
		Hazardous waste				
Introduction of more environmentally friendly chemicals		By thoroughly checking for alternatives some chemicals could be substituted by more environmentally friendly ones, while at the same time saving costs. Nevertheless the environmental saving cannot be quantified.				

EJOTATF Fasteners de México y Compañía



EJOTATF Fasteners de México y Compañía, S. en C.
 Avenida del Siglo 180
 Parque Industrial Millenium
 San Luis Potosí
 SLP – CP 78395

Contact Person: Yolanda Cano
 EHS Coordinator
 Phone: +52 444 870 82 45
 E-mail: ycano@ejot-atf.com
 Website: www.ejot-atf.com
 Founding year: 2007
 Employees on site: 130
 Sector: fasteners industry
 (cold-forming fasteners)



Roll threading machine

Description

EJOTATF Fasteners de México is a Joint Venture between two important companies in the industry of fastening elements:
 – EJOT GmbH & Co. KG, Germany
 – ATF Inc., USA

In our plant in San Luis Potosí we produce cold-formed fasteners for various customers in the automotive industry, the electronics industry and the industry of household appliances.

Just as our parent companies we are aware of our responsibility to deliver products of the highest quality to satisfy and surpass the expectations of our customers.

Our motivation to participate in this initiative

The EJOTATF commitment with the environment is reflected in the continuous search for improvement on its processes that directly have a positive impact on the environment.

It is important for us to find that improvement by sharing experiences and ideas with other companies.

We are always invited by our clients to participate in programs that help us understand and to apply those experiences. We will always be there!

Environmental Program

Description of the measure	Investment	Environmental saving			Economic savings per year	Status
		Type	Amount	Unit		
Oil regeneration	Confidential	Consumption	1,200	Liters	– 46% in consumption	Implemented
Energy saving	Confidential	Electricity	198,810	kWh	– 90t CO ₂ Emissions	In progress

„Due to onsite meetings we initiated a structured project of environmental improvement.“

Yolanda Cano



Cristóbal Vázquez, Yolanda Cano, Jesús Vázquez

Interplexico Manufacturing S.A de C.V
 Parque Industrial San Angel
 Av. Dr. Angel Leano No. 401-5
 45134 Zapopan
 Jalisco

Contact Person: Marcelo Cortés
 Phone: +52 33 3000 6000
 E-mail: Marcelo.Cortes@mx.interplex.com
 Website: www.interplex.com/locations/mexico
 Founding year: 1999
 Employees on site: 324
 Sector: metal stamping, assembly services,
 insert molded and injection molded
 products



Production area

Description

Founded in 1999, Interplex Mexico is a global supplier of precision metal stamping, assembly services, insert molded and injection molded products. Located in the Parque Industrial San Angel, in Zapopan, an adjacent suburb of Guadalajara, the company specializes in tight tolerance, light-gauge stampings and over-molded products produced in mid to high volumes.

Our motivation to participate in this initiative

Interplex Mexico supplies an array of products that support the automotive, medical, communications and electronics industries. Interplex Mexico was one of the first companies to achieve ISO/TS 16949 certification - the international standard established to improve automotive product quality and consistency.



Mario Sánchez, Martha Rodríguez,
 Ricardo Salcedo, Marcelo Cortés

Environmental Program

Description of the measure	Investment	Environmental saving			Economical savings per year	Status
		Type	Amount	Unit		
Change of normal urinal for ecologic urinal	4,690 MXN	Freshwater	656,000	Liters	19,680 MXN	Implemented
Install timers on the presses for auto-off of the motors	15,130 MXN	Electricity	170,000	kWh	298,272 MXN	In process
Increase temperature of IT-room from 16 to 21 degrees	–	Electricity	4,905	kWh	8,584 MXN	Implemented

JFC Packaging de México



JFC Packaging de México, S. de R.L.
Camino Las Lomas 1695
Col Los Robles
Zapopan
Jalisco, CP 45203

Contact Person: Jorge Cázares
General Manager
Phone: +52 3311990174
E-mail: jorgecazares@jfcpackaging.com
Website: www.jfcpackaging.com
Founding year: 2007
Employees on site: 25
Sector: plastic and packaging conversion



Production equipment

Description

JFC Packaging was founded in 2007 to produce specialty packaging products and plastic materials transformation for the automotive and assembly industry. We provide specialty packaging solutions and plastic parts production through the use of different processes such as heat sealing technology, laser cut, thermoforming and die cut. Our engineering capabilities are focused on the development and implementations of technical solutions that can meet customer needs in a short time. Our quality management system is certified under ISO9001:2008.

