2010 Environmental Statement

MEMC

TECHNOLOGY IS BUILT ON US

Environmental Statement

MEMC Electronic Materials S.p.A.

The subject of this Environmental Statement
is the Merano factory of MEMC Electronic Materials S.p.A.

This document has been drawn up to comply with
Article 6 of EC Regulation no. 1221/2009 dated 25/11/09.
The published data refer to the period 2005-2010.

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LETTER FROM THE COMPANY MANAGEMENT

Today's global context is characterized by uncertainty. The world economy, which was seriously challenged by the 2009 economic and financial downturn, now seems more vulnerable than ever due to inadequate energy policies in the most highly developed countries.

The scarcity of fossil-derived resources - exacerbated by a surge in demand in emerging countries, tension in Middle Eastern countries and, more recently, a crisis occurring in various areas of Northern Africa - has been made even more critical by the lack of solid alternatives to oil and natural gas in the clean/renewable energy sector. With regard to nuclear power, the disastrous earthquake that struck Japan on March 11, 2011 has uncovered the risks and fragility of an energy source which was already being hotly disputed in numerous segments of the international scientific community. In this sense, the example of the Japanese economy seems emblematical, since its intense use of nuclear energy enabled it to gradually establish itself after World War II as one of the most solid economies on the planet, yet today it seems weak and almost impotent, as it is faced with a serious energy deficit which seems to be undermining its very foundations in a way that is unlikely to be reversed.

The international community has thus far been unable to identify applicable, effective, universally agreeable solutions to the problem of high rates of air and ground pollution caused by the intensive use of fossil fuels, as well as the problem of managing the radioactive waste accumulated in the fifty or so years of atomic energy production. At this delicate time in history, the world finds itself having to give top priority to dealing with what appears to be the most serious problem that must be solved if we are to provide the generations to come with a prosperous future: the identification of a truly eco-compatible global energy policy; i.e., a policy that reconciles the need for energy for industrial and private use over the short term with requirements of safety, health and liveability over the long run, which only the broad use of clean and renewable energy sources seems able to ensure.

Solar photovoltaic power

Although it is still hampered by steep investment costs that are only partially compensated by strong economic incentives made available for a certain length of time to companies in the sector by numerous national governments, solar photovoltaic power is continuing to grow. However, an ongoing increase in production capacity (especially in Asia and particularly in China) has ensured that global demand for raw materials (silicon), intermediate items (solar cells) and finished products (panels) has been steadily lower than supply, even though such demand shows no signs of decreasing.

As a result, prices along the entire supply chain for solar energy are not rising significantly, as would be useful for providing an acceptable level of compensation for investments and, with them, the ability of the entire sector to sustain itself; indeed, this latter condition is essential for guaranteeing new resources for scientific research into clean energy and for favouring the balanced development of solar photovoltaic power and other renewable energy sources in a "virtuous cycle" of linked events. However, our "virtuous cycle" has not managed to get off the ground.

The role of MEMC

In this context - which was already uncertain during the "boom" years of solar energy and is now being made particularly difficult by recent environmental emergencies and the worsening of the political situation in the Middle East and Northern Africa - MEMC Electronic Materials has continued to invest at the same pace in the photovoltaic sector, in conformance with its strategy of strengthening its production capacity for polycrystalline silicon. At the same time, MEMC is continuing - with renewed commitment - its research into developing production processes that are an alternative to current production technology, which is used (with only a few exceptions) by almost all the world's manufacturers of silicon for photovoltaic applications.

For the environment and in the environment

In the meantime, for over fifty years, MEMC has been engaged in the production of wafers for the manufacture of electronic devices (microprocessors, memories and many other kinds of integrated circuits), during which time it has succeeded in adapting its skills, processes and - in the final analysis - its product portfolio to the demands of the semiconductor market, a market that has gradually become more and more sensitive to the question of reducing energy consumption. Microprocessors are being redesigned to be increasingly less "energivores", and new applications are being developed whose purpose is to meet the needs of the consumer but at lower and lower environmental costs (a prime example is light-emitting diodes or LEDs: thanks to the use of silicon as a passive substrate, these devices will soon replace traditional, energy-hungry incandescent light bulbs).

