ABSTRACT OF ENVIRONMENTAL STATEMENT 2010

MEMC

TECHNOLOGY IS BUILT ON US

Novara Plant

Contents

The economic context of reference

the Chairman’s 2010 letter

The global situation is one that is marked by uncertainty

Today, the world’s economy, which was already in serious difficulty following the economic and financial crisis in 2009, appears to be even more vulnerable because of the inadequacy of the energy policies of countries that have the highest rates of growth.

The scarcity of fossil resources (which is made worse by the sudden rise in demand from emerging countries, by tensions in countries in the Middle East and, more recently, by the crisis that has struck several areas of North Africa) is made even more critical by the lack of real alternatives to oil and natural gas in the sector of clean and renewable energies. As for the nuclear option, the disastrous earthquake on 11 March 2011 in Japan revealed the dangers and fragility of an option that was already heavily contested in numerous areas in the international scientific community; in this respect, the Japanese economy is a good example of how, thanks to the intensive adoption of nuclear energy, it became progressively established, after the Second World War, as one of the most solid on the planet, but now appears to be weak and almost impotent before the extremely serious energy shortage that seems to be undermining its very foundations in a way that is difficult to put right.

At this delicate time in history, the international community (which has, hitherto, been unable to identify practicable, common and effective solutions to the problems of the high levels of air and soil pollution caused by the intensive use of fossil fuels, and to that of how to manage the radioactive waste that has built up in about fifty years of atomic energy production) must deal, as a priority, with what is the most serious problem to resolve, to guarantee prosperity for future generations, namely, identifying a truly eco-compatible global energy policy, that is, one that, in the short term, combines the needs for energy for industrial and civil use, with the need for long-term safety, health and liveability, which only a greater use of clean and renewable energy sources seems able to guarantee.

Photovoltaics

Although still held back by high investment costs (which are only partially compensated by the high economic incentives, which, for a certain time, were made available to companies operating in the sector by numerous national governments) solar photovoltaics has still made some headway. The continuous increase in production capacity, particularly in Asia and China, keep the global demand for raw materials (silicon), of intermediate (solar cells), and finished products (panels) below supply, although there are no signs of it dying down.

Thus, the prices of the whole supply chain of solar photovoltaics do not rise significantly, as would be useful to ensure an acceptable level of return on investments, and, with them, the self-support of the whole sector. This last condition is itself essential to ensure there are always new resources for scientific research in the field of clean energies, and to encourage a harmonious development of photovoltaics itself and of the other renewable energy sources, within a “virtuous circle” of connected events, which, however, has difficulty in getting started.

The role of MEMC

Given this context, which was already uncertain during the boom years of solar photovoltaics, and which is today made particularly difficult by recent environmental emergencies and by the worsening of the political situation in the Middle East and in North Africa, MEMC Electronic Materials has continued to invest, without slowing down, in the photovoltaics sector, in line with its strategy of enhancing the production capacity of polycrystalline silicon. At the same time, MEMC continues, with renewed commitment, in its research to develop production processes alternative to the current technology, which today is applied, with few variations, by almost all of the world's producers of silicon for photovoltaic applications.

For the environment, and in the environment

In the meantime, MEMC, who have been involved, for over fifty years, in the production of wafers for the manufacture of electronic devices (microprocessors, memories and numerous other types of integrated circuit), have been able to align their skills, their processes and, in the final analysis, their portfolio-products with the requirements of the semiconductor market, by becoming increasingly sensitive to the themes of reducing energy consumption: microprocessors redesigned to be increasingly less "energy-consuming"; new applications that satisfy the demands of the consumer, but at increasingly contained environmental costs (one example is the case of light emitting diodes, LEDs, which, also by using silicon as a passive substrate, will soon bring about the disappearance of the traditional, extremely energy costly, incandescent bulbs).

A company culture that supports the environment

he conviction that a style of management that is directed at sustainable growth is an indispensable condition in order to guarantee the company a long-term future, encourages the adoption, in MEMC, of technological and operating choices that continually reduce the environmental impact of production processes, by lowering specific energy consumption, reducing non-recyclable waste and emissions into the environment, and containing the consumption of limited resources, above all, groundwater.

Projects to develop new production technologies and, on a daily basis, the work of continually improving existing processes, by means of specific activities that assess any environmental impact, and that conserve energy and the most critical natural resources continue to help significantly in achieving MEMC's environmental objectives. This is all thanks also to the company's active participation in EU-funded territorial initiatives in research applied to defending the environment (Innovation Park for Sustainable Chemistry).

The key instruments that support MEMC's objectives in defending the environment are:

- the management system, which is applied in all operating sectors;
- the provision of information and training, and involvement of the whole of the company's workforce;
- the publicising of activities and results to potential stakeholders: the local community, clients and suppliers.

Introduction

MEMC’s Novara site has operated a UNI EN ISO 14001-certified Environmental Management System since 1999, and, since 2002, has been on the EMAS Register of European organizations that participate in the EMAS scheme (Regulation EC 761/2001) (registration number I-000123), with subsequent modifications and integrations introduced with the updating of Regulation EC 1221/2009.

In compliance with EMAS regulations, every year MEMC of Novara places information related to the company, the results obtained and its environmental improvement programs at the disposal of interested parties by means of an Environmental Declaration validated by an auditor. The Environmental Declaration is a communication tool that cements MEMC’s desire to operate with the greatest transparency with regards to their personnel, the local community and public bodies, not to mention surrounding companies and any companies operating within the site itself. The information contained in this document was updated on 31 December 2010.

General information

The MEMC Electronic Materials Inc. group

MEMC Electronic Materials is an international group producing ultra-pure silicon, operating in the field of microelectronics and, since 2004, solar photovoltaics. The head office of the multinational group can be found in St. Peters, Missouri (USA). There are a total of 12 productive sites throughout the world. These are situated in America, Asia and Europe and they cover the whole globe with their commercial net. Productively MEMC is represented in Europe by MEMC Electronic Materials S.p.A. with the sites at Merano and Novara. The last of these is the European head office and is also the object of this environmental statement.

Fig.1 - Sites throughout the world

● Manufacturing Facilities

● Sales and Support Offices
St.Peters, Missouri
Santa Chiara, California
Sherman, Texas
Parts, Francia
Novara, Italia
Singapore
Shanghai, Cina
Hsinchu, Taiwan
Seoul, Sud Korea
Tokyo, Giappone

● SunEdison
Toronto, Canada
Prescott, Arizona
Sacramento, California
San Clemente, California
San Francisco, California
Denver, Colorado
Beltsville, Maryland
Pensduken, New Jersey
Portland, Oregon
San Juan, Puerto Rico
St. Thomas, Virgin Islands
Chennai, India
Seoul, Sud Korea
Dubai, U.A.E.
Parigi, Francia
Lecce, Italia
Milano, Italia
Barcellona, Spagna
Madrid, Spagna

Novara site

MEMC Electronic Materials
S.p.A Novara site
Viale Gherzi 31, 28100 Novara
Around 2.5 km north east of the town centre
Internet site: www.memc.com
E-mail: info@memc.it

Total surface area:

Total surface area	79.385 m^2
Covered area	16.200 m^2
Area of the car park	10.800 m^2

Annual underscore of the society in 2007 were 276 million euro.

Number of employees: 712

NACE code:
20.13 - Production of other chemical products with an inorganic base

ISTAT(ATECOFIN) activity code:
20.13.09 - Production of other chemical products with an inorganic base

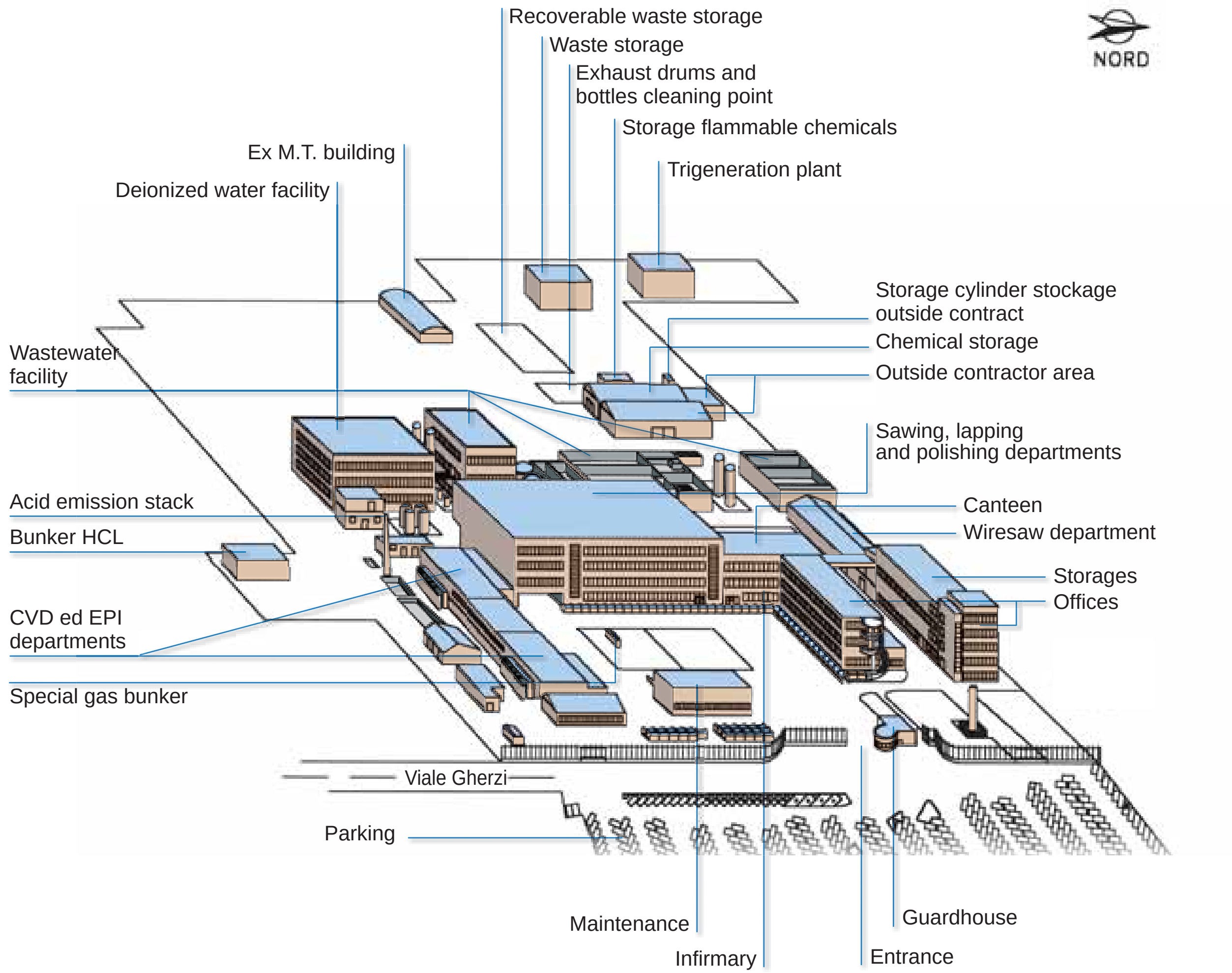
CERTIFICATES
According to international standards

QUALITY SYSTEM:
ISO 9002 in 1991
ISO 9001 in 1994
QS 9000 in 1999
ISO 9001:2000 in 2003
ISO TS16949 in 2003

ENVIRONMENTAL SYSTEM:
ISO 14001 IN 1999
EMAS in 2002

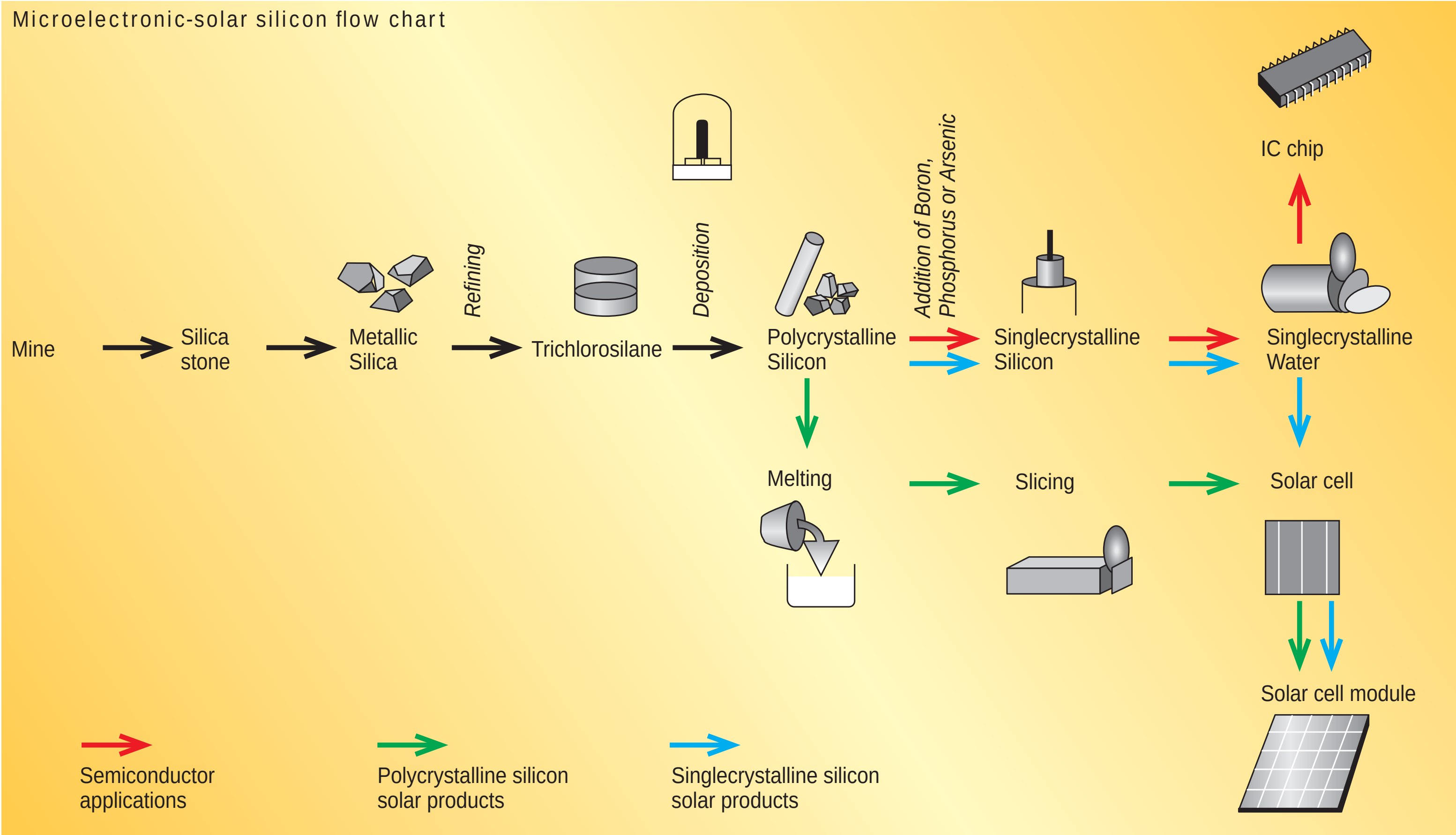
HEALTH AND SAFETY SYSTEM:
OHSAS 18001 in 2007

(As at 31/12/2010)



Silicon and its applications

Silicon is a chemical element that is a semi-conductor in its crystalline form; as such it finds application in the microelectronics industry, as a base on which to create integrated circuits (chips), that is to say those electric devices that, by processing and/ or storing data, are fundamental for the correct operation of all of the electronic equipment used in industry and our daily lives.
Crystalline silicon is also increasingly used in the fi eld of solar photovoltaics to produce photovoltaic cells capable of transforming solar energy into electric power. However, although silicon is the second most abundant element available on our planet after oxygen, in nature it is always bound with other elements: in quartz for example, in which it is bound with oxygen, or in silicate minerals in which it is bound with various elements (magnesium, aluminium, sodium and many others).Silicon can only be obtained by means of industrial processes as described in the flow charts here beside.



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A look at the history

A look at the history

The construction of the MEMC site was started in 1976. In the following years the site grew at Novara with the construction of new offices and productive departments. October 2001, the group E.ON Ag sold the ownership to a new major shareholder, an American investment company called Texas Pacific Group.

MEMC's commitment to environmental protection

Environmental protection activities have been an important commitment for MEMC for some time now and the company has completed various environmental improvement projects over the last two decades, as described here beside:

1990 elimination of ozone depleting substances

1993 aquifer monitoring and decontamination

1995 monitoring and decontamination of acquired areas with ground contaminated by past processes

1996 creation of own waste treatment plant and expansion of acid fumes abatement plant, completed in 2000

1998 reduction of specific energy and water consumption and reduction in the amount of waste produced, as well as curbing polluting emissions to the atmosphere and in surface water

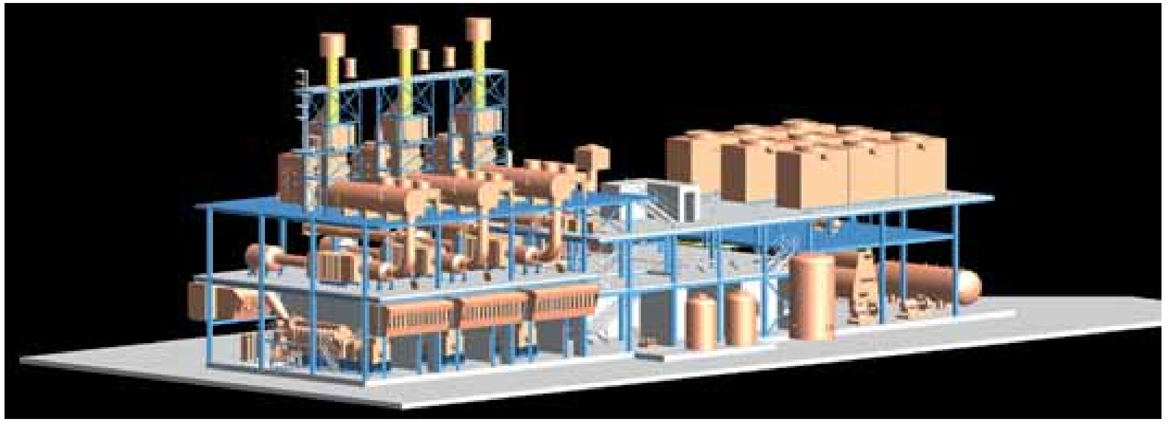
1999 awarded ISO 14001 certification for the Environmental Management System

2002 registration on the EMAS register;
TPG converts preferred stock to common stock, increasing its ownership in MEMC to 90%.