Our motivation to participate in this initiative

To improve our knowledge about sustainability and environmental management; to take advantage of the experiences of other companies and the support of government organizations.

It helps us to be closer to our customer from a different perspective than just the commercial point of view. With this we can build a stronger relationship as sustainable business partners.

"We could increase our knowledge through this project. Furthermore, it helped us to be closer to our customer in a different way. Usually, only the commercial perspective is important."

Jorge Cázares



Jorge Cázares, Alejandro Barrón,
Jorge Cázares Reyes

Environmental Program

Description of the measure	Investment	Environmental saving			Economical savings per year	Status
		Type	Amount	Unit		
Installation of photovoltaic power plant (6,24 kWp)	250,000 MXN	Electricity	10,866	kWh	39,710 MXN	Planned
		CO ₂	4,933	kg		
Change form fluorescent-lighting to LED in the production shop	570 MXN	Electricity	144	kWh	636 MXN	Implemented
Reduce the number of trash bins	-	Non-hazardous waste	5,200	Liters	1,352 MXN	Planned
Check for leakages at the compressor	665 MXN	Electricity	100	kWh	400 MXN	Implemented
Change form mercury-lighting to LED in the production shop	5,840 MXN	Electricity	370	kWh	1,480 MXN	Planned
Leasing a new truck to deliver products	51,840 MXN	Petrol	419	Liters	7,129 MXN	Implemented

MAGNEKON S.A. de C.V.
Ave. Rómulo Garza 290
66493, San Nicolás, N.L.

Contact Person: Juan M Chavez
Phone: +52 6566875530
E-mail: jmchavez@magnekon.com
Website: www.magnekon.com
Founding year: 1996
Employees on site: 300
Sector: production of magnet wire and varnishes



Production area

Description

We are the result of more than half a century of growth and achievement which reflect a long track record in the manufacture of magnet wire as well as enamels and varnishes. You can rest assured that we will be able to provide your company with the very best products and services.

This experience, combined with the state-of-the-art technology in our plants, plus the commitment to quality and service enable us to maintain a high level of product reliability and operational flexibility. These factors contribute to improved levels of quality and service for our customers.

Our motivation to participate in this initiative

We take responsibility for our decisions and our actions, ensuring that we reliably fulfill our commitments to our clients, personnel, financial institutions, suppliers, shareholders, community and the environment.



Green team and visitors

Environmental Program

Description of the measure	Investment	Environmental saving			Economical savings per year	Status
		Type	Amount	Unit		
Separation of the infirmary from the air conditioning, thereby reducing the hours that the room is cooled	24,000 MXN	Electricity	24,455	kWh	31,792 MXN	Implemented
Barrels are now sealed after use to protect from oxidation	0 MXN	Hazardous waste	48,000	kg	12,000,000 MXN	Implemented
Reuse of water of the cooling tower in the garden area	160,000 MXN	Freshwater	2,190	m ³	127,020 MXN	Implemented

Maquiladora Gráfica Mexicana



Maquiladora Gráfica Mexicana SA de CV
 Periférico Sur 6400-B
 Tlaquepaque Jalisco México
 CP 45601

Contact Person: Antonio Alba
 Quality & Environmental Manager
 Phone: +52 33 34782500 ext.722
 E-mail: aalba@mgmex.com.mx
 Website: www.mgmex.com.mx
 Founding year: 1995
 Employees on site: 370
 Sector: production of labels, printings,
 nameplates, gaskets and corrugated
 boxes



Offset-printing equipment

Description

MGM was founded in 1995 and is a Mexican industrial printer. It manufactures labels, manuals, decorative and corrugated boxes and gaskets for all markets. We have two manufacturing sites one in Tijuana and the other one in Guadajajara.

Our motivation to participate in this initiative

We want to learn from our customers and hope to find other ways to reach the same results with different approaches. Our goal is also to learn about new tools as well as new ways to save water, energy and to understand the need of being a contributor to save the planet.