A company culture that supports the environment

At MEMC, the conviction that a management policy directed toward sustainable development is an essential condition for ensuring the company's long-term future has led to technological and operational decisions whose purpose is to effect continuous reductions in the environmental impact of production processes by decreasing specific energy consumption, reducing non-recyclable waste and atmospheric emissions, and restricting the consumption of limited resources, especially groundwater.

Contributing constantly and substantially to reaching the environmental goals of MEMC are development projects for new production technologies and, on a daily basis, working to achieve ongoing improvements in existing processes through specific activities whose purpose is to evaluate possible environmental impact and to conserve both energy and highly critical natural resources. This is all made possible by the company's active participation in local projects financed by the EU in the sector of research applied to environmental protection (The Innovation Centre for Sustainable Chemistry).

The key tools supporting the goals of MEMC in the field of environmental protection are:

- the management system, which is applied in all operational sectors;
- informing, training and involving the entire staff at the company;
- publicizing the activities and results of potentially interested outside parties (stakeholders) the local community, and customers and suppliers

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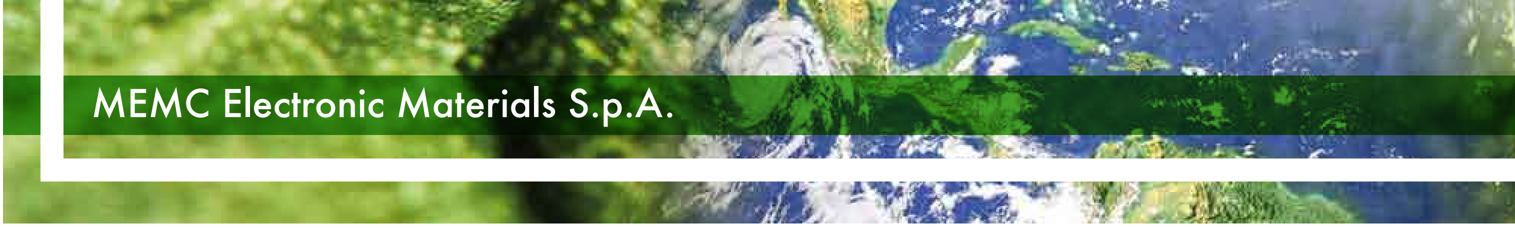


INTRODUCTION

Since 1999, the MEMC site in Merano has had a UNI EN ISO 14001-certified Environmental Management System, and since 2009, it has also been listed (no. I-000121) in the European register of organizations belonging to the EMAS (EC Regulation 1221/2001).

With respect to the EMAS Regulation, every year MEMC makes information on the company available to interested parties with our Environmental Statement, which is endorsed by an environmental examiner. This information includes the results MEMC has obtained in the environmental field and its programs for environmental improvement.

This Environmental Statement consolidates MEMC's desire to operate with maximum transparency toward its staff, the local community, public bodies, nearby companies and others operating on-site.

This document is the fourth edition of the factory's Environmental Statement.

The information contained in it has been updated to 31 December 2010, and the layout of previous editions has been maintained to make it easier to study the data and to compare it with data from previous years.

General Information

THE MEMC ELECTRONIC MATERIALS INC. GROUP

MEMC Electronic Materials Inc. is an international manufacturer of hyperpure silicon operating on the microelectronic market, and, since 2004, on the solar photovoltaic market.

The Group has its registered office in St. Peters, Missouri (USA). It has nine production plants worldwide (three in the United States, two in Europe, one in Japan, one in Malaysia, one in Taiwan, and a joint venture with a Korean partner), and covers the entire globe with its marketing network.