2004 MEMC Inc. acquires remaining 55 percent of Taisil Electronic Materials Corporation (TEM) from China Steel, Chiao Tung Bank and the China Development Industrial Bank.
The joint venture between these companies was formed in 1994.

2005 soundproofing of fan vents located on the south side of the plant;
TPG Wafer Holdings LLC, completes the sale(s) of 85,000,000 shares of common stock. TPG's beneficial owner ship of the company's common stock is reduced from 63% to approximately 25%.

2006 an external company specialised in the energy industry starts and completes the construction of a trigeneration plant on a piece of ground located behind the factory, providing almost all of the energy needed to meet the factory's energy requirements.



2007-2010

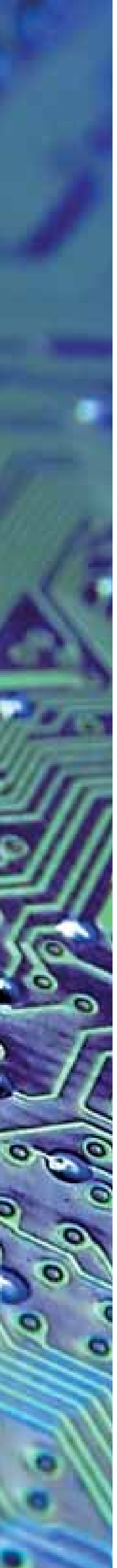
Since 2007, the trigeneration plant has been operating at full capacity, thanks to three natural gas-fuelled motors, which produce all of the factory's electricity requirement and approximately 2/3 of the steam and frigories used to produce cold water; as a result, energy efficiency has improved, and at the same time, carbon dioxide emissions into the atmosphere have decreased significantly. Since 2009, almost all of the steam (over 90%) has been supplied by the trigeneration plant.

In the last three years, greater attention has been paid to the macro areas that serve production, and their impact on energy consumption. In accordance with the environmental programs, the new cooling plants and new compressors have been installed, in order to reduce energy consumption by improving their performance.

When it comes to water consumption, a number of activities in the environmental programs of the last three years have identified, and made, process and system changes that reduce the use, or increase the recovery, of process water for activities secondary to production.

When it comes to waste management, the aim of implementing the planned Environmental Program actions was to reduce waste, where possible, and to maximise the percentage of recovered waste; see, for example, the almost complete recovery of mud after sewage treatment.

Last, but no less important, actions have been implemented to reduce the consumption of auxiliary materials. For example, in the completion phase, the action that allowed using diamond wire in the cutting department considerably reduced the use of the abrasive.



Novara trigeneration plant

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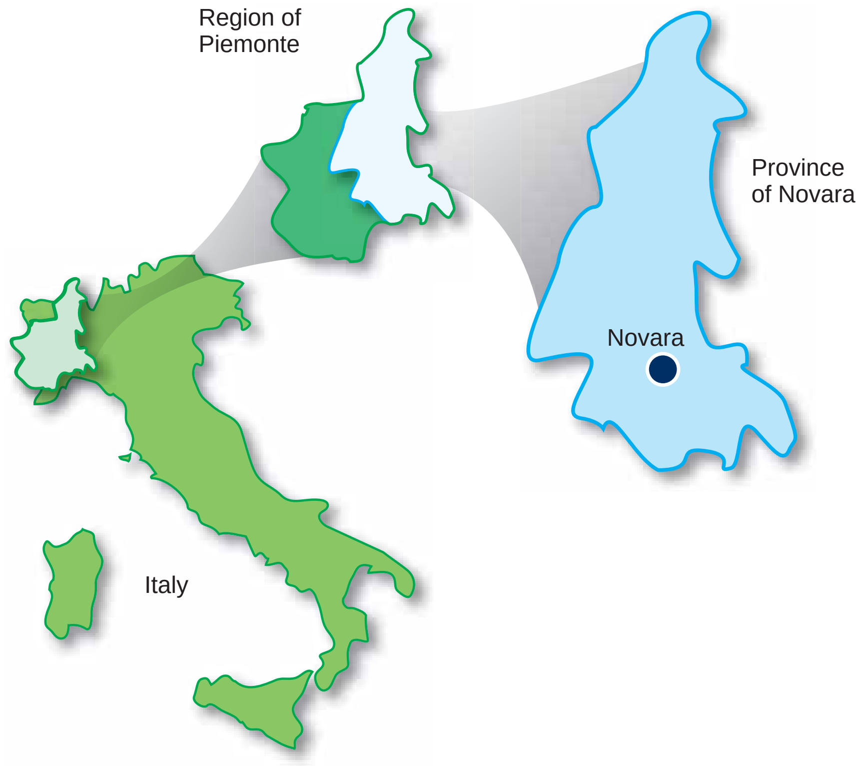
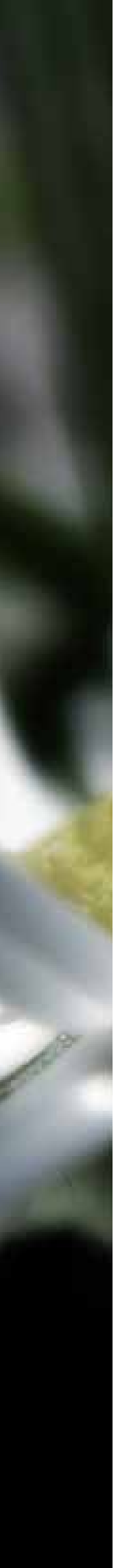
Geographical position and environmental context

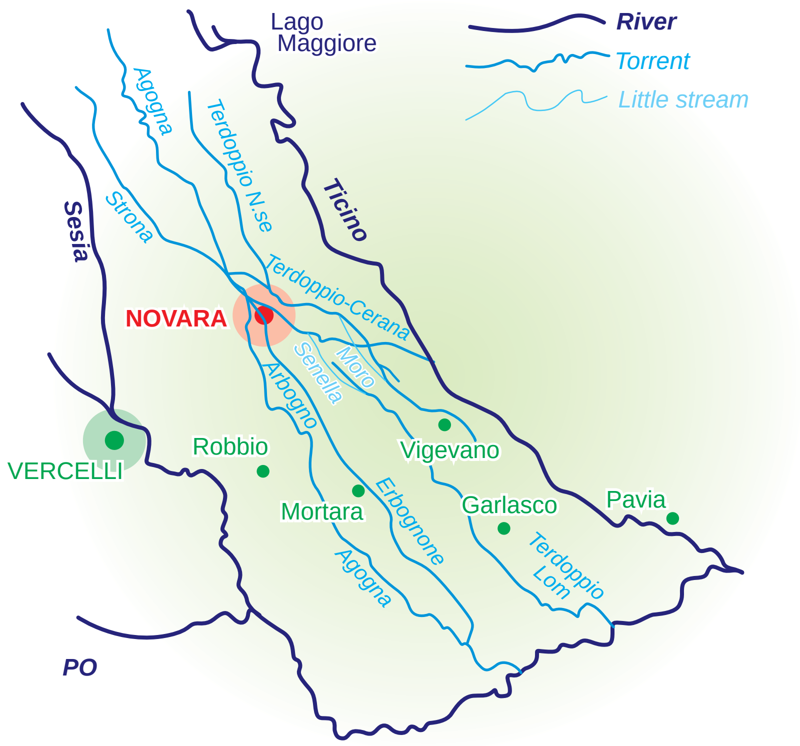
Novara can be found in the north east part of the region of Piemonte. Novara contains about 105.024 inhabitants at 31/12/2010. The site is situated in the zone of St.Agabio, which is characterized by a mixture of industrial activity and residential homes, according to the census it's the most populated with 12.877 inhabitants with a likelihood of rising.
The site is situated within a large chemical business park, where there are several companies, with a variety of productions, that were built on areas once occupied by the Montecatini factories.





Surface Water Environment

The land surrounding the town is rich in water resources, the largest of which are Lake Maggiore (the second largest lake in Italy, in terms of area) and Lake Orta, which are 40 and 50 km respectively to the north of the town.
To the east of Novara lies the Regional Park, which protects the Ticino River system, and to the west, the Agogna River; the town itself lies within the drainage basin of East Sesia.
This basin is made up of artificial canals, which were produced for irrigation purposes by Cavour, and of a number of streams, including the Terdoppio, which is of interest to the factory, as it passes close by and is the body of water that receives the sewage from the factory itself.



Environmental Policy

MEMC's Health, Safety and Environmental Policy consists of all of the objectives pursued by the company to protect the environment and the health and safety of their personnel and the population. The Policy is defined and signed by the managers of all of the company's operational areas, thereby highlighting their full support and involvement.

It was updated in 2006 in order to: include the new marketing area into which MEMC had entered (solar - photovoltaic) and underline the importance of the management of emergency situations, clarifying the company's commitment to the development and observance of the safety management system in greater detail (in view of the OHSAS18001 certification) and a new update document was issued in 2007 to add the signature of MEMC SpA's new human resources manager. During 2010, the need emerged to update the policy to include the signature of the head of the area of logistical warehouse management, and of the new supplies head. This change was officially approved during the management review in the early months of 2011.

ENVIRONMENTAL, HEALTH & SAFETY: MEMC SpA POLICY

MEMC

The policy of MEMC Electronic Materials SpA is to carry out the whole of our business with a view to achieving the continuous improvement of our performance in the areas of environmental protection, and prevention of and protection against significant accidents risks.

For the company, the pursuit of these objectives means being consistent with the following values:

- *WE ARE A LEADING COMPANY IN THE PRODUCTION OF SILICON FOR THE MICROELECTRONICS MARKET AND FOR SOLAR CELL APPLICATIONS. WE WANT TO MAINTAIN AND, INDEED, IMPROVE OUR STANDARDS OF QUALITY OF ENVIRONMENT AND SAFETY MANAGEMENT OVER TIME.*
- *WE HAVE QUALIFIED AND EXPERIENCED HUMAN RESOURCES WHO OPERATE IN AN ORGANISATION THAT IS SUPPORTED BY APPROPRIATE SYSTEMS AND PROCEDURES, WHERE ROLES AND RESPONSIBILITIES ARE DEFINED ACCORDING TO THE REGULATIONS CONCERNING ENVIRONMENTAL PROTECTION, HEALTH AND SAFETY AT WORK.*
- *WE CONSIDER EMERGENCY PREVENTION ACTIVITIES A PRIORITY, BUT WE ALSO GIVE GREAT IMPORTANCE TO PREDICTABLE EVENTS, SO THAT WE MAY BE READY TO MANAGE THEM IN THE MOST EFFECTIVE WAY POSSIBLE, IN COLLABORATION WITH THE APPROPRIATE AUTHORITIES, IN ORDER TO SAFEGUARD THE PHYSICAL WELLBEING OF PEOPLE AND THE EXTERNAL ENVIRONMENT.*
- *WITH A VIEW TO ACHIEVING CONTINUOUS IMPROVEMENT, WE SEEK TO DO MORE THAN SIMPLY RESPECT EXISTING LAWS; THEREFORE, WE HAVE AN ACTIVE MANAGEMENT SYSTEM TO FULFIL OUR OBJECTIVES OF ENVIRONMENTAL PROTECTION, OF HEALTH AND SAFETY AT WORK, THAT ENTAILS MAKING REGULAR AND SHARED ASSESSMENTS OF RISKS AND OF THEIR ENVIRONMENTAL IMPACT, AND CARRYING OUT IMPROVEMENT ACTIVITIES THAT ARE SCHEDULED AND CHECKED EVERY YEAR.*
- *WE ARE STRONGLY COMMITTED, ALSO FOR CLEAR ECONOMIC REASONS, TO USING NATURAL RESOURCES RESPONSIBLY, TO REDUCING CONSUMPTION OF THESE PROGRESSIVELY, TO KEEPING THE PRODUCTION OF WASTE TO A MINIMUM, AND TO PREVENTING EVERY FORM OF AIR, WATER AND SOIL POLLUTION.*
- *WE BELIEVE THAT THE INVOLVEMENT AND PROFESSIONAL GROWTH OF PEOPLE IS AN ESSENTIAL MEANS OF ACHIEVING SIGNIFICANT IMPROVEMENTS ALSO IN HEALTH AND SAFETY, AND ENVIRONMENTAL PROTECTION. FOR THIS REASON, EVERY YEAR, WE ORGANISE PUBLICITY AND SPECIFIC AND INCLUSIVE TRAINING PROGRAMS ON THESE MATTERS, ALSO INVOLVING ANY EXTERNAL PARTIES CONCERNED OR BOUND BY CONTRACTUAL CONDITIONS, WHERE THIS IS USEFUL AND POSSIBLE.*
- *WE ARE PART OF A COMMUNITY AND OF A SOCIAL AND ENVIRONMENTAL CONTEXT THAT WE WANT TO PRESERVE AND IMPROVE. THIS IS WHY WE ARE COMMITTED TO USING THE BEST TECHNOLOGIES AVAILABLE TO IMPROVE THE CURRENT SITUATION, AND TO SUPPORT A SUSTAINABLE MODEL OF DEVELOPMENT.*

WE EMPLOYEES ARE ALL COMMITTED TO PUTTING THESE VALUES INTO EFFECT AND TO MAKING THEM WORK

Mauro Pedrotti
Chairman, MEMC S.p.A.

Claudio Gattore
Manager, Logistics and Stores

Marco Sciamanna
Director, Operations Unit Novara

Claudio Pavolli
Director, Merano Factory

Fabrizio Ebani
Director, Innovation and Systems

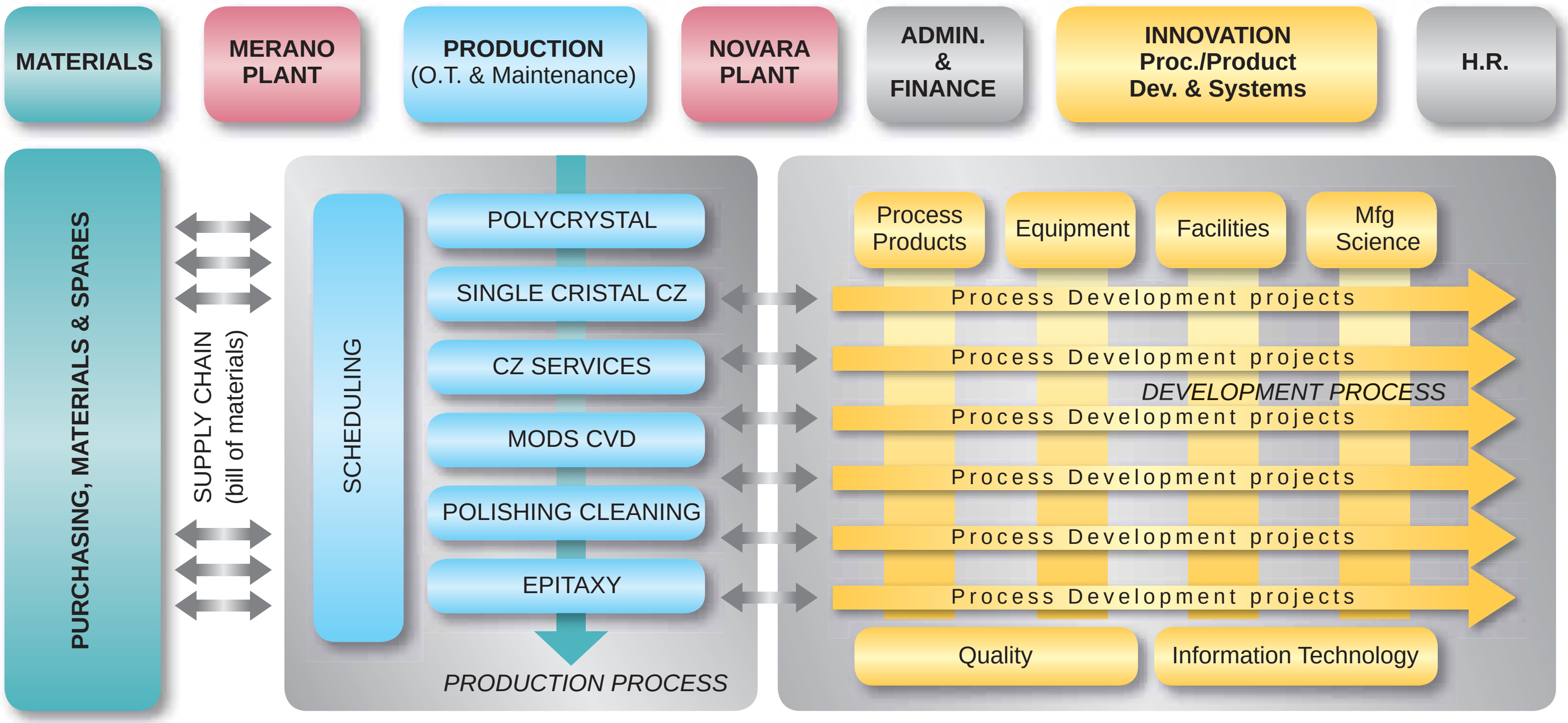
Mauro Pedrotti
Director (ad interim), Human Resources

Fabio Gatta
Mnager, Procurement and Supplier Quality

March 2011 (Rev. 10)

The organisational structure

MEMC S.p.A.'s organisational structure (Merano and Novara sites) is shown in the following illustration.
There are six manufacturing units - three in Merano (Polycrystal, Single Crystal CZ and CZ Services) and three in Novara responsible for achieving the operational objectives in terms of quality, cost, output and productivity in compliance with company procedures and laws in force concerning environmental protection and safety in the workplace.
"Supply Chain" is the sole department responsible for supervising all production planning and progress activities for both sites, as well as packing and dispatch of the finished product, with the aim of ensuring that company objectives concerning production and punctual delivery times are met. Technological development of the production processes, maintenance engineering, plant engineering planning, the Quality System including the laboratories, the IT Systems and Industrial Engineering are managed by the "Innovation" department by means of development projects designed to support a generation of new "know how". Some of the technical specialists also act as a technical interface with production departments with the aim of bringing technological development production specific market The Sales, Accounts and Control departments of the sites, their own Resources and Environmental Protection.