Besides, it is a big help for us to learn from the experiences of others and how they approach matters. New and fresh ideas are always welcome to improve our company.

„Although continuity is a big challenge, we have the right tools, processes and motivated employees to reach the ISO 14001.“
 Antonio Alba



Antonio Alba and Vicente Becerra

Environmental Program

Description of the measure	Investment	Environmental saving			Economical savings per year	Status
		Type	Amount	Unit		
Introduction of LED in engineering offices	4,560 MXN	Electricity	1,048	kWh	2,552 MXN	Implemented
Introduction of LED in production area	39,900 MXN	Electricity	17,640	kWh	42,941 MXN	Planned
Introduction of new cleaning cloths	117,216 MXN	Hazardous waste	20,450	Kg	66,600 MXN	Implemented
Introduction of a 500kWp photovoltaic plant	10,277,282 MXN	Electricity CO ₂	763,141 346,466	kWh kg	1,858,336 MXN	Planned
Awareness campaign to reduce the amount of oil and solvent contaminated water.	–	Hazardous waste	–		–	Planned

SAG MECASA SA de C.V.
 Vía Dr. Gustavo Baz 4321
 Fracc. Industrial Tlaxcolpan
 Tlalnepantla, Edo.
 CP 54030

Contact Person: David Gómez Hernández
 Industrial Engineer
 Phone: +55 10839870
 E-mail: dhernandez@sag-mecasa.com
 Website: www.sag-mecasa.com
 Founding year: 1970
 Employees on site: 190
 Sector: production of automotive parts/
 metal products



Production equipment

Description

SAG was founded in 1970 and is an Austrian capital industry dedicated to the manufacture of automotive parts and metal products, mainly made of aluminum.

Our motivation to participate in this initiative

Our main motivation is to generate a cultural change regarding the environment through actions and projects that benefit the company, the municipality and society in general. Another motivation is to demonstrate that the company is responsible for the environment in which it develops and to preserve the ecological balance.

Besides, another benefit for us is an overall approach to measuring, sustaining and improving issues that help to protect the environment.

„After the project I want to improve my processes from day to day. I’m also focused on proposing and developing projects for my company, community and home in future. “
 David Gómez Hernández



Jesús Angel Sánchez Garibay,
 David Gómez Hernández,
 Gustavo Peña Solís

Environmental Program

Description of the measure	Investment	Environmental saving			Economical savings per year	Status
		Type	Amount	Unit		
Reuse of rag, (washing) minimizes the confinement of this residue	120,763 MXN	Hazardous waste	650 (monthly)	kg	31,061 MXN	Implemented
Change of compressor from 100 hp to 50 hp (compressor rent for one month, for testing) ROI: 11 MONTHS	367,946 MXN	Electricity	32,520 (monthly)	kWh	270,242 MXN	Planned
Change of lighting in production area (LED T8 TUBE BASE G13 36 W, COOL WHITE)	241,276 MXN	Electricity	In the process of analysis	kWh	In the process of analysis	Planned

Schunk Sintermetal



Schunk Sintermetal S.A de C.V
 Acueducto del Alto Lerma No. 6
 Zona Industrial Ocoyoacac
 Ocoyoacac
 C.P. 52740

Contact Person: Ricardo Enrique García Vásquez
 Head of EHS
 Phone: +52 728 2875014
 E-mail: ricardo.garcia@schunk.com.mx
 Website: www.schunk-sintermetals.com/en
 Founding year: 1966
 Employees on site: 141
 Sector: metal processing



Production Site

Description

Schunk Sintermetal, S.A de C.V. was founded in 1966. As a strategic, innovative partner, Schunk Sinter Metals boldly faces the challenges of the global automobile and automotive supplier industries. With locations equipped with state-of-the-art technology, we are specialists for *Axial pressing technology* and *Metal-Injection Molding (MIM)*.

At our plants in Heuchelheim and Thale (Germany) as well as Ocoyoacac, Toluca (Mexico), we manufacture high-precision parts which deliver both speed and safety to the streets of the world. There is hardly an automobile on the road without Schunk sintered parts – many millions of vehicles have „Schunk inside“.

Sintered structural parts and bearings as well as metal-injection molding parts made by Schunk stand for safety, reliability and confidence. You can depend on our parts, for we live by the zero-defect philosophy.