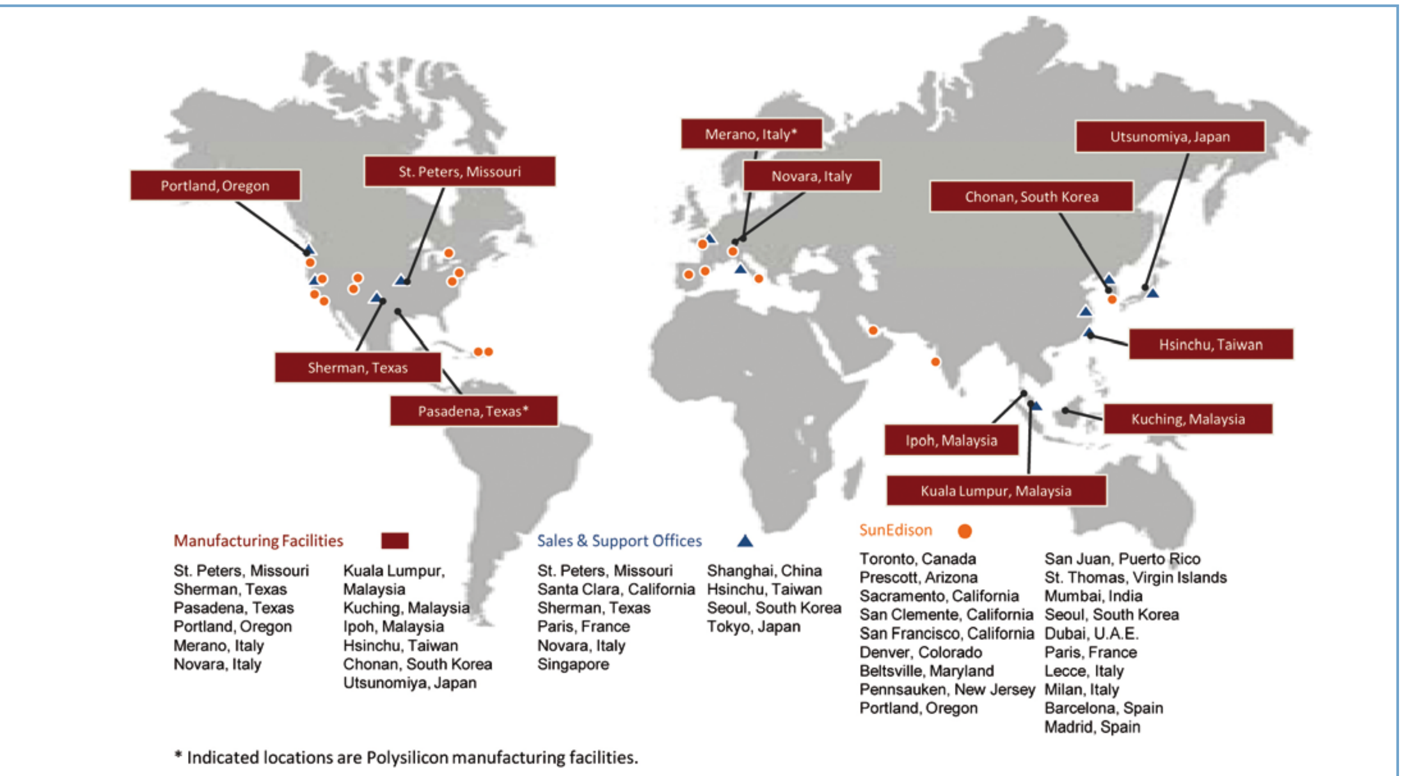
In November 2008, MEMC Electronic Materials Inc. acquired Sun Edison LLC, a North American leader in the solar sector with branch offices in North America and Europe (see Figure 1). Additional acquisitions have been completed and are in progress, with the ultimate goal of increasing MEMC's share of the solar market.

MEMC's production facilities in Europe are operated by MEMC Electronic Materials S.p.A. They consist of factories in Merano and Novara, which is also the Group's European headquarters.

MEMC S.p.A. customers are leading companies operating in the microelectronic (IT, telecommunications, mobile telephony, high-fidelity, transport, electromedical products, industrial electronics) and solar photovoltaic sectors.

MEMC Electronic Materials Inc. has been listed on the New York Stock Exchange since 1995 (symbol: WFR).

Figure 1 - MEMC in the world



THE MERANO FACTORY

The Merano factory produces pure silicon in polycrystalline form, and then uses this product as a raw material in a subsequent phase in the production process to produce monocrystalline silicon.

The Merano facility produces silicon for both the microelectronics market and the solar photovoltaic market.

Due to the continuous, growing demand for silicon on the photovoltaic market, MEMC Electronic Materials began an important expansion project in 2007 whose purpose was to expand the capacity of the Merano production facility. The final goal is to increase the production of polycrystalline silicon for the photovoltaic market. The expansion essentially involves an increase in the capabilities of certain existing plants, along with the construction - from the ground up - of a number of new buildings, processing systems and their relative infrastructures, as described in detail in the next section entitled, "The History and Recent Developments of the Merano Factory".