The Environmental Management System

Within the scope of the above organisational structure, a management committee - the EHS Steering Committee - has been set up to deal with the annual planning of environmental protection and health and safety activities for both of the sites.
To manage and coordinate such activities at factory level, the EHS Steering Committee avails itself of an operating committee known as the EHS Committee, composed of the managers of departments that have the highest impact on the environment.

The management model adopted by MEMC for protection of the environment is that commonly known as PDCA, otherwise known as the “Deming Cycle”, which consists of the repetition over time of the following four management stages:

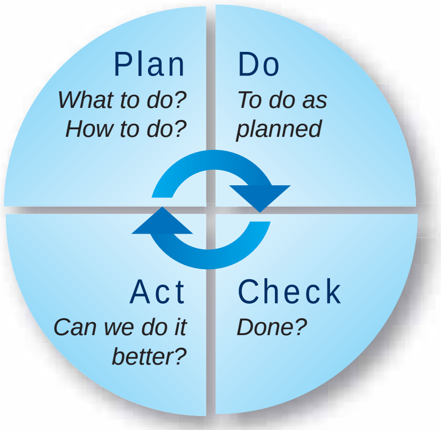
Plan
plan the improvement

Do
implement that planned

Check
check that which is being implemented

Act
assess that implemented in order to strengthen or review the lines of direction undertaken.

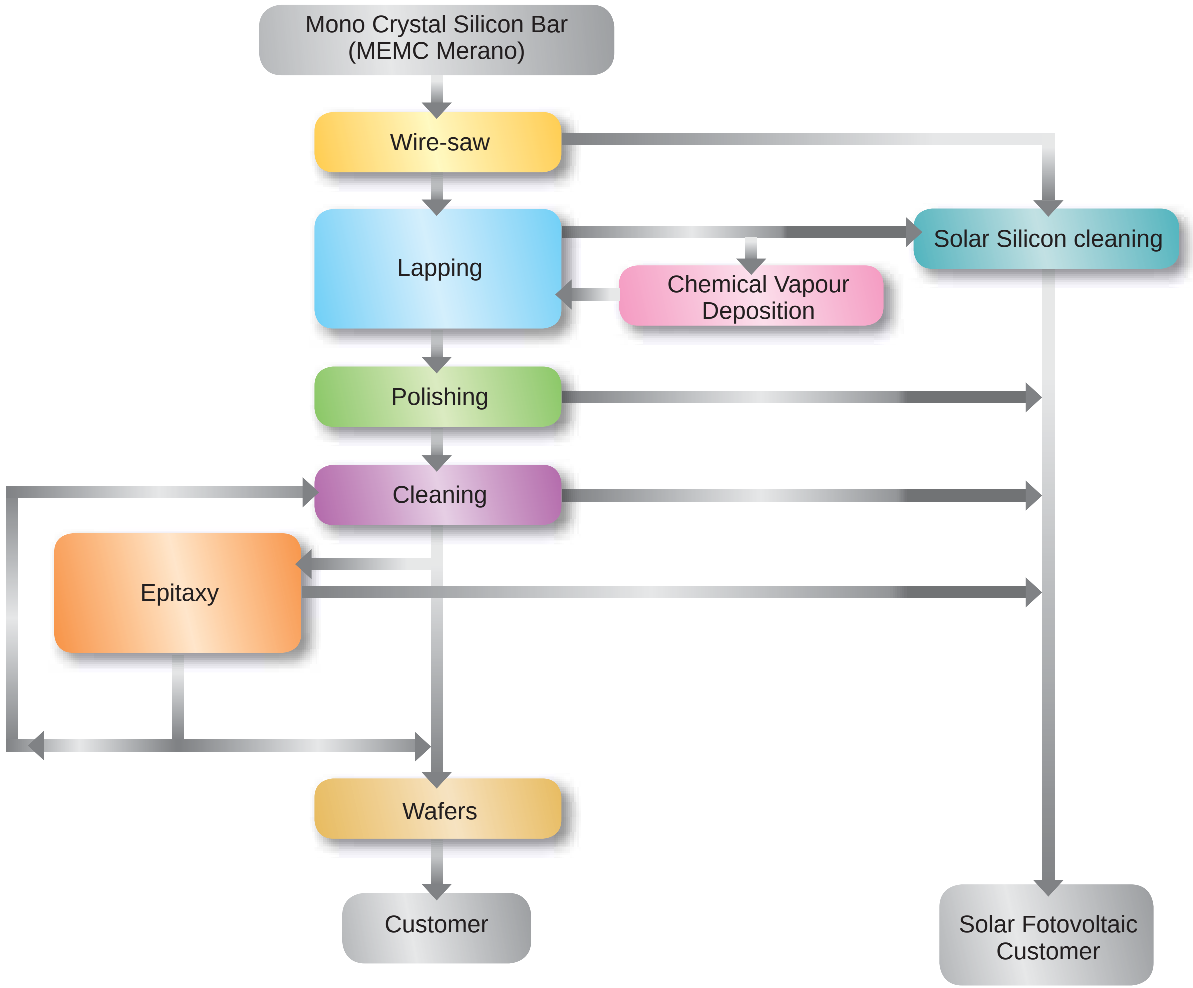
Ciclo di Deming

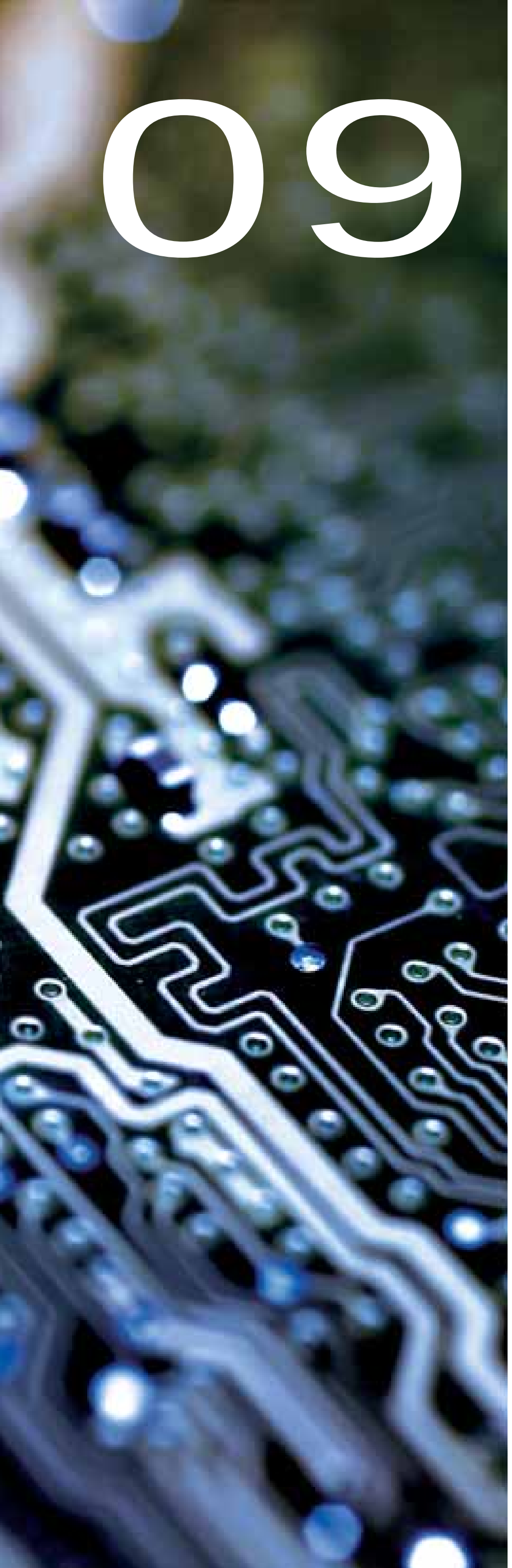


08

Description of the activities

In the following flow chart the productive cycle of the site is described.





Legislative framework

Conformity to the environmental legislation is ensured by continually updating the new laws, and by assessing the changes to processes or activities carried out in the company, which is done by the PAS responsible.
Here below, are the main areas that have legal requirements, into which MEMC's activities fall:

EXHAUST PIPED INTO THE ATMOSPHERE

- Exhaust released into the atmosphere
- Civil sewage discharged into the public drainage system
- Industrial sewage discharged into surface waters
- Water consumption
- Waste
- Energy consumption
- Noise
- Ozone-depleting substances
- Asbestos
- Soil contamination
- PCBs
- Traffic
- Chemical substances
- Significant accident risk

Quantification of the Environmental Aspects

Beside is a table that summarises the levels of significance, for the year 2010, of the environmental impacts associated with the direct environmental aspects, which are managed directly by the organisation of the factory.
Table 1 shows the levels for normal running conditions, under previous and programmed conditions. Since 2010, the environmental aspects under emergency conditions have also been assessed, by analysing the levels of significance and the environmental impacts associated with accident events described in the risk assessment document, which MEMC produce, in accordance with Italian Legislative Decree No. 334/99, which covers the actions of companies for which there is a with a risk of significant accidents.

DIRECT ENVIRONMENTAL ASPECTS	Normal conditions		Emergency conditions		Past conditions		Programmed conditions		Abnormal conditions	
	2010	2011	2010	2011	2010	2011	2010	2011		2011
Raw material consumption	yellow ✖	yellow ✖								
Electrical energy, steam and natural gas consumption	yellow ✖	yellow ✖	green ✖	green ✖			yellow ✖	yellow ✖		green ✖
Oil and combustible consumption	green ✖	green ✖	green ✖	green ✖						green ✖
Auxiliary materials consumption for production	yellow ✖	yellow ✖					green ✖	green ✖		
Auxiliary materials consumption for controls	green ✖	green ✖								
Auxiliary materials consumption for facilities	red ✖	red ✖					green ✖	green ✖		yellow ✖
Auxiliary materials consumption for mtz, services	green ✖	green ✖								yellow ✖
Paper, carton consumption	yellow ✖	yellow ✖								yellow ✖
Groundwater consumption	yellow ✖	yellow ✖	green ✖	green ✖			yellow ✖	yellow ✖		yellow ✖
Raw water consumption			red ✖	red ✖			yellow ✖	yellow ✖		
Drinkable water consumption	green ✖	green ✖								
Convyed emissions to atmosphere	red ✖	red ✖	yellow ✖	> red ✖			yellow ✖	yellow ✖		red ✖
Diffused emissions	yellow ✖	yellow ✖	yellow ✖	> red ✖			yellow ✖	yellow ✖		yellow ✖
Wastewater discharge	red ✖	red ✖	yellow ✖	yellow ✖			green ✖	green ✖		red ✖
Hazardous waste	yellow ✖	yellow ✖			yellow ✖	yellow ✖	yellow ✖	yellow ✖		yellow ✖
Not hazardous waste	red ✖	red ✖			yellow ✖	yellow ✖	yellow ✖	yellow ✖		yellow ✖
Recoverable waste	yellow ✖	yellow ✖								yellow ✖
PCB	green ✖	green ✖	yellow ✖	yellow ✖						green ✖
ODS Ozone depleting chemicals	yellow ✖	yellow ✖	yellow ✖	yellow ✖			yellow ✖	yellow ✖		yellow ✖
Asbestos	green ✖	green ✖			yellow ✖	yellow ✖				green ✖
Odors	green ✖	green ✖	green ✖	> red ✖			yellow ✖	yellow ✖		green ✖
External noise	yellow ✖	yellow ✖								yellow ✖
Radiation	green ✖	green ✖								green ✖
Vibrations	green ✖	green ✖								green ✖
Soil contamination	green ✖	green ✖	yellow ✖	yellow ✖	green ✖	green ✖	yellow ✖	yellow ✖		yellow ✖
Soil occupation	green ✖	green ✖								yellow ✖
Landscape modification	green ✖	green ✖		> red ✖						green ✖
Internal transportation	green ✖	green ✖								yellow ✖
Biodiversity effects	green ✖	green ✖	green ✖	green ✖			green ✖	green ✖		green ✖

Table 1

red ✖ *very significative* yellow ✖ *significative* green ✖ *not significative*

Determining the level of significance is done following a method described in the company operating regulations, where guidelines are indicated for attributing a risk score to the environmental impacts associated with the accident scenario.

In this processing phase, an assessment is made of the probability that the risk scenario will occur, of the associated local impact on the external community, and of the cost of managing the emergency.

In the sections that follow, there is a summary of the environmental indicators of MEMC in Novara, which were updated on 31 December 2010, and which enable characterizing, qualitatively and quantitatively, the site's relevant environmental aspects, and following the evolution of the company's environmental performance in the period 2007-2010.

The indicators presented here have been developed from data collected during checks made by the company of its environmental aspects, and, where not otherwise indicated, have been grouped for all of the activities carried out on the site.

It should be remembered that two types of indicator have been used:

- absolute, which represent the annual quantity of the parameter being examined (e.g. Kg of waste produced in one year);
- specific, which are obtained by dividing the absolute quantity of the parameter considered by the quantity of product destined for the electronics market and for the solar photovoltaics market, manufactured in the year (millions of equivalent square inches of silicon). This type of indicator is important because it makes highlighting the company's performance per unit of product possible. For some environmental aspects, a percentage value is also included, which is obtained from the ratio between the specific value of the year being considered, and the specific value of 2007.
  In order to facilitate interpretation, the indicators are presented in the form of graphs.

Production

In order to make a correct interpretation of the trend of the environmental aspects, it is necessary to consider all that is mentioned in the introduction, about the trend in silicon wafer production in the last year.

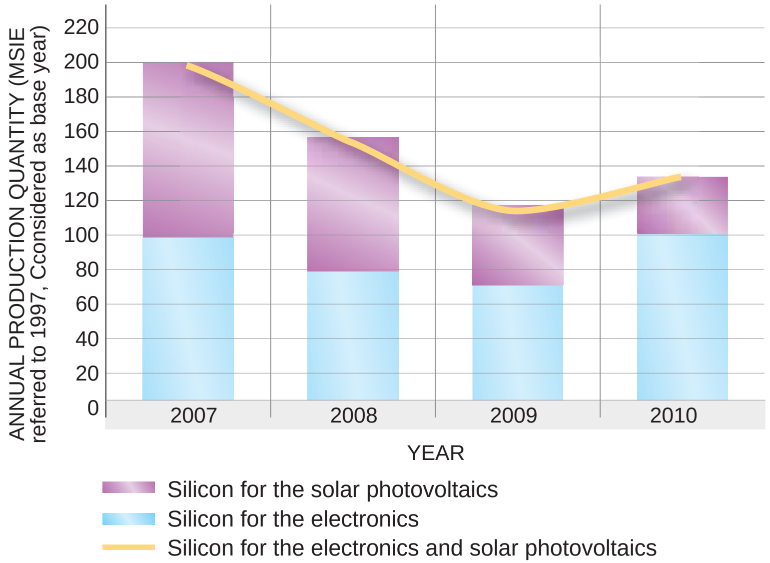
For this purpose, a graph has been included which shows the production trend for silicon, which, for 2010, considers the silicon produced for the electronics industry and for solar photovoltaics, in terms of the percentage variation with respect to the production in 2007 (which has been chosen as the reference year). It was decided to consider the quantity of silicon produced for the electronics and solar photovoltaics markets as a reference for the calculation of the specific values of environmental performance shown below; indeed, silicon took on significant importance for the solar photovoltaics market already in 2006.

By analysing the production data in MSIE (million square inch equivalent), it can be seen in Table 3 that, in line with the economic context described above, the production of silicon for the electronics market shows a net increase over 2009, and over the years immediately preceding, in line with the recovery of the consumer electronics market. In contrast, the amount of the silicon production destined for the solar photovoltaics market, shows a reduction at the Novara factory, whose core business is not solar photovoltaics, but electronics, unlike the MEMC factory in Merano, where the production of polycrystalline silicon (in addition to the monocrystalline silicon for the electronics market) for solar photovoltaics grew continuously. Table 3 shows the percentage values (increases and decreases) of MSIE for the year considered, compared to the 2007 reference value.

SILICON WAFERS PRODUCTION Table 3

	Percentage variation with respect of the production in 2007		Silicon wafers production
Year	**for the electronics**	**for the solar photovoltaics**	
2007	100	100	200
2008	79	78	158
2009	76	42	118
2010	101	35	136

Silicon wafers production



Energy consumption

The energy primarily used at the factory in Novara is electricity, although steam, natural gas and diesel are also used. The energy consumption of the individual sources, and the total consumption are presented in absolute terms (TOE: tonne of oil equivalent) and specific terms, which refer to the quantity of silicon wafer production per year (expressed in MSIE: million square inch equivalent).

Since 2008, the amounts, in TOEs, of electricity and steam have been calculated using data from the regeneration plant (which runs on natural gas) using their specific consumptions. The remaining amount of steam required by the factory, which is not supplied by the trigeneration plant, is purchased externally, so the value in TOEs of this quantity of steam is calculated using standard conversion factors.

Thanks to the plant's ever improving performance, which guarantees greater energy efficiency and, at the same time, a significant reduction in carbon dioxide emissions into the atmosphere, the amount of steam purchased externally falls every year.

To illustrate these new assessments clearly, Table 4 has two columns that show the steam purchased externally, and the sum of electricity and steam supplied by the plant.

The graph of energy consumption reflects the 2010 production trend, where there is a clear increase in the absolute value of the energy consumption, due to increased production, but what is equally clear is a decrease in the specific consumption, of 68 TOEs/MSIE, against the 80 TOEs/MSIE of the previous year, which confirm the theories of economies of scale.