Our motivation to participate in this initiative

We want to exchange experiences with other companies in order to create new ideas. We want to keep up with the high standards that we set ourselves in our quality policy thus new ideas are always welcome. Therefore, our commitment is to protect the environment, to make safe working conditions, to eliminate waste and to support the professional development of our employees.



Ricardo García, Damian Palacios,
 Jesús González

Environmental Program

Description of the measure	Investment	Environmental saving			Economic savings per year	Status
		Type	Amount	Unit		
Installation of suction in the cleaning room	Confidential	Safety	–	–	–	Planned
Awareness creation and motivation of employees e.g. setup of KPI boards in the production area	–	Awareness	–	–	–	Implemented
Installation of separation areas for the different waste fractions e.g. collection and separation of metal dust	10,000 MXN	Hazardous waste	16,206	kg	92,700 MXN	Implemented
Change atmosphere in small furnaces (Plan to shut down Ammoniac)	Confidential	Chemicals	5,881	kg	Confidential	Planned
Use treated water to water the garden	0 MXN	Freshwater		savings not quantified		Implemented
Installation of a photovoltaic plant	At planning stage, Investment and savings not known yet					Planned

Sunningdale Technolgies



Sunningdale Technolgies S.A. DE C.V.
Camino al Iteso No. 8900-2C,
Parque Industrial Tecnológico Jalisco
Tlaquepaque Jalisco Mexico
C.P. 45609

Contact Person: Noemi Gil
Coordinador SSYMA
Phone: +33 31344090
E-mail: Noemi.Gil@sdaletech.com
Website: www.sdaletech.com
Founding year: 2003
Employees on site: 354
Sector: automotive, consumer and IT



Sunningdale Technologies

Description

The foundation of Sunningdale Mexico was in 2003 and is strategically located in Guadalajara, serving many multi-national corporations of American and European origin in the main business segment namely Automotive. Furthermore, the company has certifications for ISO TS 16949 and ISO 14001.

Our motivation to participate in this initiative

With this initiative we have the possibility to exchange experiences and ideas with other companies which are active in the environmental sector. Besides, it makes no difference whether the introduction or further development of the existing environmental system is involved.

Exchanging experiences with others is pretty helpful and important for us. Due to that we have already had positive results in waste reduction and employee awareness. We can learn from what others have experienced.



Implementing Team

Environmental Program

Description of the measure	Investment	Environmental saving			Economical savings per year	Status
		Type	Amount	Unit		
Utilization of bacteria to „eat“ contaminated paints, thereby reducing paints, slug, solvents and contaminated containers	46,555 MXN	Hazardous waste	21,598	kg	104,104 MXN	Implemented
Detachment of the cooling tower from the osmosis thereby reducing the amount of fresh water as of 2017	48,500 MXN	Freshwater	1,531	m ³	95,678 MXN	Planned
Change of lights from T8 to LED	133,630 MXN	Electricity	59,401	kWh	118,803 MXN	Implemented

Trend Technologies



Trend Technologies, LLC
 Carr. Guadalajara-Morelia 1720, Col. Santa Isabel
 45645 Jal. C. P.
 MEXICO

Contact Person: Hugo Zárate
 Phone: +52 33 3880 8008
 E-mail: HZarate@trendtechnologies.com
 Website: www.trendtechnologies.com
 Founding year: 2000
 Employees on site: 700
 Sector: automotive, medical & life sciences,
 industrial, enterprise, digital home
 and office



Production site

Description

Trend Technologies is a vertically integrated mechanical solutions provider specializing in the areas of metal stamping, metal fabrication and injection molding. With 10 facilities in 9 countries, we are your local source globally for all of your manufacturing needs.

Trend's diverse customer base includes some of the most recognized Fortune 500 companies in the world. These customers rely on Trend to provide them with cost-effective solutions while delivering the highest levels of quality and service.

Our motivation to participate in this initiative

We are aware of the importance of keeping a balance between environment, society and economy in our factory to achieve sustainable development.