A SNAPSHOT OF THE MERANO FACTORY

MEMC Electronic Materials S.p.A.
Merano Factory
Via Nazionale, 59 - 39012 Merano (BZ), Italy
www.memc.com - infomemc@memc.it

NACE code: DG 24,13
Manufacturer of other inorganic chemical products

ISTAT (ATECO2003) code no.: 24,130
Manufacturer of other inorganic chemical products

Dimensions of the site before expansion:

Total area	100,688 m^2
Covered area	23,141 m^2
Open areas	60,675 m^2
Green area	16,872 m^2

Current dimensions of the site after expansion:

Total area	102,475 m^2
Covered area	32,635 m^2
Open areas	60,365 m^2
Green area	9,475 m^2

Manufacturing in a continuous cycle:
52 weeks/year
7 days/week
3 8-hour shifts/day

Staff
As of 31/12/2010, MEMC employed 529 individuals at Merano, of whom:
40% with high school and college degrees
374: Production
21: in the Technology and Research areas
36: maintenance personnel
24: working on innovations in plant systems
13: working on innovations in equipment
2: specializing in Quality Control
15: working in the Safety, Environment and Security area
44: working in Human Resources; IT and Telecommunications; Procurement and Purchasing; Logistics and Warehouses

This personnel is supplemented with staff from outside companies (painting, insulating, plant systems, structural work, electrical work, cleaning, cafeteria), who number approximately 30 associates that work daytime hours, only.

A first aid centre is also included, where a doctor is on duty twice a week.
On average, there are 230 persons working at the factory.

CERTIFICATIONS		
QUALITY	**ENVIRONMENT**	**SAFETY**
ISO9002 in 1991 ISO9001 in 1994 QS9000 in 1999 ISO9001:2000 in 2003 ISO/TS 16949 in 2003	ISO 14001 in 1999 EMAS in 2002	OHSAS in 2007

Besides complying with applicable international standards, the Integrated Environmental and Safety Management System at the facility abides by the provisions of art. 7 and attachment III of Italian Legis. Decree 334/99, and Ital. Ministerial Decree dated 9/8/2000.

Turnover of MEMC S.p.A. in 2010:
276,380,000 Euros (data as of 31/12/2010)

THE HISTORY AND RECENT DEVELOPMENTS OF THE MERANO FACTORY

The 1920s: Montecatini builds a factory for the production of fertilizers (ammonium sulphate, calcium nitrate, ammonium nitrate) in Merano, whose area is chosen for the availability of cheap electric power and local raw materials.
World War II: The factory is used to produce explosives and heavy water.

1955 - 1972: Pilot processes are begun at the factory for the production of various types of substances such as beryllium oxide, metallic calcium, metallic lithium, lithium carbonate and hyperpure sodium.

1961: The experimental production of hyperpure sodium for semiconductors is begun.

1974: SMIEL (The Hyperpure Materials for Electronics Company) is founded. The factory is completely restructured and reconverted for the exclusive production of hyperpure silicon - from polycrystal to the production of wafers.

1977: Wafer production is transferred to the Novara production facility.

1980: SMIEL is acquired by Dynamit Nobel AG of Germany, and the company's name is changed to DNS - Dynamit Nobel Silicon.

1988: The chemicals division of Dynamit Nobel AG, which includes the Merano factory, is acquired by another German company called Hüls, a member of the VEBA multinational group.

1989: Hüls acquires the Monsanto Electronic Materials company in the Monsanto Group, thus creating MEMC Electronic Materials. Since then, the Merano factory has also been called MEMC Electronic Materials.

1999: A new company structure is instituted with the merger of VEBA and VIAG, thus creating the E.ON AG Group.

2001: E.ON AG sells its share to a new majority stakeholder called Texas Pacific Group (TPG), an American investment firm.

2003: TPG acquires full ownership of the Hsinchu factory in Taiwan.

2006: With an investment of approximately 18 million dollars (around 15 million euros), the Merano factory is expanded to meet the demand for polycrystalline silicon on the solar photovoltaic market.