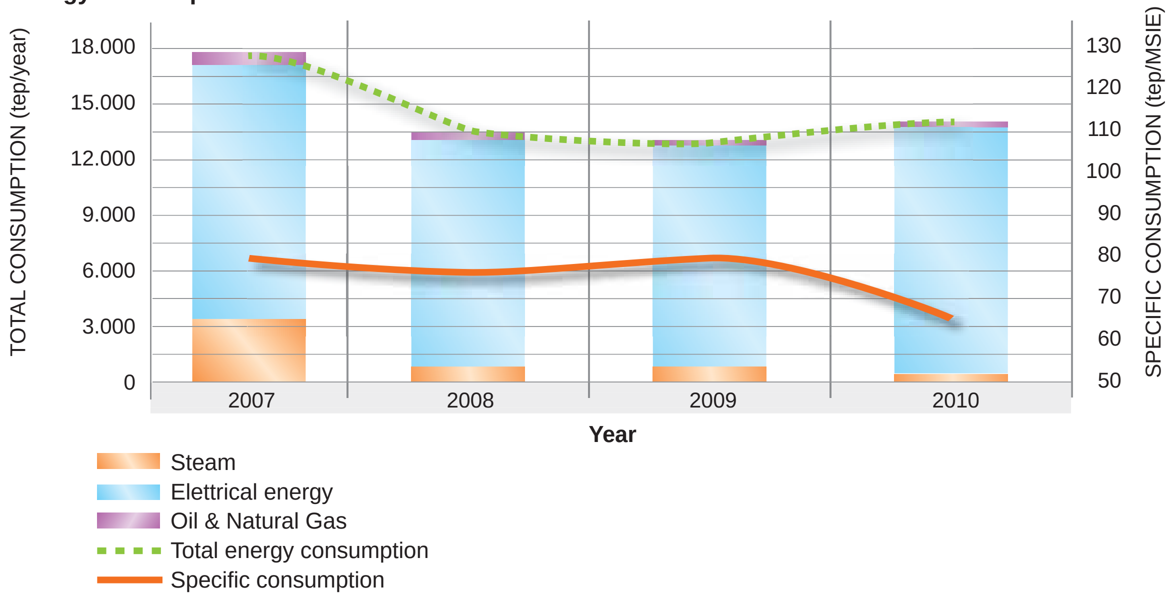
The decrease in specific consumption is closely linked to the achievement of the environmental objectives implemented in 2010 (see environmental program 2010), which were the replacement of the cooling plant (chiller) and installation of the new compressed air production plant, which enabled achieving a reduction of 2400 MWh/year.

ENERGY CONSUMPTION Table 4

	Total energy consumption		Steam	Electrical energy	Oil & Natural Gas
Year	**tep**	**tep/MSIE**	**tep**	**tep**	**tep**
2007	17.474	81	3.519	13.762	193
2008	13.115	77	721	12.232	162
2009	12.629	80	734	11.769	126
2010	14.095	68	422	13.547	126

tep = equivalent tons of petroleum oil
MSIE = million square inches equivalent

Energy consumption



Water consumption

The entire water supply for the site's production processes is provided by underground aquifers. Water is taken from four wells (two in the first aquifer and two in the second aquifer) to which water extracted from a piezometer located in the factory, downstream from the flow direction of the aquifer, which is bled off continuously for decontamination and monitoring purposes, is added. As explained in greater detail in the chapter dealing with ground contamination, water extracted from said piezometer is sent to the site's waste purification plant and the annual amount is included in the total industrial consumption of water from the first aquifer. Drinking water is supplied by the mains water supply, while fire-fighting water is taken from nearby, well-irrigated canals and distributed by means of a collection and pump system managed by an adjacent firm. Water consumption over the last few years is illustrated in the graphs showing the quantity of water consumed for industrial and civil use (sanitary services and canteen) expressed in m^3 normalized respectively to the production values and typical number of employees for the year in question.

We should emphasise the reduction in specific consumption, which went from 15,840 m^3/MSIE, in 2009, to 13,343 m^3/MSIE, even though, in 2010, the total consumption of drained water, in absolute terms, increased as a result of greater production.

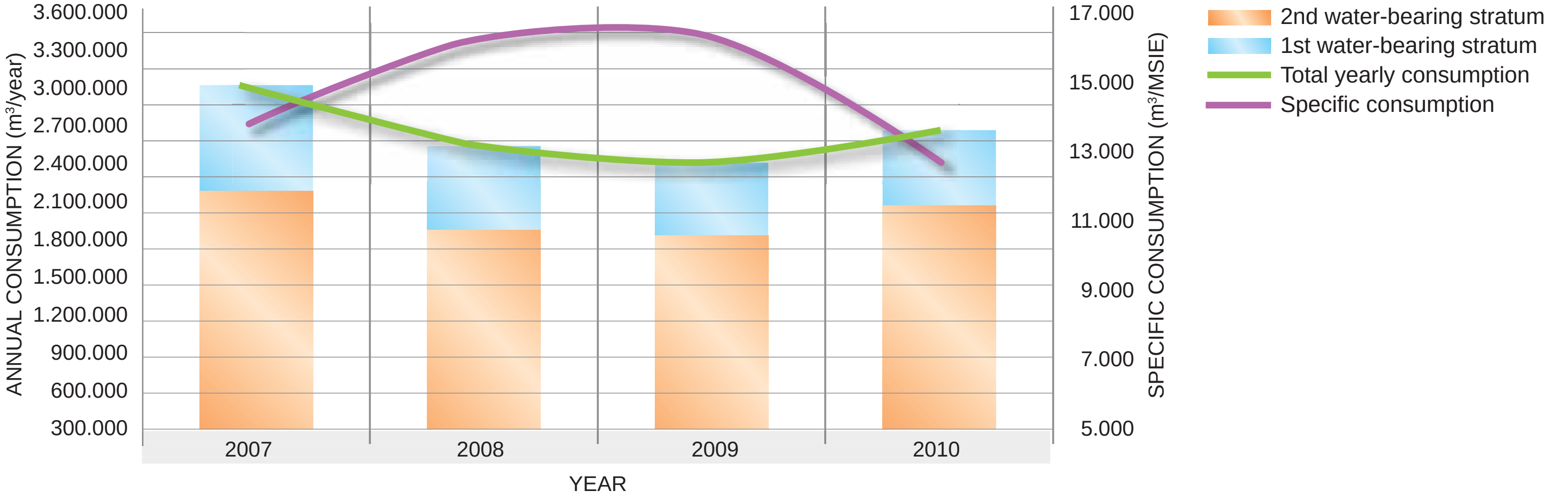
This significant reduction in the specific consumption of water is closely linked to the achievement of the improvement objectives since 2008. Indeed, in the continuous search for improvements that reduce water consumption, the company set up an Interfunctional Team, in 2008, to assess the amount of water consumed by every machine and plant. This Team reformulated the objectives that would help to convert and reduce the type of fluid used in the cooling and washing systems of the production processes. In 2010, a number of activities were begun, which are still ongoing, to recover the water in the final washing tanks (approximately 4.5 m^3/h), for reuse in a variety of processes. Tests are also carried out on the use of well water, instead of deionised water. In this case, although the component in question is water, the benefit will be in terms of an energy saving as a result of reducing the deionised water production. Table 5 shows the quantities drained, and the specific quantities, with reference to the MSIE.

Table 5

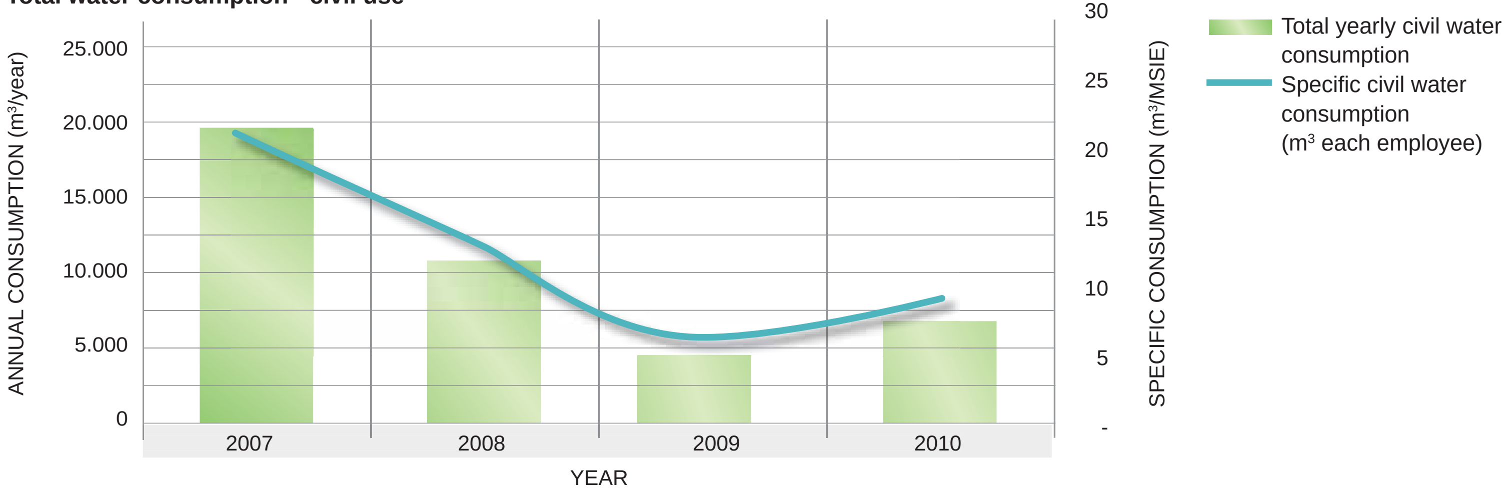
	TOTAL WATER CONSUMPTION - INDUSTRIAL USE (1st and 2nd water-bearing stratum wells)					CIVIL WATER CONSUMPTION (town reservoir)
	Total annual	2nd water-bearing stratum	1st water-bearing stratum	Specific	% Yearly specific consumption	Annual
Year	m^3/year	m^3/year	m^3/year	m^3/MSIE	%	m^3/year
2007	3.045.239	2.263.406	781.833	14.162	100	20.051
2008	2.655.140	2.035.855	619.285	15.557	110	10.463
2009	2.504.447	1.869.818	634.629	15.840	112	4.430
2010	2.758.163	2.181.662	576.501	13.343	94	6.733

"...We should emphasise the reduction in specific consumption, even though, in 2010, the total consumption of drained water, in absolute terms, increased as a result of greater production."

Total water consumption - industrial use



Total water consumption - civil use

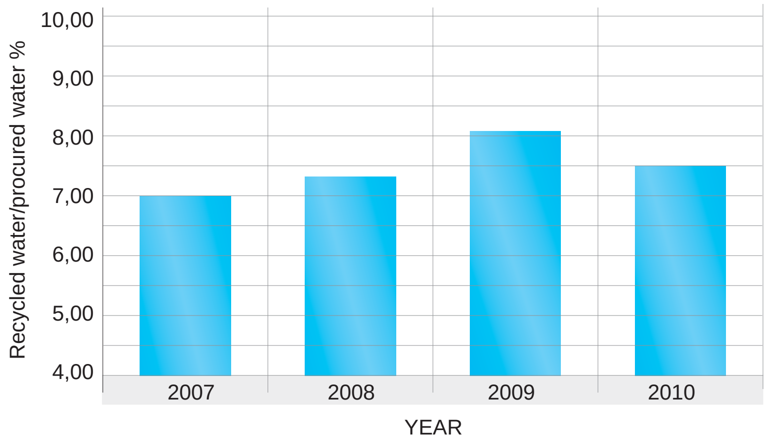


As per previous versions of this document, values related to another parameter used to assess the efficient use of water on site are also shown here beside, that is to say the quantity ratio of recycled water in production processes or for technological purposes divided by the overall quantity of water procured: Qr/Qa.
As you can see in the graph and in Table 6, the quantity supplied, with respect to that recovered, has remained almost unchanged with respect to 2009.

Table 6

	Quantity ratio of recycled water	Quantity of procured water	(Qr/Qa)*100
Year	m^3/Year	m^3/Year	%
2007	211.376	3.045.239	6,94
2008	196.182	2.655.140	7,39
2009	201.445	2.504.447	8,04
2010	204.552	2.758.163	7,42

Water percent recovery



Consumption of auxiliary materials

Various chemical substances (acids, bases, detergents, alcohols, inert and special gases, colloidal solutions, oils and greases) are used in the production processes that can give rise to direct or indirect environmental impacts. The former can be controlled directly on site and derive from the formation of contaminating or non-contaminating by-products in production processes, that may lead to emissions to the atmosphere, the discharge of liquid, waste and risk of ground contamination during loading and transport operations. The latter involves the areas in which factories producing said chemical substances are located. Various process stages performed in the factory require the use of hydrofluoric acid, which is classified as very toxic in concentrations greater than 7%. The storage and use of said substance, even when mixed with other acids, means that the factory falls under the scope of Italian Decree 334/99 Art. 6 concerning major accident hazards.

A Safety Management System has therefore been defined and implemented that, together with the Environmental Management System, defines action to improve the management of said substances designed to reduce the hazards associated with their use and storage. The table here below shows trends in the consumption of substances in use in the factory, considered significant due to the quantity consumed (> 3 tons/year) or their hazardous nature (classified: Toxic, Corrosive or Highly Flammable), whilst trends related to substances for which specific improvement actions have been defined are also shown in graphs for ease of reference.

Production began again in 2010, and the natural consequence was the increases and consumption of auxiliary production materials.

At the time that there was a general increase in the absolute consumption, there was also a reduction in the specific consumption (tonne/MSIE) for all of the most important auxiliary materials.

This specific reduction is a sign of efficient processes.

Table 7

	Sodium hydroxide 30%		Hydrocloridric acid 37%		Phosphoric and nitric acid mix (50% HNO_3, 39% H_3PO_4)		Phosphoric, nitric and hydrofloridric acid mix (50% HNO_3, 10%CH_3COOH,6% HF)		Isopropylic alcohol		Hydrofloridric acid 49%		Hydrogen Peroxide 31%	
	C		C		C		T, C		F+		T+, C		Xn	
Year	ton	ton/MSIE	ton	ton/MSIE	ton	ton/MSIE	ton	ton/MSIE	ton	ton/MSIE	ton	ton/MSIE	ton	ton/MSIE
2007	1.156,08	5,08	724,27	3,18	440,20	1,94	198,00	0,87	82,78	0,36	103,84	0,46	62,68	0,28
2008	958,00	5,17	721,00	3,89	362,20	1,95	171,00	0,92	76,08	0,41	89,44	0,48	60,07	0,32
2009	727,00	4,60	617,47	3,91	266,60	1,69	169,70	1,07	81,91	0,52	80,30	0,51	56,60	0,36
2010	904,00	4,37	704,26	3,41	365,70	1,77	180,00	0,87	102,62	0,50	100,00	0,48	71,16	0,34

	Potassium hydroxide 45%		Ammonia 25%		Hydrocloridric acid anidrous (gas)		Trichlorosylane		Nitric acid 65%		Acetic acid 80%	
	C		C		T, C		C		C		C	
Year	ton	ton/MSIE	ton	ton/MSIE	ton	ton/MSIE	ton	ton/MSIE	ton	ton/MSIE	ton	ton/MSIE
2007	66,04	0,29	56,40	0,25	57,67	0,25	45,55	0,20	10,82	0,05	7,39	0,03
2008	51,48	0,28	49,94	0,27	47,82	0,26	30,98	0,17	9,90	0,05	0,98	0,01
2009	53,04	0,34	43,86	0,28	35,84	0,23	28,63	0,18	7,80	0,05	1,06	0,01
2010	78,52	0,38	54,90	0,27	61,58	0,30	43,70	0,21	10,10	0,05	1,33	0,01

Table 8 shows the absolute and specific quantities of the chemicals most used.

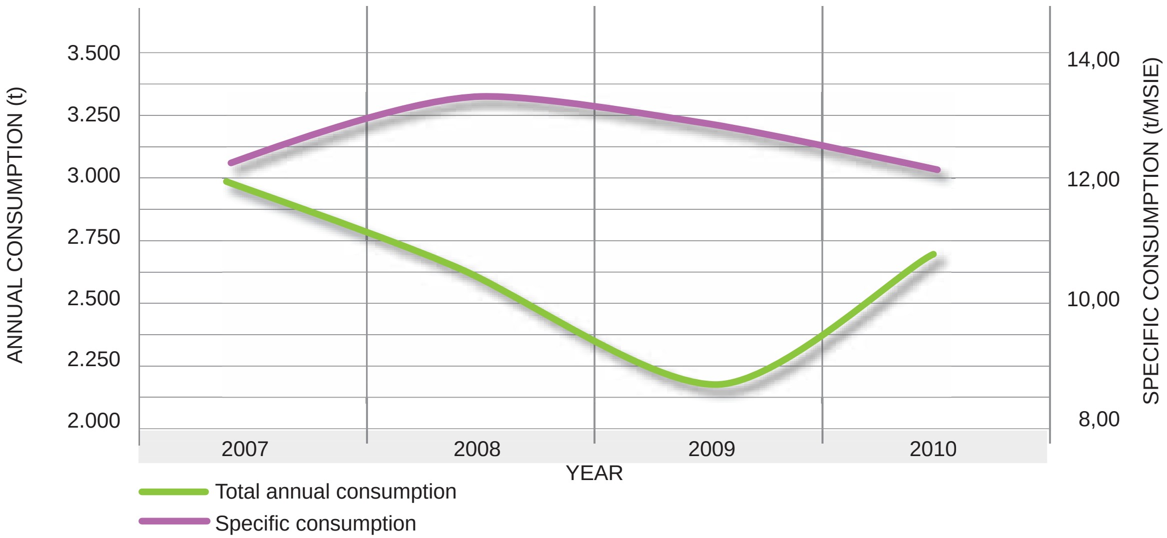
A number of activities, which were begun, in 2010, to reduce the consumption of materials that serve the production, will come to an end in 2011. The polishing department began reducing the process slurry, and the process engineers in the polishing department began a series of tests to determine whether it was possible to increase the life time of the polishing materials. The process engineers in the lapping department began studies to reduce the lapping abrasive, and new processes that will enable increasing the lifetime of the solutions used in the washing tanks. Another, ongoing activity is the economic assessment of the recovery of the isopropyl alcohol used in the cleaning department for drying the wafers after washing.

We should point out the dramatic reduction in the consumption of acetic acid used in the ID-Saw cutting process during the support surface removal phase, which began in 2008 and was confirmed in 2010, due to the new Wire-saw cutting process, which does not require this chemical. This consumption is destined to decrease further thanks to the introduction of the diamond wire cut, where the ungluing takes place in only hot water.