Ricardo Ruiz, Antonio Arellano,
 Hugo Zárate, Eduardo Alvarez,
 Jesús Casanova

Environmental Program

Description of the measure	Investment	Environmental saving			Economical savings per year	Status
		Type	Amount	Unit		
Exchange of lights in production lines to LED	90,000 MXN	Electricity	96,000	kWh	163,200 MXN	Implemented
Use of a degreaser (Multipoint) to reuse contaminated cloths a second time	72,000 MXN	Hazardous waste	6,696	kg	155,682 MXN	Implemented
Recycling of plastics and carton in the production area	0 MXN	Non-hazardous waste	27,450	kg	NA	Implemented

The Results

Data development

Between 2015 and 2016 the amount of all analyzed environmental impacts increased as Table 1 shows. The increase obviously varies between the different aspects. The amount of non-hazardous waste showed the biggest increase (35.13%) whereas



the amount of used chemicals “only” climbed by 1,89%. This development can be explained by an increased production, as also the increase of over-all hours worked (16.62%) shows.

	2015	2016	
Total energy consumption	79,988,923 kWh	83,033,738 kWh	+ 3.81%
Total CO ₂ emissions	33,985,383 kg	35,079,994 kg	+ 3.22%
Hazardous waste	518,392 kg	529,412 kg	+ 2.13%
Non-hazardous waste	1,074,542 kg	1,452,049 kg	+ 35.13%
Freshwater	58,189 m ³	70,671 m ³	+ 21.45%
Wastewater	44,038 m ³	55,508 m ³	+ 26.05%
Chemicals	3,221,314 kg	3,282,146 kg	+ 1.89%
Overall hours worked	5,518,592 h	6,435,698 h	+ 16.62%

Table 1

AVERAGE ROI OF MEASURES



Bottom up monitoring

An interpretation of those numbers, also the analysis of performance indicators calculated by those numbers, is misleading, because a lot of different factors influence the development of the consumption pattern. Thus for calculating the results of the work of this network, the Bottom up method was applied. In contrast to the “top down” analysis the bottom up analysis does not depend on performance indicators but puts the sum of savings of a specific resource into relation with its absolute consumption.

The efficiency gain according to the Bottom up method (EG_{Bottom up}) is basically a comparison of the consumption of a specific year to the consumption of a fictional year in which no efficiency measures would have been conducted. As the consumption of that fictional year (Consumption₂₀₁₆+Sum of savings) is higher than the actual consumption (Consumption₂₀₁₆) the efficiency gain will be positive as soon as saving measures have been applied.

$$EG_{Bottom\ up} = \frac{(Consumption_{2016} + Sum\ of\ savings)}{Consumption_{2016}} - 1$$

With this approach influencing factors - apart from efficiency improvement measures such as changes in productivity - are negligible. Thus the Bottom up method is used to evaluate the environmental performance of the network.

In total forty-five representative measures were analyzed for the overview of the project results. Of these measures thirty-five were quantifiable. Thus the results only contain the fraction of measures which could be put into numbers. Out of the forty-five measures twenty-nine were already implemented during the project period. Sixteen

measures were still at the planning stage on compilation of this brochure. Nevertheless they were considered as implemented measures.

To finance those measures 13,814,788 MXN (664,276 EUR) were invested. The measures lead to a yearly saving of 16,357,280 MXN (786,531 EUR) meaning that the average return on invest is 0.84 years. 62% of the measures had a return on invest below three years (see Figure 1).

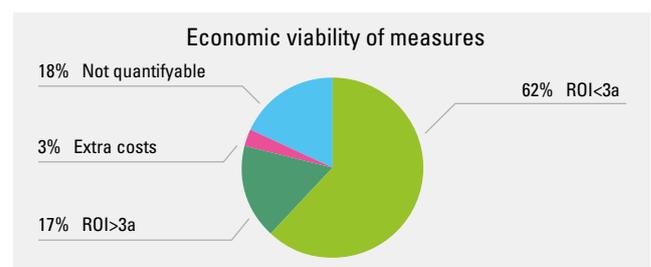


Figure 1

The type of improvement measures employed by the companies varies greatly, ranging from replacing technologies, utilizing different resources or optimizing processes. The biggest fraction of measures concerned electricity followed by hazardous waste (see Figure 2).