This expansion project is subjected to an Environmental Impact Study, which concludes positively with approval by the Bolzano provincial government (Resolution no. 870 by the Provincial Executive, dated March 13, 2006).

The project essentially consists of modifying several limited sections of the poly plant and installing new processing units for closed-cycle recovery of the substances involved in the process (chlorosilane condensation unit, chlorosilane fractioning unit, hydrogen purification unit, TCS storage, a water-type level-three air cooling unit, two UPS units, and doubling of the hydrochloric acid plant).

This expansion leads to a first, significant increase in production (see Table 1, 2006 and 2007).

2007: The expansion project currently in progress is begun.

The following are brief descriptions of the work involved in the overall project. It must be noted that the expansion project has only affected the production process for polycrystal.

In Phase 1, technical changes were made to the polycrystal production reactors, and the relative infrastructures were upgraded, in order to increase production capacity by around 30%.

The work in Phase 2 was planned with the goal of tripling polycrystal production capacity and thus increasing production. While MEMC's facilities were being expanded, the EVONIK DEGUSA company built a trichlorosilane production plant of its own, which was taken into account when the indirect environmental impact of the project was evaluated.

Here is a list of the new sections:

- a new chlorosilane synthesis unit with relative supplementary systems (chlorosilane purification, fractioning and storage) built by EDIT (Evonik Degussa Italia), whose facilities are jointly placed with MEMC facilities on the eastern side of the factory. EDIT will produce TCS, a raw material used in MEMC plant systems

- a new chlorosilane purification unit

- new reactors for producing hyperpure polycrystalline silicon

- a new unit for recovering non-reacted chlorosilane

- new reactors for hydrogenation of silicon tetrachloride

- a new unit for absorbing hydrochloric acid in water

- a new unit for compressing and liquefying hydrochloric acid

- a new nitrogen production unit (an on-site Air Liquide system, currently under construction)

- a new hydrogen purification unit

- a new hydrogen purification unit (an on-site SAID system, still in the planning stage).

These projects have resulted in the creation of:

- new metal structures for installing the plant systems

- a new building for the TET hydrogenation reactors and polycrystalline silicon deposition reactors

- a new control room for remote monitoring of plant systems

- new electrical stations with relative transformers

- expanded storage areas for raw materials.

The expansion has thus resulted in major building construction as well as work on plant systems, which were designed and built using the finest technologies available for minimizing risks and environmental impact.

The most important consequences of these projects from the environmental standpoint are described in the next section, entitled "MEMC's commitment to environmental protection".

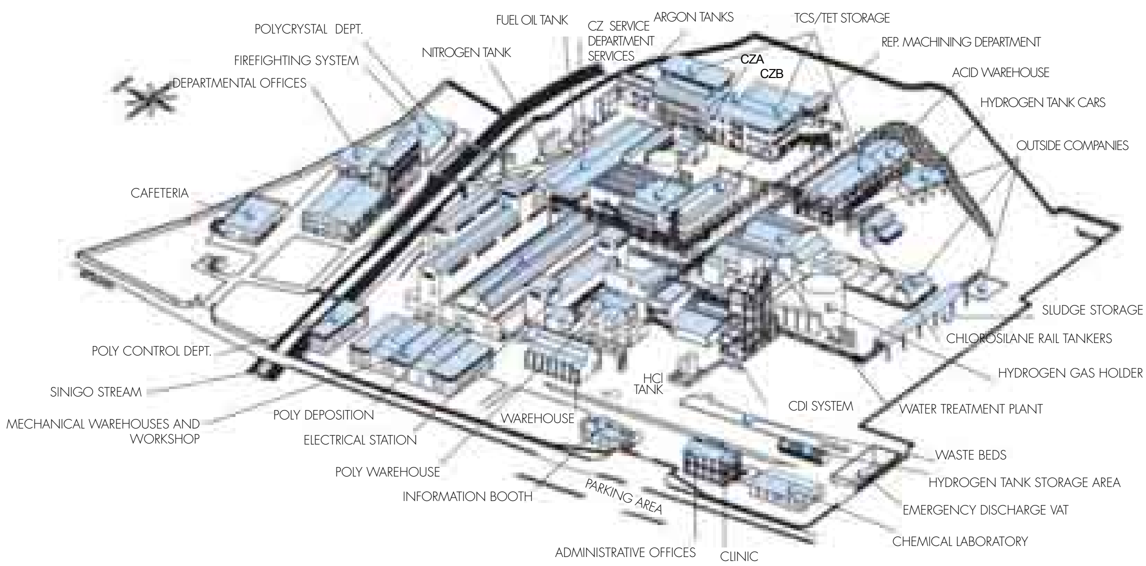


Figure 2 - Previous layout

Figure 3 – A view of the entrance after the expansion (project rendering)