The trends of the chemicals most used are reported individually, below, where, despite the increase in the absolute value is confirmed, there is a dramatic, clear reduction in the specific consumption (ton/MSIE), also when comparing the specific value in years, where the absolute value is comparable. This indicates the improvement in the processes in which these chemicals are used.

Consumption of most used chemical sustances

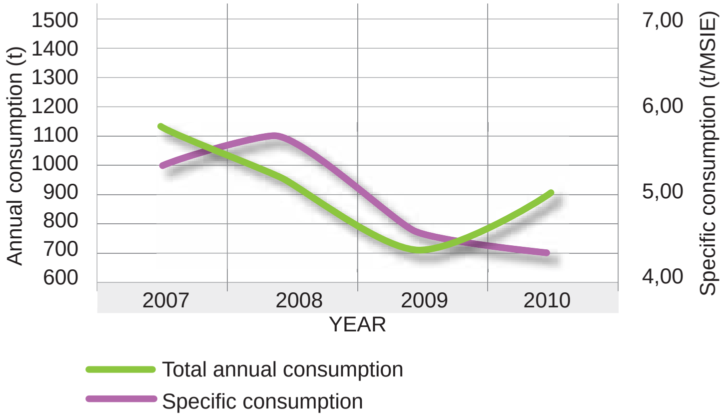
Table 8



Consumption of Sodium hydroxide 30%

Year	Total cons. ton	Spec. cons. ton/MSIE	2007=100 %/ton
2007	1.156	5,38	100,00
2008	958	5,61	82,87
2009	727	4,60	62,89
2010	904	4,37	78,20

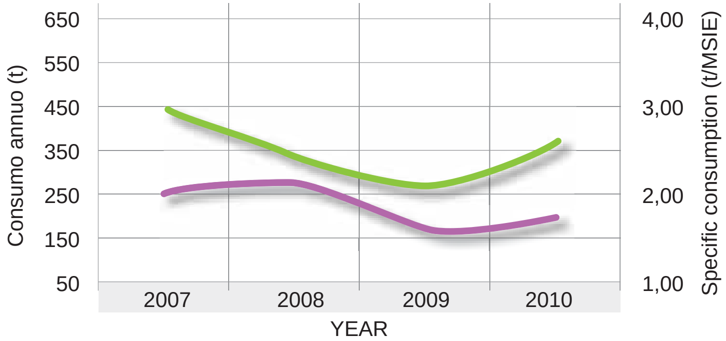
Consumption of chemical sustances Sodium hydroxide NaOH 30%



Consumption of Phosphoric and nitric acid mix (50% HNO_3, 39% H_3PO_4)

Year	Total cons.	Spec. cons.	
	ton	ton/MSIE	2007=100 %/ton
2007	440	2,05	100,00
2008	362	2,12	82,28
2009	267	1,69	60,56
2010	366	1,77	83,08

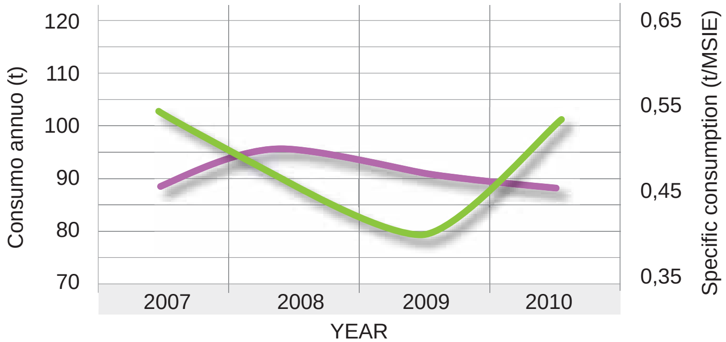
Consumption of chemical sustances:
Phosphoric and nitric acid mix (50% HNO3, 39% H3PO4)



Consumption of Hydrofloridric acid 49%

Year	Total cons.	Spec. cons.	
	ton	ton/MSIE	2007=100 %/ton
2007	104	0,48	100,00
2008	89	0,52	86,14
2009	80	0,51	77,33
2010	100	0,48	96,30

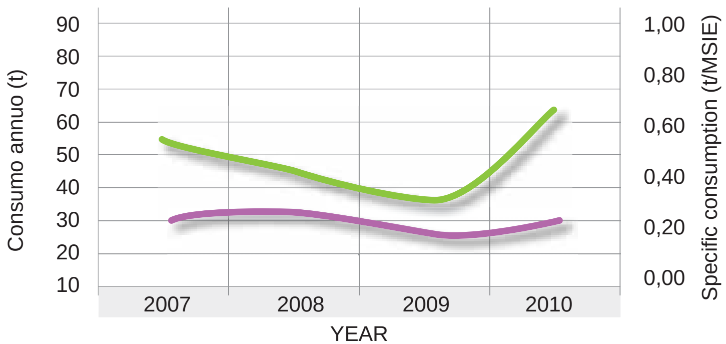
Consumption of chemical sustances:
Hydrofloridric acid 49%



Consumption of Hydrocloridric acid anidrous (gas)

Year	Total cons.	Spec. cons.	
	ton	ton/MSIE	2007=100 %/ton
2007	58	0,27	100,00
2008	48	0,28	82,92
2009	36	0,23	62,15
2010	62	0,30	106,79

Consumption of chemical sustances:
Hydrocloridric acid anidrous (gas)



Total annual consumption
Specific consumption

Consumption of Hexavalent Chromium

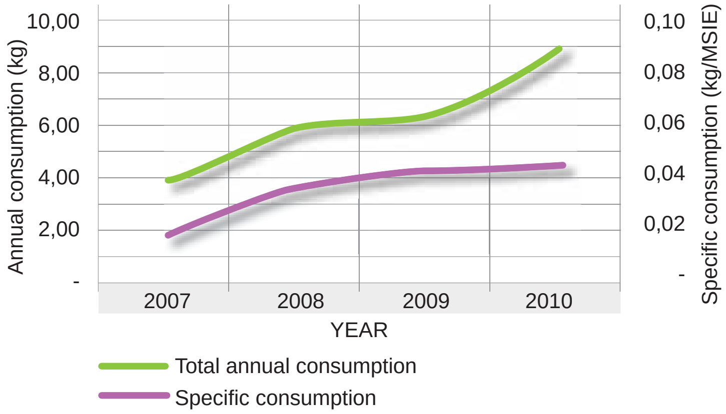
Finally they highlight a situation deriving from the upkeep of an improvement action, strengthened over the years, that continues to offer excellent results in terms of environmental performance: that is to say a reduction in the consumption of hexavalent chrome, a chemical substance, the compounds of which are classified as carcinogenic by inhalation and are therefore particularly hazardous. Said reduction has been achieved thanks to a decrease in the number of product defect tests performed requiring application of the chromic etching process and the application of a process foreseeing multiple use of the etching bath.

The small increase that occurred in 2010 is proportional to the greater checks carried out in the laboratory, following the optimal resumption of production. MEMC installed the necessary safety systems during use of the equipment that uses this substance, and implemented health protocols for all of the operators in charge of these operations.

Consumption of Hexavalent Chromium

Year	Total cons.	Spec. cons.	
	kg	kg/MSIE	2007= 100%
2007	3,71	0,017	100
2008	6,03	0,035	163
2009	6,43	0,041	173
2010	9,14	0,044	247

Consumption of Hexavalent Chromium



> "The small increase that occurred in 2010 is proportional to the greater checks carried out in the laboratory, following the optimal resumption of production."

Consumption of Silicon Carbide

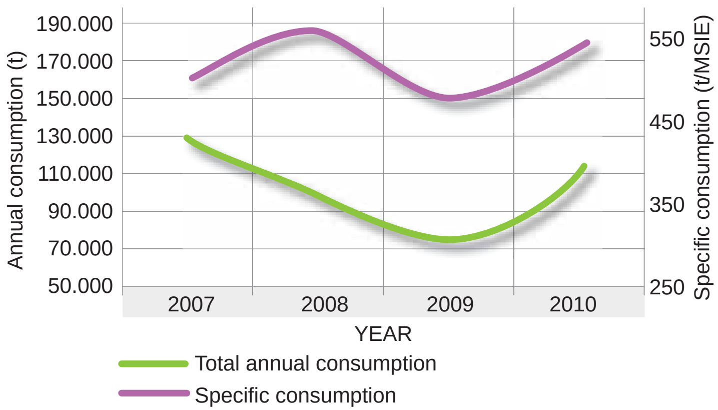
- In 2010, the use of recovered silicon carbide (which is used as an abrasive in the wire cutting phase) with respect to the total consumed (recovered + purchased), was in line with previous years, at 71%. The recovery, which, to date, has been done inside the factory, has been transferred to an external plant run by a third-party company authorised to recover this product, which is regarded as non-hazardous waste. However, management of this substance, which has an insignificant environmental impact, is an example of eco-sustainability within the company; a reduced consumption of the chemical leads to lower acquisition costs, but also lower costs of managing the environmental consequences associated with using the product itself: in this case, sewage to be purified and mud to be sent for disposal.
- An additional reduction in the use of silicon carbide is linked to advanced testing and, today, in the pre-production phase for some specifications of use of the diamond wire, an alternative to the current cutting process. The table beside shows the complete consumption data: purchased and recovered; the graph shows the trend of purchased silicon carbide, which is the actual supply of auxiliary material from the outside.

In particular, Table 9 shows the quantities of SiC recovered and purchased, and the percentages of the amount recovered, over the total.

Consumption of **Silicon Carbide** Table 9

	Purchased	Recovered	Total cons.	Spec. cons.	%SiC amount recovered	% Spec. cons.
Year	**kg**	**kg**	**kg**	**kg/MSIE**		**2007=100**
2007	110.700	267.820	378.520	515	70,8	100,0
2008	96.820	229.220	326.040	567	70,3	110,2
2009	76.360	243.535	319,895	483	76,1	93,8
2010	114.460	284.880	399.340	554	71,3	107,6

Consumption of chemical sustances: Silicon Carbide (SiC)



Emissions into the atmosphere

Significant emissions into the atmosphere are monitored at least every three years, as required by the latest authorisations obtained for the emission points; the samples are taken, and the analyses carried out by a qualified external laboratory coordinated by the environmental protection and safety function.

The limits allowed by the authorisations are respected for all of the substances.

It should be noted that the samples from individual chimney stacks are taken under the most drastic operating conditions of the processes that cause the emissions, and, therefore, represent the most critical situation that may occur, one that does not reflect the actual situation in terms of the total quantity of pollutants emitted per year.

The following tables show the results of the official sampling carried out in 2010 for the pollutants used in MEMC's production cycle, at the factory's main emission points, compared with the limit values authorised by Novara Province.

Authorisation on the part of the Province requires sampling every three years, for almost all of the emission points (with the exception of the emission points for arsine, for which monitoring is carried out annually). Thus, the next monitoring will be in 2013.

The values measured are obtained from an official sampling carried out by an accredited external laboratory, under the most drastic plant running conditions.

There is also a column that shows a threshold value, as a percentage, indicating how far the authorised value is from the value measured during the official sampling.

The three tables (10, 11 e 12) represent all processes and pollutants in MEMC's production cycle, in particular:

- Emission point 1:
  Cutting, Lapping, Acid etching, Various washings
- Emission point 2:
  Polishing, Acid etching, Various washings
- Emission point 73:
  this represents one of the 26 epitaxial emission points chosen, insofar as it is a controlled emission point for HCl and Arsine.

Emission point 1: Cutting, Lapping, Acid etching, Various washings

Table 10

Pollutant	**Concentration** (mg/Nm³ a 0°C e 0,101 mPa)			**Mass flow** (kg/h)		
	Values measured	**Limits allowed by the Authorisations**	**Treasured value** (100%=authorized value)	**Values measured**	**Limits allowed by the Authorisations**	**Treasured value** (100%=authorized value)
NO_x Nitrogen oxide NO_2	0,237	100	0,24%	0,012	5,5	0,21%
F- Fluorides (HF)	0,0678	2	3,39%	0,00340	0,11	3,09%
CH_3COO- Acetates (CH_3COOH)	0,144	10	1,44%	0,0072	0,55	1,31%
CL- Clorides (HCl)	0,566	3	18,87%	0,0283	0,165	17,15%
Chrome VI	0,00079	0,5	0,16%	0,00004	0,0275	0,15%

The years 2009 and 2010 were characterised by the request for authorisation for new EPI reactors that use arsine, for the manufacture of advanced products. Use of this critical gas required a number of administrative actions before authorisation to emit into the atmosphere could be obtained. At the same time, the environmental impacts associated with the use of this gas and the systems for safeguarding the environment (new generation scrubbers) were assessed. In the same way, actions for improving safety management for the plants that use this gas were identified. In addition to the prevention/protection measures, health surveillance measures were implemented and employee protection information provided.

Emission point 2: Polishing, Acid etching, Various washings Tab.11

Pollutant	**Concentration** (mg/Nm^3 a 0°C e 0,101 mPa)			**Mass flow** (kg/h)		
	Values measured	**Limits allowed by the Authorisations**	**Treasured value** (100%=authorized value)	**Values measured**	**Limits allowed by the Authorisations**	**Treasured value** (100%=authorized value)
NH_3 Ammoniaca	2,49	20	12,45%	0,266	2,52	10,63%
SOT-COV Isopropanolo	2,03	3,6	56,39%	0,21840	0,455	48,00%
Ozono O_3	0,359	2,6	13,81%	0,0267	0,33	8,09%
Polveri totali	1,07	1,2	89,17%	0,1152	0,142	81,13%
HCl Acido Cloridico	0,396	1	39,60%	0,0427	0,13	32,85%
KOH Idrossido di Potassio	0,0181	2	0,91%	0,0020	0,254	0,79%
NaOH Idrossido di Sodio	0,05	2	2,50%	0,0049	0,254	1,93%

Emission point 73 EPI Tab.12

Pollutant	**Concentration** (mg/Nm^3 a 0°C e 0,101 mPa)			**Mass flow** (kg/h)		
	Values measured	**Limits allowed by the Authorisations**	**Treasured value** (100%=authorized value)	**Values measured**	**Limits allowed by the Authorisations**	**Treasured value** (100%=authorized value)
HCl Acido Cloridico	2,23	10	22,30%	0,97664	5,5	17,76%
AsH3 Arsina	0,0003	0,002	14,95%	0,00014	0,0011	12,73%

Emission of carbon dioxide equivalent

Said trend refl ects the trend seen in the factory's energy consumption and is in sharp decline thanks to the fact that from March 2007 all of the electricity, steam and about 2/3 of the frigories required by the factory are provided by the new trigeneration plant, which is powered by natural gas and therefore has a lower impact on the environment in terms of the emission of carbon dioxide comparedto the previous situation.

From Table 13 and the associated graph, a consistent reduction can be seen in the greenhouse effect contribution in both absolute and specific terms, over the last few years with respect to 2007, when the trigeneration plant began operating.

The following table and graph show the carbon dioxide equivalent emissions for the factory (which reflect the trend in energy consumption), which represents the site's contribution to raising the temperature of the earth's crust, which is known as the greenhouse effect, or global warming (GW).

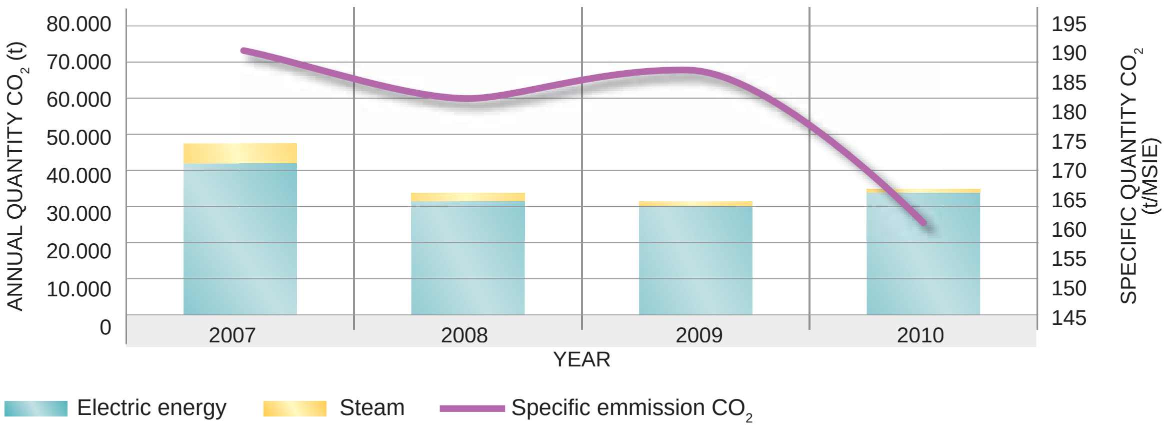
The contribution to GW made by Freon R22 is almost identical to that of 2008, as a result of maintenance work on the existing cooling systems.

In particular, since 2008, the contribution of electricity and steam production to the greenhouse effect has been determined using the emission factors of the trigeneration plant, which, in past years, were not available, whereas, for the calculation of the emissions due to the generation of steam purchased from external suppliers who use a variety of energy sources, the standard GW coefficient is maintained.

Table 13

	Yearly							Specific	Rif. to Specific
	Total	Electricity+ Steam by Trigeneration Plant	Steam purchased outside	Natural Gas	Diesel oil	Freon	R134a	Total	
Year	t CO_2	t CO_2	t CO_2	t CO_2	t CO_2	t CO_2	t CO_2	t CO_2/MSIE	%
2007	41.246,4	33.917,2	6.872,86	448,3	6,5	0,0	1,56	192	100
2008	31.153,4	29.359,9	1.408,63	373,2	10,6	0,6	0,52	183	95
2009	29.680,8	27.949,0	1.432,67	288,9	9,7	0,6	0,00	188	98
2010	33.294,5	32.168,0	824,50	286,5	11,3	0,0	4,16	161	84

Emission of Carbon Dioxide Equivalent



Note: contributions related to Natural Gas and Diesel Fuel are not included in the graph as they were less than 1% overall.

Waste and fluid drainage

Waste water from the various production processes are channelled to the facility's waste water purification plant, in function since mid 1997, in which pollutants are treated and purified waters returned to the Cavo Veveri irrigation canal, a confluent of the Terdoppio stream, where cooling waters are also discharged. Meteoric waters are also channelled into the same stream through separate piping. Civilian discharges are channelled to the Agogna stream through the municipal sewage system, after treatment in the municipal water purification plant.