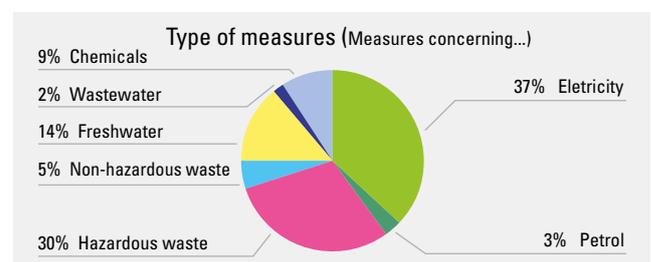


Figure 2

Result

Depending on the environmental field of dedication the saving potential varies between the environmental aspects and the different companies. Nevertheless all environmental aspects were tackled by the network and each participating company can prove their active involvement by a huge efficiency gain in one field or the other (see Figure 3).

In order not to discriminate any company by its size all efforts have been treated equally to calculate the network average - meaning that the networks efficiency gain based on the Bottom up method is the average of the company-specific efficiency gains.

34.43% 
REDUCTION OF HAZARDOUS WASTE


20.24%
FEWER CO₂ EMISSIONS

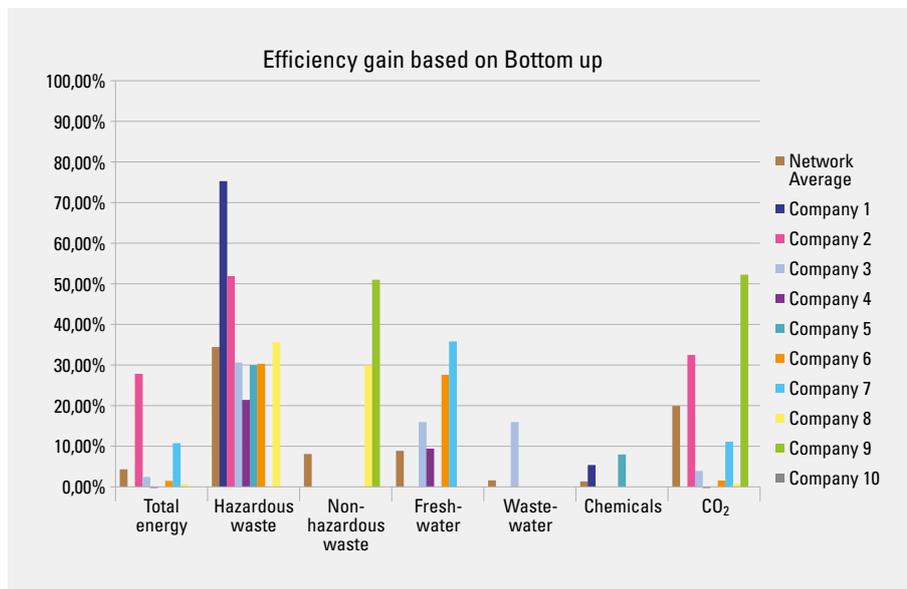
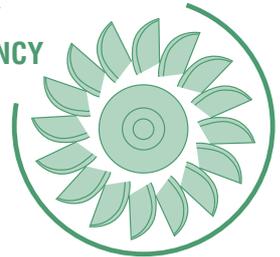


Figure 3

4.77%
ENERGY EFFICIENCY GAIN 

Over the project period the network achieved substantial savings as Table 2 shows. Almost one gigawatt hour of energy could be saved which stands for an efficiency gain of almost 5%. The freshwater consumption was reduced by almost 9%. The generation of hazardous waste was reduced by almost 35% and the CO₂ emissions were reduced by more than 20%.

Investing in energy and resource efficiency not only results in ecological savings and economic benefits but also reduces emissions of greenhouse gases such as CO₂. Through the efforts of the network, 775,276 kg of CO₂ emissions can be reduced.

Huge overall savings, low payback periods, and a large CO₂ reduction potential clearly demonstrate the benefits of intensive engagement in improving energy and resource efficiency.

	Savings bottom up	Average efficiency gain
Electricity	923,497 kWh	7.12%
Petrol	3,749 kWh	1.33%
Total energy	927,246 kWh	4.77%
Hazardous waste	178,883 kg	34.43%
Non-hazardous waste	32,650 kg	8.09%
Freshwater	4,581 m ³	8.88%
Wastewater	205 m ³	1.59%
Chemicals	6,232 kg	1.33%
CO ₂	775,276 kg	20.24%

Table 2