MEMC's COMMITMENT TO ENVIRONMENTAL PROTECTION

Activities whose purpose is to protect the environment have long been an important commitment for MEMC, which over the past two decades has completed numerous projects both to correct the effects of past production and to eliminate, reduce or prevent the environmental impact generated by current operations.

The following are brief descriptions of the most important actions taken.

1990: MEMC begins its first project for reclaiming land, subsoil and its aquifer - and for monitoring and preventing their contamination - with an initial program of testing, regeneration of collection vats for exhausted chemicals, replacement and/or double-wall insulation of the relative underground pipes, elimination of certain substances (trichloroethylene and trichloroethane) from the production process, the creation of a "hydraulic barrier" hydrogeologically downstream from the production site to contain contamination completely "within" the company's perimeter, and "washing" the contaminated aquifer by injecting unpolluted water into several wells placed hydrogeologically upstream of the site.

1990: A series of projects begins (and continue to this day) that enable MEMC to reduce significantly the specific consumption of electric power (60 toe/ton of silicon were consumed in 1990; this figure was reduced to 31,9 toe/ton by 2007) and groundwater (13 m^3 of water/kg of silicon were supplied in 1990; this figure was reduced to 5,58 m^3 water/kg of silicon by 2007).

1991: MEMC reclaims and transfers to the Province of Bolzano the area currently occupied by a small manufacturing/commercial zone located just south of the property. In years past, when the factory produced sulphuric acid, this area was contaminated by heavy metals.

1999: The MEMC Environmental Quality System is certified to meet the ISO 14001 standard. The company begins systematic monitoring of all environmental aspects at the factory: atmospheric emissions, water discharge, waste production, noise, etc., as described in the Environmental Statement

2000-2004: MEMC begins and completes a project for characterizing, reclaiming/securing and monitoring several "former cafeteria" areas (where a parking lot is now located) and interior areas at the factory, pursuant to Decree 471/99. The project starts with an historical investigation to reconstruct the operations carried out at the site in the past, in order to identify possible points of contamination, and with the collection of complete data and information from test programs already carried out. To broaden knowledge of the degree of contamination of the site, possible "mobility" of pollutants, and the risk to human health deriving from their presence, additional drilling (approved by the competent authorities) is effected for gathering and analyzing soil samples, and for placing piezometers which would collect and test the groundwater. These investigations enable the company to develop and implement (with the approval of the competent authorities) the necessary reclamation operations, which are concluded in 2004 with final testing and subsequent forwarding of reports issued at the end of reclamation. The effects of the actions that have gradually been taken over the years are regularly checked through monitoring of surface groundwater and through sampling of the water by piezometers that check for and analyze contaminants, in compliance with the provisions of an internal monitoring plan which meets applicable regulations and MEMC Corporate guidelines.

2002: MEMC obtains EMAS registration. Since then, the company is inspected every year by an accredited, independent certifying agency and publishes an Environmental Statement that contains detailed information on environmental impact, and on improvement programs and the relative results, which have been verified and validated by the certifying agency over the years.

2006: The Merano factory is expanded to meet the demand for polycrystalline silicon on the solar photovoltaic market. New plant systems are designed and built to meet environmental protection requirements. The following environmentally significant results have already been achieved:

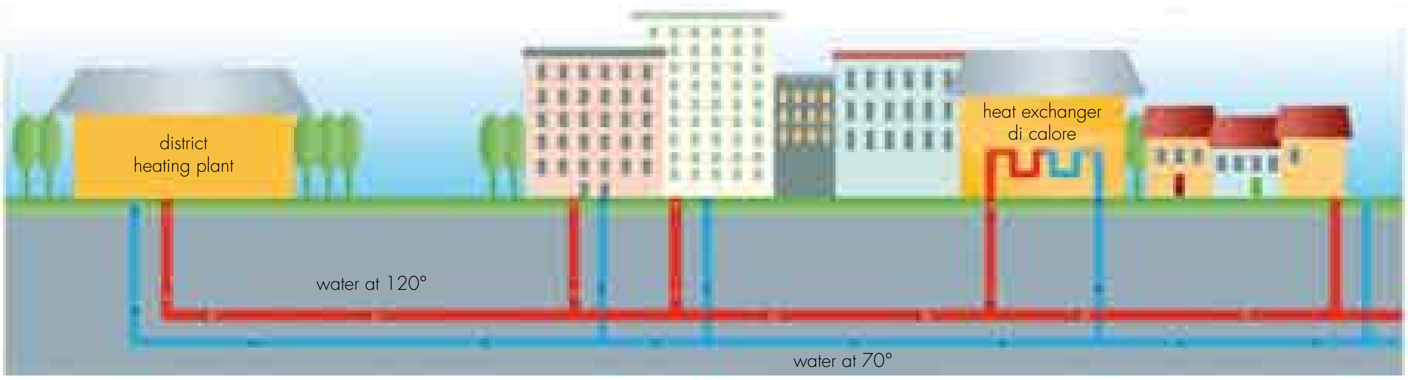
an increase in silicon production for solar energy use[1];

optimization of electricity and water consumption through engineering that has reduced specific consumption figures, recycling of silicon (originally set aside as waste) into the production cycle, the use of refrigerant gasses that do not harm the ozone layer (ODP = 0) or contribute to global warming (GWP = 0).

Again in 2006, a district heating project begins that would transfer a portion of heat generated by the production process (approx. 10 MkCal/hr) to the people in Sinigo and Merano for heating their buildings and/or producing domestic hot water.

District heating consists of producing a high-temperature heat transfer fluid (usually water or steam hotter than 100°C) at a large heating plant and distributing the fluid through an insulated underground pipeline system to a number of buildings (which can even be located over one kilometre away). After it arrives at its destination, the heat transfer fluid gives up its heat to the water in the heating and/or hot water system at each user's location. Transfer takes place through a heat exchanger that replaces the user's boiler or hot water heater. After heat exchange, the cooled heat transfer fluid returns to the heating plant, where it is brought back to its maximum temperature and begins its course once again.

In the MEMC project, the production plant is the Merano factory, and the heat transfer fluid is process cooling water, which is to be fed into the district heating circuit at a temperature of around 105°C.



[1] the advantages obtained by producing electricity using photovoltaic cells are briefly illustrated in the box entitled, "Photovoltaic Solar Energy"

2009: In 2009, SunEdison - the leading player on the solar photovoltaic sector in North America, which is acquired in November by MEMC Electronic Materials Inc. - receives the necessary permits for developing and building a photovoltaic park in the province of Rovigo, in the Veneto region of Italy.

The park, set up in 2010, is the largest in Europe. With an installed capacity of 72 MW, it will surpass two current European "megaparks" in Olmedilla, Spain (60 MW) and Straßkirchen, Germany (50 MW).

With such capacity, the system will generate enough energy in its first year of full operational capability to power 17,150 homes, thus contributing to "not release" 41,000 tons of carbon dioxide into the atmosphere: the equivalent of taking 8,000 cars off the road.

2010: The "district heating" project is about to be completed, with plant systems undergoing final testing. The municipal government and the utility company are committed to heating at least one family out of four with the new district heating system within a couple of years, and half of the heat required by the entire system will be provided by MEMC.

Also, the expansion project is progressing as scheduled. The advantages of the project from the environmental standpoint can be summarized as follows:

The project has not created new points of emission or water discharge; in fact, the vapour phases in the columns and in the deposition/hydrogenation reactors are released into special low-temperature condensation systems that recover chlorosilane completely. The other substances that cannot be condensed are hydrochloric acid and hydrogen, which in any case flow into closed circuits. The hydrochloric acid is used to produce an aqueous solution (which is still sold on the market), and the hydrogen re-enters the production cycle. Detailed information on emissions is available in the section below entitled, "Atmospheric Emissions".