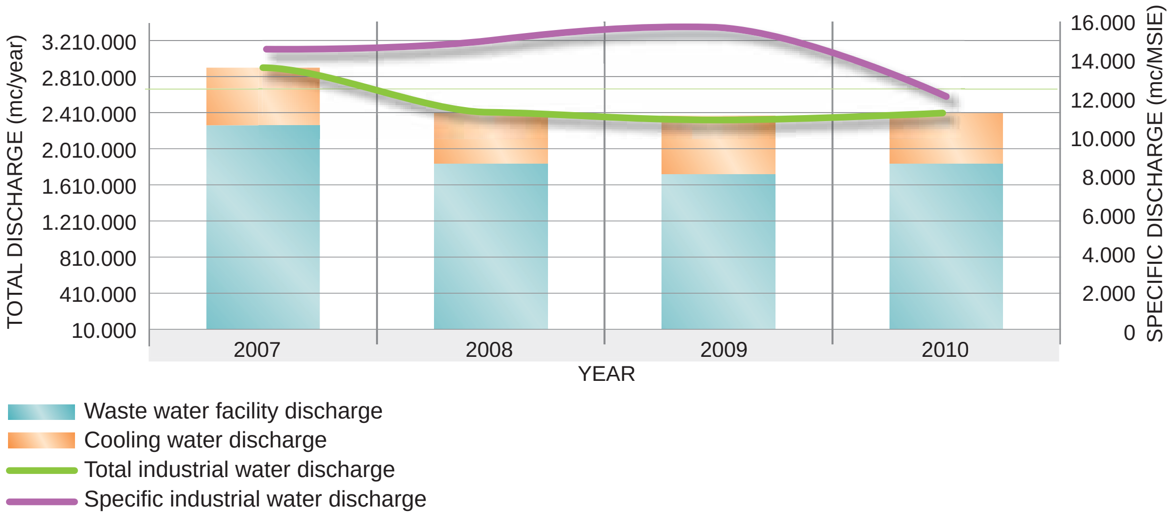
Listed in the charts below are the capacities of the different types of discharges, and the concentration values (highest monthly average recorded in the year considered, calculated as the mathematical average of the concentrations identified through internal analyses on samples from each discharge, taken at least three times a week on alternate days) of the typical pollutants recorded at the waste water's purification plant's discharge. Also indicated are the limits imposed by current legislation as shown in the charts, these limits are respected in all cases.

The capacity values, as absolute values in m^3/year, are almost identical to those of 2009, whereas the value of specific exhaust in m3/MSIE, is clearly lower than in the previous year. The process exhaust essentially remained unchanged, a sign of a constant consumption of deionised water (DIW).

Table 14

	INDUSTRIAL WASTE WATER (Water pumped from 1st and 2nd groundwater private wells)					CIVIL WASTE WATER (water supplied by municipal water service and 2nd groundwater wells)
	Industrial water discharge	**Waste water facility discharge**	**Cooling water discharge**	**Specific industrial water discharge**	**% Annual specific consumption**	**Civil discharge**
Year	**m^3/year**	**m^3/year**	**m^3/year**	**m^3/MSIE**	**2007=100**	**m^3/year**
2007	3.033.580	2.356.383	677.197	13.337	100,00	20.537
2008	2.423.099	1.841.341	581.758	13.070	100,64	10.913
2009	2.324.325	1.709.702	614.623	14.270	104,20	4.430
2010	2.418.425	1.842.241	576.184	11.699	82,93	6.733

The site industrial water discharge



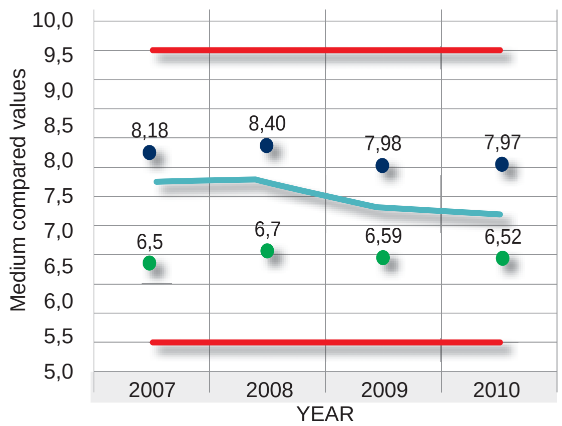
From an analysis of the graphs that show the concentration values of the pollutants typical of the discharge of the purification plant, we can see an overall trend that is in line with the previous three years.

WASTE WATER - Concentration

	pH -		
Limit by Law DLgs 152/06	5,5 - 9,5		
Year	medium	min	max
2007	7,65	6,50	8,18
2008	7,65	6,70	8,40
2009	7,39	6,59	7,98
2010	7,15	6,52	7,97

- Yearly average value
- Yearly minimal value
- Average value
- Max and minimum limit by law

Waste water - **pH**

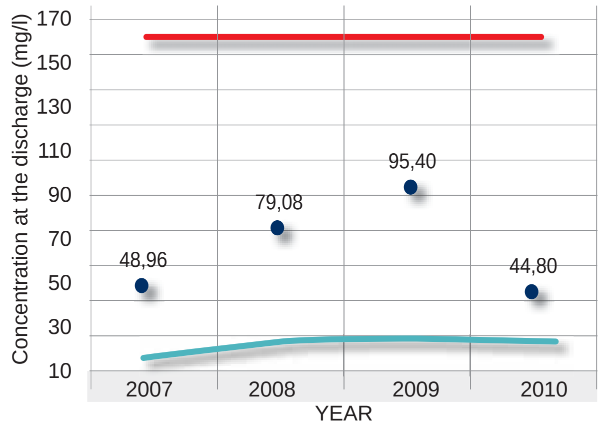


WASTE WATER - Concentration

	COD mg/l	
Limit by Law DLgs 152/06	160	
Year	medium	max
2007	13,8	48,96
2008	16,95	79,08
2009	27,81	95,40
2010	26,15	44,80

- Yearly average value
- Average value
- Max limit by law

Waste water - **COD**

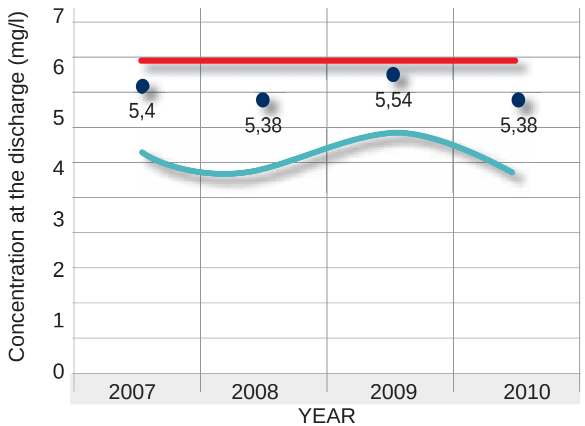


WASTE WATER - Concentration

	Fluoride mg/l	
Limit by Law DLgs 152/06	6	
Year	medium	max
2007	4,10	5,40
2008	3,91	5,38
2009	4,37	5,54
2010	3,83	5,38

- Yearly average value
- Average value
- Max limit by law

Waste water - **Fluoride: F-**

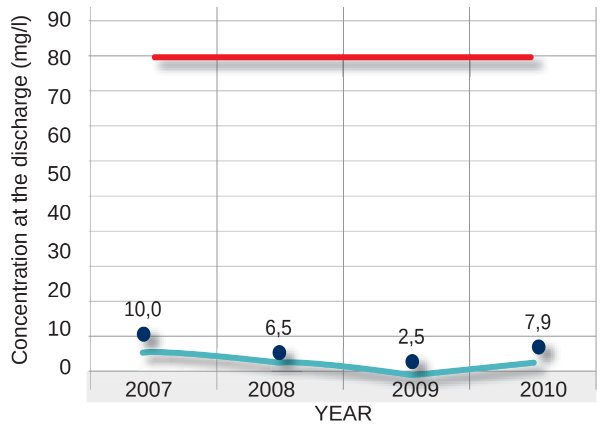


WASTE WATER - Concentration

	Sospeded Solids - mg/l	
Limit by Law DLgs 152/06	80	
Year	medium	max
2007	5,3	10,00
2008	2,8	6,50
2009	1,3	2,50
2010	3,7	7,90

- Yearly average value
- Average value
- Max limit by law

Waste water - **Total Sospeded Solids: TSS**

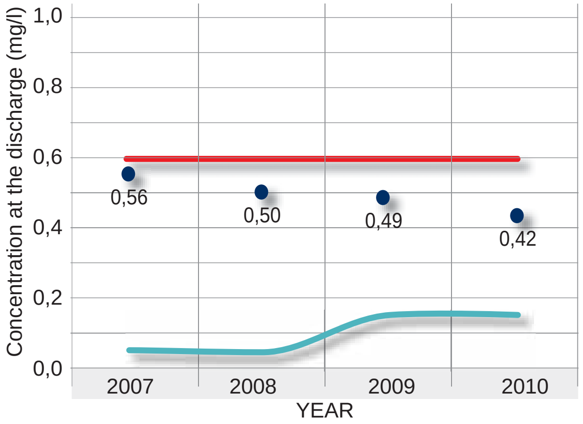


WASTE WATER - Concentration

	Nitrite NO_2^- mg/l	
Limit by Law DLgs 152/06	0,6	
Year	medium	max
2007	0,05	0,56
2008	0,05	0,50
2009	0,16	0,49
2010	0,15	0,42

- Yearly average value
- Average value
- Max limit by law

Waste water - **Nitrite: $N\text{-}NO_2$**

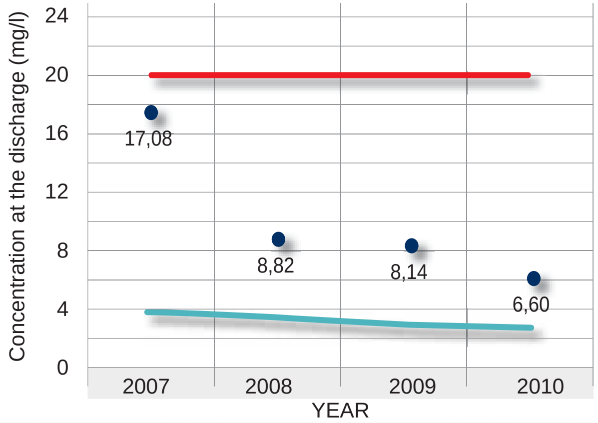


WASTE WATER - Concentration

	Nitric Nitrogen NO_3^- / mg/l	
Limit by Law DLgs 152/06	20	
Year	medium	max
2007	3,65	17,06
2008	3,52	8,82
2009	2,95	8,14
2010	2,88	6,60

- Yearly average value
- Average value
- Max limit by law

Waste water - **Nitric Nitrogen: $N\text{-}NO_3$**

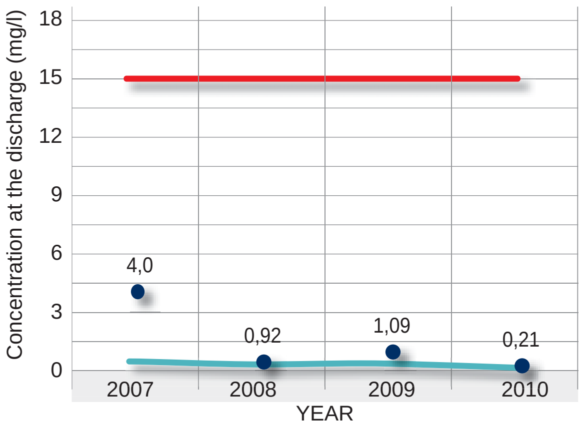


WASTE WATER - Concentration

	Ammoniacal Nitrogen NH_4^+ / mg/l	
Limit by Law DLgs 152/06	15	
Year	medium	max
2007	0,18	4,00
2008	0,11	0,92
2009	0,13	1,09
2010	0,10	0,21

- Yearly average value
- Average value
- Max limit by law

Waste water - **Ammoniacal Nitrogen: $N\text{-}NH_4^+$**

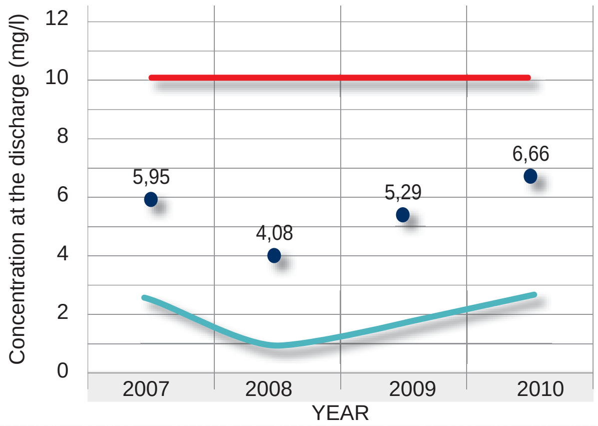


WASTE WATER - Concentration

	P - Phosphor mg/l	
Limit by Law DLgs 152/06	10	
Year	medium	max
2007	2,54	5,95
2008	1,09	4,08
2009	1,87	5,29
2010	2,61	6,66

- Yearly average value
- Average value
- Max limit by law

Waste water - **Phosphor P04: $P\text{-}PO_4$**

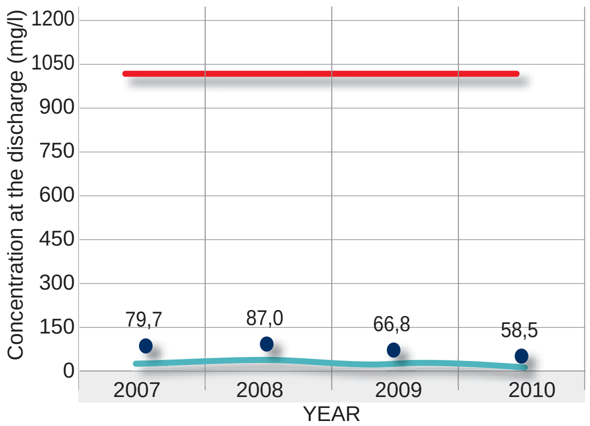


WASTE WATER - Concentration

	Sulfate mg/l	
Limit by Law DLgs 152/06	1000	
Year	medium	max
2007	43,7	79,7
2008	48,6	87,0
2009	47,1	66,8
2010	42,4	58,5

- Yearly average value
- Average value
- Max limit by law

Waste water - **Sulfate: SO_4**



WASTE WATER - Concentration

	Chloride mg/l	
Limit by Law DLgs 152/06	1200	
Year	medium	max
2007	180,85	299,27
2008	209,86	333,68
2009	165,16	275,90
2010	172,18	261,70

- Yearly average value
- Average value
- Max limit by law

Waste water - **Chloride: Cl-**

Waste

The following graphs and tables with data relating to the trend in the production of waste, standardised with respect to the production, and updated in 2010, divided on the basis of the classification (special, non-hazardous and hazardous) and of the destination (recovery or disposal).

In 2010, the absolute value of the total production of waste increased following the resumption of production in the factory, and of the numerous expansion activities of the factory itself (increased production).

As can be seen from the graph, the amount of waste recovered is considerably greater than the amount of waste destined for disposal, and increased from 7.5 tonnes/MSIE, in 2009, to 10.7 tonnes/MSIE, in 2010.

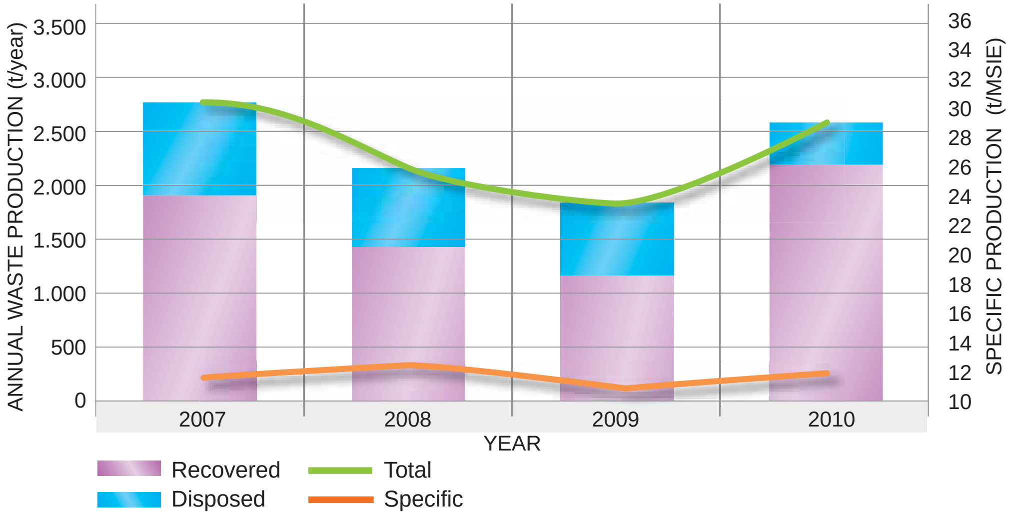
This shift from waste that is disposed of to waste that is recovered, began in 2009, with the collaboration with a new recovery plant, and continued in 2010, and with additional collaborations particularly, in recovering mud from the process of industrial sewage purification. This mud (non-hazardous waste) is mostly recovered for the brick industry and for the recovery of silicon for glassworks.

What is reported above has been confirmed by an analysis of the quantitative data concerning waste separated according to its hazard characteristics.

Total waste Table 15

Year	Disposed waste			Recovered waste			Total		
	t/year	t/MSIE	%	t/year	t/MSIE	%	t/year	t/MSIE	%
2007	816	3,79	100	1.878	8,7	100	2.694	12,53	100
2008	778	4,56	120	1.468	8,6	98	2.246	13,16	105
2009	621	3,93	103	1.188	7,5	86	1.809	11,44	91
2010	337	1,63	43	2.214	10,7	123	2.550	12,34	98

Waste production

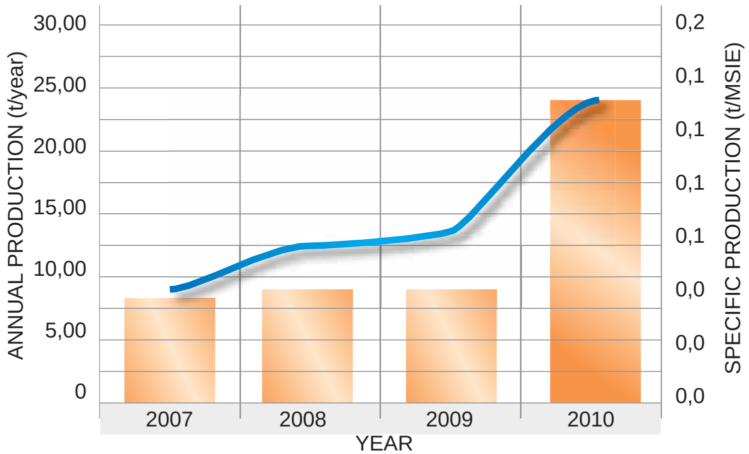


The trend of non-hazardous waste generally remained constant over time. The small variations were linked primarily to ordinary and extraordinary maintenance operations. For example, in 2010, extraordinary maintenance was carried out on the dessicator, which removed the water contained in the mud, and thereby gave it a much lower volume and weight; the weight of the mud produced by the purification plant increased (about 10% greater than in 2008, the production reference year), thus, under ordinary operating conditions, there would have been a reduction in the absolute amount of non-hazardous waste.
The used abrasive from the wire-saw cutting machines was recovered by sending it to an external company; this resulted in an increase in the production of non-hazardous waste, which absorbs the reduced production of mud sent for recovery or disposal.
However, in this case, the increased production of one type of waste should be interpreted in a positive light, because it guarantees the recovery of a production residue that, otherwise, would have been piped to the purification plant, and thereby increase the pollution load that needed treating.
As can be deduced from the Environmental Declaration Form, the increase in the hazardous waste produced by the factory's activity is linked essentially to the dismantling of equipment and machinery that contain hazardous substances.
Only a small part of the specific increase in hazardous waste is due to the increased disposal of the chrome-fluoride mixture, which is used for the qualification and testing of new products, which increased in 2010.
It should be emphasised that, in 2011, the section of the environmental program that relates to waste mentions, for example, a study for the recovery of nitric and phosphoric acid in the phosphonitric mixture used during the manufacturing phases. Once this activity has been completed, the amount of hazardous waste disposed of will decrease.

Hazardous waste			
Year	Total t/year	Spec t/MSIE	%
2007	7,60	0,033	100
2008	8,87	0,048	147
2009	8,93	0,055	160
2010	24,46	0,118	335

Hazardous waste production
Specific production

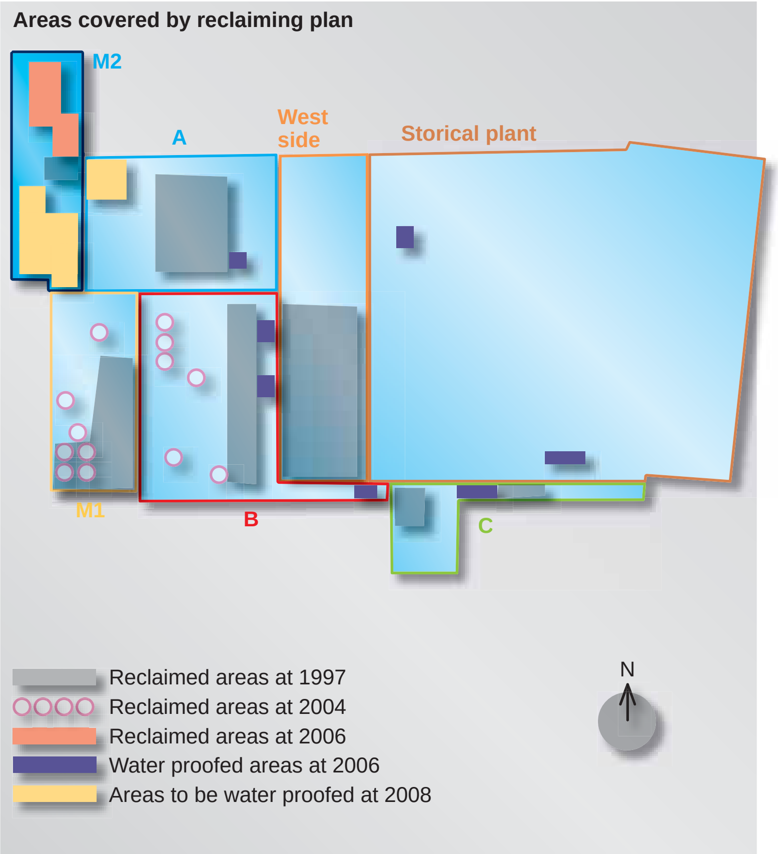
Hazardous waste production Table 16



Non hazardous waste			
Year	Total t/year	Spec t/MSIE	%
2007	2.687	12,49	100
2008	2.238	13,11	105
2009	1.800	11,39	91
2010	2.526	12,22	98

Non hazardous waste production
Specific production

Non hazardous waste production Table 17



Ground contamination

The area on which the trigeneration plant stands has been decontaminated over the last years (2004:2008) by means of removal of excavated earth from the site (about 2,000 tons of earth contaminated with heavy metals and 400 tons contaminated with asbestos from activities conducted on the site before it was purchased by MEMC). In fact said plant stands on a portion of land covered by a decontamination program agreed with the relevant authorities, the last stage of which is to be completed by the end of 2008 and consists of waterproofing of the surface and the creation of a meteoric water collection network.

With regards to the aquifer, pumping from active wells and drainage piezometers and monitoring activities have been continued. Concentration values of pollutants in the aquifer have maintained the downward trend seen in the past, highlighting the effectiveness of decontamination measures already implemented.

These drain water activities, which are still active, also affect old contaminations of chloride solvents which were necessary in the early 1990s, when a glue containing these solvents was used. The drums of glue were decontaminated, but pollution was caused by the breaking of the tube that transported the washing water to the purification plant. Since 1993, MEMC has no longer used glues or chemicals that contain chloride solvents, having replaced them, in general, with a glue that contains ammonia solutions and maleic resins. The drainage activity is still ongoing, in order to eliminate traces of this pollutant completely, as required by the instructions received from the control bodies. The changes in the concentration values of this pollutant in the water table have maintained a downward trend, which was already shown in the past, which emphasises the effectiveness of the decontamination interventions already carried out.

PCBs

The five dielectric oil transformers (No. 1 and No. 2 in Cabin 1, No. 3 in Cabin 2, and No. 8 and No. 9 in Cabin 3) that are currently present in the factory contain PCB concentrations that are well below 50 ppm, as reported in the analytical results. The monitoring plan entails an analytical check of the concentrations, every three years. In 2010, two unused transformers (which contained PCBs) were sent for disposal, and analyses of the fluid of the transformers present were made.

Ozone depleting substances

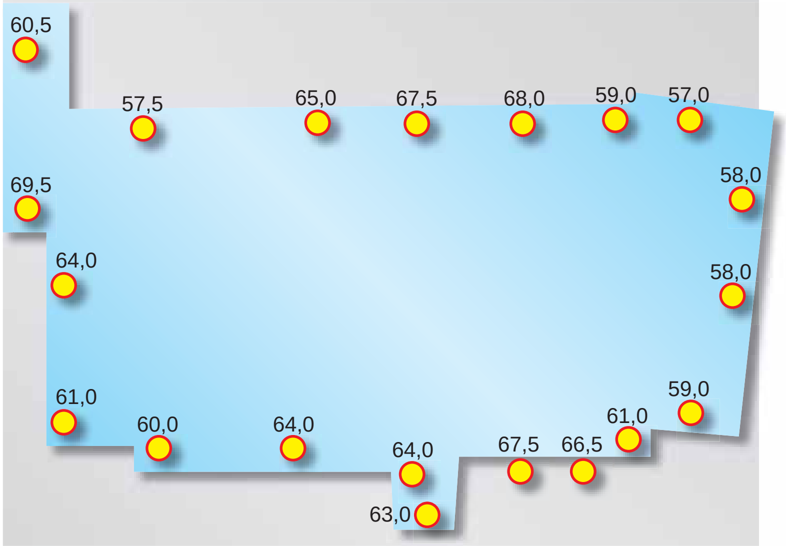
Freon 22 is used in the factory as a cooling liquid in some of the air-conditioning units. A survey of these plants is updated every year. Said chemical product is included in the list of ozone depleting substances prepared by the European Community (Regulation CE 2037/00), for which special action must be taken to control its use and prevent emissions to the atmosphere. The date set for completion of the phasing out process is 31/12/2005.

In 2005 (updated in 2010), a plan was produced to eliminate entirely the R22 still present in some factory cooling systems, and, in accordance with this plan, the plants that still contain it are being replaced.
In particular, the 2005 survey, which subsequently made planning for the elimination plan possible, identified the systems that still contain R22, in the indoor units of some offices, in the lapping and cutting machine compressors and in the refrigerators in the canteen.
In 2010, the air-conditioning system in the reception, which contained Freon 22, was replaced completely, in accordance with the improvement program.

Outside noise

The environmental impact of noise on the surrounding areas was measured in equivalent noise levels expressed in decibels,
along the facility's boundaries. The MEMC facility is likely to have been included in Class VI, "Exclusively Industrial Areas", for which the daytime and night-time noise output limit is set at 65dBA, and the noise input limit is set at 70dBA. In 2005, many actions has been put in place, aimed at reducing noise emissions produced by the plant in points where previous noise readings had exceeded 65dBA (and were in any case lower than the 70dBA daytime and night-time limit imposed by previous legislation).
The points in question were positioned along the facility's southern boundary, where the epitaxy department's extraction ventilators and air conditioning system are located, which create noise levels of close to 70dBA, in close proximity to the boundary. Updated results are awaited for the acoustic impact determined by the trigeneration plant, currently being defi ned with the plant running at full capacity.

MEMC layout whit outside noise levels
Values of outside noise levels are measured in 2006



Caption
Noise samples (during daytime) in dBA
Noise intput limit 70 dBA

Consequently, the factory floor plan shown is marked with the most up to date noise values available, detected at the boundaries of the grounds and determined by MEMC activities.

Novara city council is currently updating the acoustic zoning plan, and, in 2009, requested information about the chemistry business park, where MEMC, too, carries out its production.

Significance of indirect environmental aspects

The following table summarises the activities that, based on a significance valuation of indirect environmental aspects, lead to or can lead to significant indirect environmental impacts.

ACTIVITIES THAT ARE SUB CONTRACTED ON THE SITE

With regards to companies that operate on the site, all personnel before starting work receive hazard information, as well as what to do during their working activities to assure personal safety and environmental protection.

The dangerous substances used by contractors and the wastes produced during their working activities are controlled and specific instructions are provided for the use of proper containment areas to avoid any risk of contamination.The behaviour of employees of external companies in terms of environmental safety is verified by a periodical audit. The result contributes to the assignment of classifi cation points to the contractor.

Communication and activities on the ground:

The company pays particular attention to internal and external environmental communication, by producing a program that is updated every year.

In 2010, the following activities were carried out internally:

- graphs were put up on the notice board showing the trend of the factory's environmental performance, as well as the results of environmental audits made in the departments;
- meetings were organised with personnel to inform them of the results of environmental improvements achieved and of the improvement programs planned for the future, and to present to them the information form on accidents that are relevant to people and to employees, which was updated in 2010. External communication was carried out with the following activities:
- the organisation of visits to the factory, with a presentation on the themes of environmental protection;
- collaboration, with local universities, to support students during training periods within the company itself, and while they were producing their dissertations;
- participation in conferences to publicise the Environmental Declaration, and to increase sensitivity to environmental protection issues;
- publicising the 2009 Environmental Declaration in Italian, and by publishing on the Intranet site and distribution, by mail, and by means of CD ROMs, to the external community, authorities, schools, clients, and suppliers;
- in 2010, two initiatives were promoted to publicise the Safety and Environmental Standards applied in MEMC factories, in the local newspapers "Novara Oggi", "Ticino News" and "Occhio;
- participation in an initiative of the Province relating to the hydrogeological situation and pollution of the chemical business park;
- participation as speakers, in the Business International seminar "Green Sourcing: how to create profit by means of sustainable choices", February 2010.

External transport

In the transportation of hazardous substances, procedures were adopted for checking the transport vehicles (coming into and leaving the factory) and the grade of the drivers (ADR regime).

The factory in Novara has a considerable effect on the traffic in the district in which it is situated (S. Agabio) because of employees' journeys to and from work.

A person has been appointed within the company to coordinate journeys to and from work, and has been given the job of planning actions to reduce traffic and to rationalise transport, in order to reduce the indirect impacts that arise, such as emissions into the environment, noise and vibrations. On a yearly basis, this person will verify the level achieved by the actions planned for the previous year, and will produce an action plan for improving traffic, which he will send to the authorities concerned.

As part of the improvement plan for company mobility in 2010, the following information activities were carried out:

- information to employees, by putting up notices about the traffic limitations planned by Novara city council, with detailed maps with indications of the roads that can be travelled down that bordered the marked off area, the availability of parking spaces and a shuttle service in the city centre;
- communication of the extension of the Novara council-run service "Bicincittà" ("Bikes in town")
- MEMC took part in several sessions during MobilityTech - the international forum on technological innovation for the development of mobility and transportation - held on 18-19 October 2010, in Milan, in order to assess new strategies in the area of home-work transport/mobility.

As for previous years, use of the CAR POOL unfortunately proved to be limited, because of the difficulty, above all, of individual management (different times for family management and different places around the city that are difficult to reach at rush hour). Use of public transport also proved to be limited, because of the incompatibility with work hours.

Manufacturing and use of the product supplied by MEMC

For the transportation of silicon wafers, MEMC reached agreements with its main customers to send the product in aluminium boxes that are entirely reusable, instead of the traditional disposable cardboard packaging.

All of our customers have the opportunity to return the plastic boxes that contain the wafers, so that they can be used again for subsequent deliveries.

MEMC's customers operate in countries that have been sensitive to environmental problems for a long time, and have the ISO 14001 certificates and/or are EMAS registered.

The MEMC site is often audited by customers in relation to the quality and environmental protection aspects; during these audits, information is received and provided that helps to improve environmental management in the work activities.

In responding to the increasingly insistent demands of the market, the sale of silicon for the solar photovoltaics market, from the Novara factory, was started in 2006.

In 2010, the size of packaging was reduced, by using new moulds, reducing the use of cardboard, and maintaining the same protection. Also in 2010, a feasibility study began of the new, reusable, plastic "Hy box" delivery containers, which will be used primarily for the Asian markets.

INDIRECT ENVIRONMENTAL ASPECTS

OUTSIDE CONTRACTORS ACTIVITIES IN SITE	
Maintenance and civil construction contractors (construction, carpentry, insulation, electrical, painters, drains, software, gardening, maintenance facilities)	✖ very significative
Cleaning contractors and canteen service	✖ significative
PRODUCTS AND SERVICES PURCHASING	
Recovery/disposal of hazardous and not hazardous waste (sludge from WWT, wire consumed from Wire-Saw)	✖ very significative
Raw material purchasing (silicon bars and dopants)	✖ very significative
Hazardous classificated chemical products purchasing	✖ very significative
Not hazardous product purchasing (chemical and not)	✖ not significative
Electrical energy and steam purchasing	✖ very significative
Oil purchasing	✖ very significative
Natural Gas purchasing	✖ not significative
EXTERNAL TRASPORTATION	
Hazardous and not hazardous waste trasportation (sludge from T.A.R., wire consumed from Wire-Saw)	✖ very significative
Not hazardous waste trasportation	✖ not significative
Raw material trasportation (silicon bars and dopants)	✖ significative
Hazardous chemical product trasportation	✖ very significative
Not hazardous product trasportation (chemical and not)	✖ not significative
Product trasportation (silicon wafer electronics industry,metal, solar)	✖ not significative
People trasportation	✖ significative
MEMC SILICON WAFER TRANSFORMATION AND USAGE	
Silicon wafer transformatione made by the customers (silicon wafer electronics industry,metal, solar)	✖ very significative
Chips usage	✖ not significative
Fotovoltaic cells usage	✖ not significative
Silicon steel for lamination usage	✖ not significative
Disposal of product contains silicon chip	✖ not significative
Disposal of packaging used to contain silicon wafers	✖ significative
ACTIVITIES FOR OUTSIDE COMUNITY	
Comunication/sensibilation	✖ very significative
Economic and social contribution	✖ very significative

✖ *very significative*
✖ *significative*
✖ *not significative*

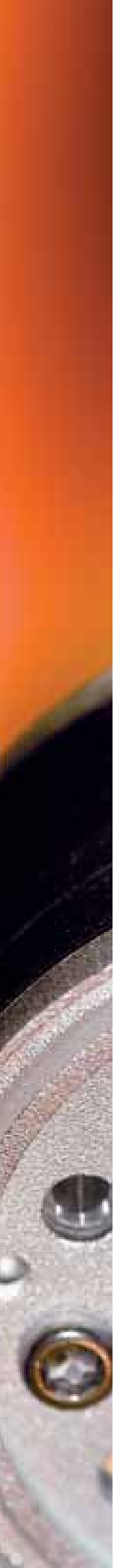
Environmental Improvement Actions: “THE ENVIRONMENTAL PROGRAM”

Below is a report of the 2010 environmental program, with the results obtained at the end of the year. Wherever the result is different from the value established in the target, the value is shown; otherwise, achievement of the target is confirmed, indicating completion of the action.

The following table presents the 2011-2014 environmental improvement program.

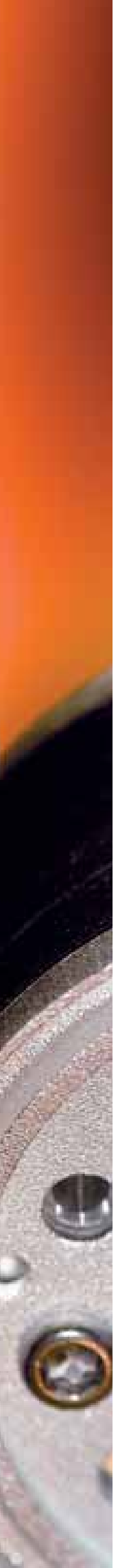
SUMMARY OF 2010 ENVIRONMENTAL PROGRAM						
Objective	**Activities**	**Action Code**	**Action**	**Target**	**Deadline**	**Status**
NORMAL CONDITIONS						
DIRECT ENVIRONMENTAL ASPECTS						
Energy consumption						
1a Reduction of energy consumption in the points of use	Plant: modif. polishing EPI Plants	1a1	Reduction of factory’s specific energy consumption by implementing engineering/factory energy consumption efficiency project	-5%	December 2012	✖
	Plants	1a2	Definition of purchasing and tendering specifications for high efficiency motors (Decree 9 April 2008)	Reduction in energy consumption	June 2010	✖
	Plants	1a3	Assessment of SMC proposal for pneumatic system checks, and subsequent reduction in electricity consumption	Reduction in energy consumption	June 2010	✖
	Plants	1a4	Feasibility assessment of photovoltaic energy production by covering front of factory car park, without own funds (Edison)	Reduct. energy consumption 1800 MWh/year	December 2010	✖
	Modification	1a5	Feasibility assessment of reducing post-lapping bank water consumption, using mains water instead of demineralised water, with subsequent energy saving on demineralised water production	-105.350 Kwh/year	June 2010	✖
	Plants	1a6	Installation of new chiller-cooling plant (Chilled water consumption reduction (EE))	-1800 Mwh/year	December 2010	✖
	Plants	1a7	Compressed Air production efficiency improv.	-600 MWh/year	December 2010	✖

✖ Delayed o modified action ✖ Completed action ✖ Cancelled action



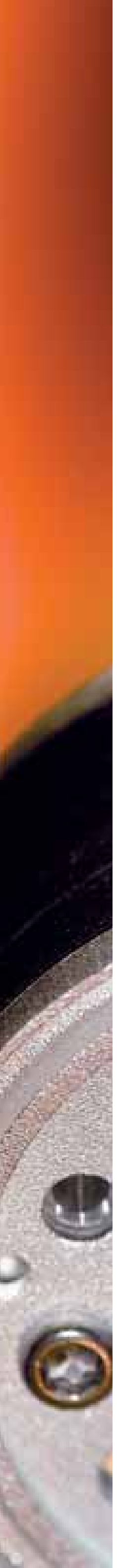
SUMMARY OF 2010 ENVIRONMENTAL PROGRAM						
Objective	**Activities**	**Action Code**	**Action**	**Target**	**Deadline**	**Status**
NORMAL CONDITIONS						
DIRECT ENVIRONMENTAL ASPECTS						
Water consumption						
2a Reduction of water consumption 1st and 2nd layer	Plant: modif. polishing EPI Plants	2a1	Reduction of factory's specific energy consum-ption: 1) completion of plan of corrective actions es-tablished in 2008 - ref utilities reduction team 2) monitoring of end of year results 3) verification of the type of fluid (demineralised water) used in the plant to assess replace-ment with mains water	-40000 m^3 of demineralised water	December 2009	Delayed o modified action
Consumption of auxiliary production materials						
3a Reduction of auxiliary production material consumption	Plant: modif. polishing EPI Plants	3a1	Reduction of total technical gas consumption (N_2) of the specific factory, by: 1) completing plan of corrective actions defined in 2008 - ref utilities reduction team 2) monitoring end of year results	-15%	December 2010	Delayed o modified action
	Wire Saw	3a2	Assessment of use of diamond wire on Wire Saw cutte	Elimination of use of silicon carbide	December 2010	Delayed o modified action
	Plants	3a3	Assessment of internal H_2 generation -Feasibility study-	Reduction of purchasing costs	June 2010	Delayed o modified action
	Lapping	3a4	Spiking reduction on 150mm Vertical Etcher	-17%	April 2010	Completed action
	Lapping	3a5	Lapping slurry concentration or flow reduction		December 2010	Delayed o modified action
	Polishing	3a6	Mk8 pad lifetime increase	-20% Reduction in waste	December 2010	Delayed o modified action
	Polishing	3a7	Slurry reduction on Mk8	-20%	December 2010	Delayed o modified action
	PAS	3a8	IPA recovery (and selling) for internal use	Completion of verification of possibility of recovery	December 2011	Delayed o modified action
	Lapping	3a9	Extension of life time of ALSC solutions from 8 to 12 h	73m3/y DIW	December 2010	Completed action

Delayed o modified action   Completed action   Cancelled action



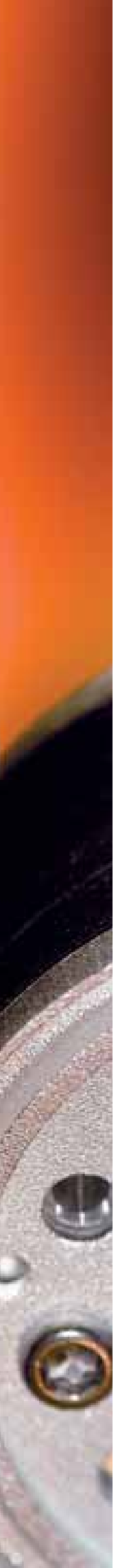
SUMMARY OF 2010 ENVIRONMENTAL PROGRAM						
Objective	**Activities**	**Action Code**	**Action**	**Target**	**Deadline**	**Status**
NORMAL CONDITIONS						
DIRECT ENVIRONMENTAL ASPECTS						
Waste and fluid drainage						
4a - Optimisation of WWT operation and improvement of output parameter control	Plants	4a1	Improvement of WWT management with control of critical parameters (purchase of a continuous analyser of incoming pollutants)	Average 24 h concentration of fluorides </= 4 ppm	December 2010	
Hazardous waste						
5a Reduction of hazardous waste	Lapping	5a1	Phosphoric-Nitric Acid Etchant Recycling -Feasibility study-	Reduction in waste	December 2010	
	Plants	5a2	Replacement of dielectric in Transformer 4	Reduction in hazardous waste	December 2010	
	Polishing	5a3	EP slurry reduction (150-200mm)	Reduction 100,000 m^3 of slurry	December 2010	
Non-hazardous waste						
5b - Reduction of non-hazardous waste for disposal	Cleaning	5b1	Reduction of packaging materials during internal processes	Reduction in waste	March 2010	
5c Improvement of waste management	Plants	5b2	Mud improvement plan: - reduction of dustiness of dried chemical-physical muds: monthly check of the need to clean container area - search for an alternative solution to the recovery and direct disposal of chemical-physical muds	Implementation of plan	December 2010	
	Lapping	5b3	Reuse of EdgeGuard Boxes	Reduction in waste	December 2010	
Emissions into the atmosphere						
6a Reduction of diffuse emissions	Plants	6a1	Assessment of reduction of dustiness of dusty mud storage, by putting a cover over mud containers	Reduction in diffuse emission of dust	December 2010	
	Plants	6a2	Addition of piping for basic substances in the external glue preparation area	Reduction in diffuse emission of NH3	December 2010	

Delayed o modified action   Completed action   Cancelled action

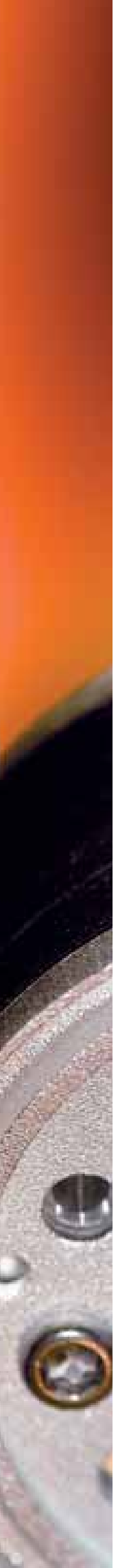


SUMMARY OF 2010 ENVIRONMENTAL PROGRAM						
Objective	**Activities**	**Action Code**	**Action**	**Target**	**Deadline**	**Status**
NORMAL CONDITIONS						
DIRECT ENVIRONMENTAL ASPECTS						
Ground contamination (past conditions)						
Ozone depleting substances						
8Sa Reduction of potential emissions of R22 into atmosphere	Plants	8Sa1	Implementation of plan to replace Freon R22 with non-ODC cooling fluids	Completion of replacement plan (CDZ Replacement, Reception)	December 2010	
EMERGENCY CONDITIONS						
INDIRECT ENVIRONMENTAL ASPECTS						
Water consumption						
2(E)a Guarantee necessary fire-fighting water supply	Surface water consumption	2(E)a1	Creation of an independent pumping tank and station for fire-fighting water	Completion of action	December 2011	
Ground contamination						
7(E)a Possible elimination of contamination in the event of accidental spillage	Handling of chemicals	7(E)a1	Upgrading chemical product loading-unloading areas	Completion of action	December 2010	
	UT	7(E)a2	Complete labelling of the factory's internal and external piping	Completion of action	December 2010	
	PAS	7(E)a3	New WWT mud storage floor - temporary deposit (with container wall washing system)	Completion of action	December 2010	
	PAS	7(E)a4	Assessment of asphalt surfacing of ecological station	Completion of action	December 2010	

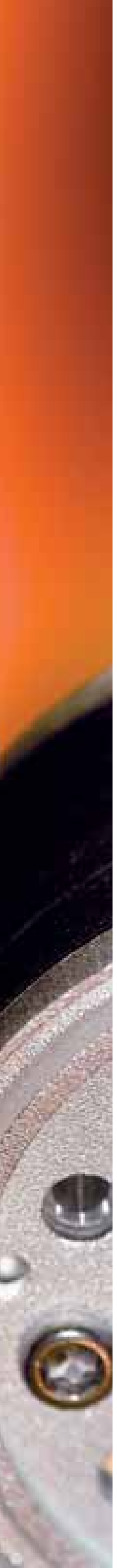
Delayed o modified action   Completed action   Cancelled action



2011-2014 ENVIRONMENTAL PROGRAM					
Objective	**Activities**	**Action Code**	**Action**	**Target**	**Deadline**
NORMAL CONDITIONS					
DIRECT ENVIRONMENTAL ASPECTS					
Energy consumption					
1a Reduction in energy consumption in the points used	Plant: Modif. Epitaxial Polishing	1a1	Assessment and energy audit, to reduce specific energy consumption of factory, by implementing engineering/ factory energy consumption efficiency Year 2011 POL/ CLEAN Department Year 2012 MOD Department Year 2013 EPI Department	-5%	December 2013
	Plants	1a2	Install an inverter on production plants	Total: - 32000kwh/y	December 2011
	Plants	1a3	Optimise CDZ (MAU 5 shutdown+division into compartments)	-10000 kwh/y	December 2011
Water consumption					
2a Reduction of water consumption from 1st and 2nd onsite wells	Plant: Modif. Epitaxial Polishing	2a1	Reduction of factory's specific water consumption: 1) completion of corrective action plan established in 2008 2) monitoring of end of year results achieved 3) verify type of fluid used (demineralised water) in the plant, to assess replacement with well water	-40000 m^3 of demineralised water	December 2011
Consumption of auxiliary production materials					
3a Reduction of auxiliary production material consumption	Plant: Modif. Epitaxial Polishing Plants	3a1	Reduction of total technical gas consumption (N2) of the specific factory, by: 1) updating the corrective action plan established in 2008 - ref team utilities reduction 2) Assessment of neutralisation Nitrogen replacement EPI area	-15%	December 2011
	Wire Saw	3a2	Assessment of diamond wire on wire saw cutter	Reduction of use of silicon carbide	July 2011
	Plants	3a3	H2 internal general assessment -Feasibility study-	Reduction of purchasing costs	December 2011
	Lapping	3a4	Lapping slurry concentration or flow reduction	Reduction of abrasive consumption	December 2011
	Polishing	3a5	Slurry reduction on Mk8	-20%	June 2011



2011-2014 ENVIRONMENTAL PROGRAM					
Objective	**Activities**	**Action Code**	**Action**	**Target**	**Deadline**
NORMAL CONDITIONS					
DIRECT ENVIRONMENTAL ASPECTS					
Consumption of auxiliary production materials					
3a Reduction of auxiliary production material consumption	Wire Saw	3a6	Assessment of use of mains water instead of demineralised water in the FISA tanks after diamond wire cut		December 2011
	EPI	3a7	Modification of the metrological process, and subsequent reduction in HF use of 49% with CV-meter	Reduction about 3t/y of HF 49%	December 2011
	PAS	3a8	IPA recovery (and selling) for internal use	Completion of recovery and sale possibility check	December 2011
Waste and fluid drainage					
4a Optimise WWT operation and improve output parameter controlcita	Plants	4a1	Improvement of wwt management with control of critical parameters (purchase of continuous analyser on incoming pollutants)	Average 24 h concentration of fluorides </o = 4 ppm	December 2010
Hazardous waste					
5a Reduce hazardous waste	Lapping	5a1	Phosphoric-Nitric Acid Etchant Recycling -Feasibility study-	Reduction of waste	December 2011
	Plants	5a2	Replacement of dielectric in Transformer 2	Reduction of hazardous waste	December 2011
Non-hazardous waste					
5b Reduce non-hazardous waste for disposal	Cleaning	5b1	Reuse of EdgeGuard Boxes	Reduction of waste	December 2011
	Polishing	5b2	Mk8 pad lifetime increase	-20% reduction of waste	May 2011
5c Improve waste management	Plants	5c1	Mud improvement plan: - reduction of dustiness of dried, chemical-physical muds: monthly check of need to clean container area - look for alternative solution to recovery or direct disposal of chemical-physical muds	Implementation of plan	December 2010



2011-2014 ENVIRONMENTAL PROGRAM					
Objective	**Activities**	**Action Code**	**Action**	**Target**	**Deadline**
NORMAL CONDITIONS					
DIRECT ENVIRONMENTAL ASPECTS					
Emissions into the atmosphere					
6a Reduce diffuse emissions	Plants	6a1	Feasibility assessment of photovoltaic energy production by covering front of factory car park and rear of factory car park, without own funds (Corporate Action)	Reduction CO2 emissions 1800 MWh/year	December 2012
	Plants	6a2	Adaptation of the scrubber of TCS Vent and EPI reactor Vent	Reduction of piped exhausts	December 2011
	Plants	6a3	Addition of piping for basic substances in the external glue preparation area	Reduction of NH3 diffuse emission	December 2012
Ground contamination (past conditions)					
Ozone depleting substances					
8Sa - Reduce potential emissions of R 22 into atm.	Plants	8Sa1	Implementation of plan to replace Freon R22 with non-ODC cooling fluids	Completion of replacement plan (Fan-coil)	December 2011
EMERGENCY CONDITIONS					
INDIRECT ENVIRONMENTAL ASPECTS					
Water consumption					
2(E) a Guarantee neces-sary fire-fighting water supplies	Surface water consumption	2(E)a1	Creation of an independent pumping tank and station for fire-fighting water	Completion of action	December 2011
Ground contamination					
7(E)a Eliminate possible contamination in the event of accidental spillage	Handling of chemicals	7(E)a1	Upgrading chemical product loading-unloading areas	Completion of action	December 2012
	U.T.	7(E)a2	Complete labelling of the factory's internal and external piping, with reference to the 5S actions relating to Plants	Completion of action	December 2011
	PAS	7(E)a3	Creation of a new cover over the WWT mud storage floor - temporary depot (with container wall washing system)	Completion of action	December 2013
	PAS	7(E)a4	Assessment of asphalt surfacing of ecological station	Completion of action	December 2013

Free translation of abstract from Environmental Statement validated by Environmental Verifier ERM Certification and Verification Services (Accredition number: UK-V-0031) 33St Mary Axe, London EC3A 8LL and approved by Italian Competent Body 04/08/2011.
On March 13, 2012 the Committee for the Ecolabel and Ecoaudit approved the renewal of registration No. IT-000123 valid until May 20, 2014.

Next annual validation will be performed within 2012 in relation to the year 2011.

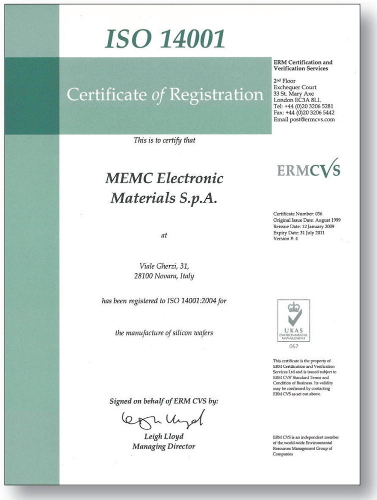
For any request of information consult the responsable of the task force tel: +39 0321- 334.424 Novara plant referring: mmigliorini@memc.it

1st Edition - October 2011

Graphic project: www.julita.it


OHSAS 18001
Certificate of Registration
This is to certify that
MEMC Electronic Materials S.p.A.
at
Viale Gherzi, 31,
28100 Novara, Italy
has been registered to OHSAS 18001:2007 for
the manufacture of silicon wafers
Signed on behalf of ERM CVS by:
Leigh Lloyd
Managing Director
ERMCVS


Certificato di Registrazione
Registration Certificate
EMAS
MEMC Electronic Materials SpA - Stabilimento di Novara
Viale Gherzi 31
38100 Novara (NO)
N. Registrazione: IT-000123
Data di registrazione: 19 dicembre 2002
FABBRICAZIONE DI ALTRI PRODOTTI CHIMICI DI BASE INORGANICI
NACE: 20.13
Roma, 13 marzo 2012
Certificato valido fino al: 20 maggio 2014
Comitato Ecolabel - Ecoaudit
Sezione EMAS Italia
Il presidente
Pietro Canepa


ISO 14001
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Managing Director
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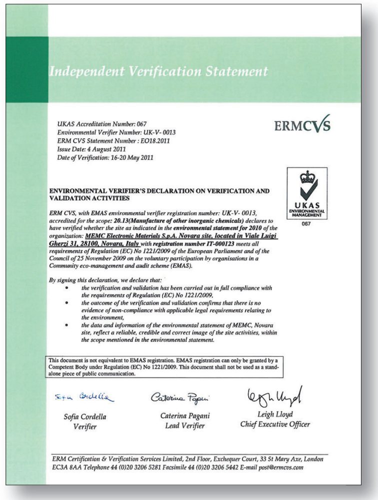
Independent Verification Statement
ERMCVS
ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES
Sofia Cordella, Verifier
Caterina Pagani, Lead Verifier
Leigh Lloyd, Chief Executive Officer

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Company Certification
ISO TS 16949
ISO 14001
OHSAS 18001

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