Furthermore, the increased polycrystal production for the solar market will not have a significant effect (less than 10%) on quality control processes for the product. These procedures use acidic mixtures and other dangerous substances, whose effluents are now given suitable treatment:
- gaseous effluents are sent to two water-type scrubbers and then released into the air;
- waste water is sent to an ("ecological") acidic waste treatment plant.

Thus, the emissions released into the air and water by quality control processes will not vary significantly, either.

No significant variations have occurred in the specific consumption of well water; indeed, less water was used in 2010 than in 2009, since the cooling water required by the new section is provided by a closed-circuit cooling system with evaporating towers, which are also equipped with unit heaters that reduce "white cloud" and resulting visual impact. Details on water consumption are available in the section below entitled "Water Resources".

No significant variations have occurred in the specific consumption of electricity; from the standpoint of energy consumption, the new deposition and hydrogenation reactors are more efficient than previous technologies.

Production in 2010 was almost double that of 2000, but electricity consumption per ton of product is approx. 74% of the 2000 figure. Also, even though specific consumption has increased slightly over the previous two years, it is still within the range of variation that has been observed over the past four years.

The specific consumption of fuel oil has not increased. The new distillation columns operate with heat that is recovered from water discharged from the deposition and hydrogenation reactors, even though certain uses still require the support of diathermic oil at 180°C. In any event, it is pointed out that the 2011-2013 environmental plan specifies a switchover from fuel oil to natural gas for producing heat.

With the expansion, the old 65 kV electric power line has been abandoned in favour of a more efficient 220 kV line.

Finally, the start-up of EDIT's line for synthesizing TCS from metallurgical-grade silicon will close the production cycle and consequently reduce shipments of hazardous substances (TCS, hydrochloric acid and hydrogen in particular).

However, with regard to the time needed for completing and starting up the new TCS synthesis plant, a transition phase is planned during which the polycrystalline silicon production capacity of the MEMC production facility will gradually increase. During this phase, the way raw material is procured will not change; that is, railway tank cars, tank containers and hydrogen tank cars will be used.

There are two major negative factors associated with the creation of the new units. The first is the use of a larger area of land; the new facilities and expansions have taken up approx. 11,000 m^2 of space (around 10% of the total area of the factory).

The second is visual impact; the new facilities are rather large as compared with the surrounding urban setting and the landscape.

THE CONSTRUCTION SITE FOR THE NEW PLANT SYSTEMS

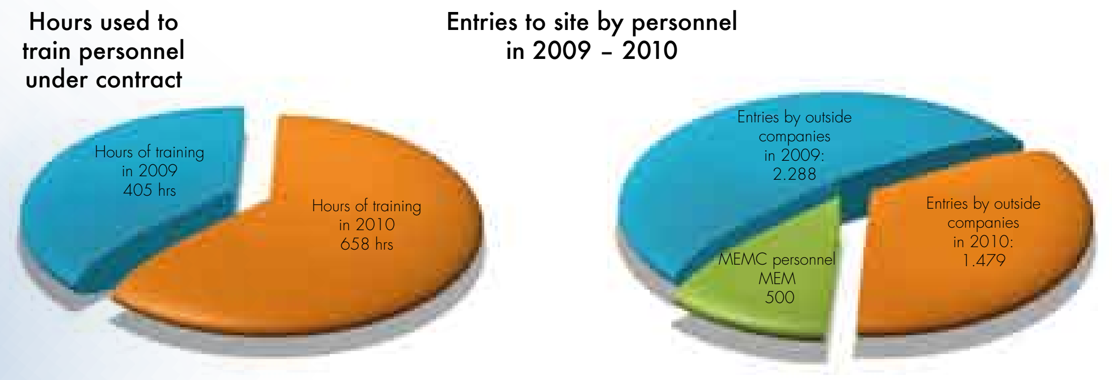
The construction site for the new plant systems has proven to be extremely burdensome for the following reasons:

The production cycles in MEMC operations have not been interrupted, but have had to be adapted to coexist with a job site which is significantly different from the type typically used for the construction of industrial buildings

Two separate production units are being constructed at the same time (the expansion of the MEMC polycrystal department, and the construction of a new trichlorosilane production system by EVONIK DEGUSSA). The facilities of the EVONIK company are hosted at the MEMC site, with resulting traffic of trucks, materials and personnel through the factory.

The activities have been organized to minimize the "pressure" of a large number of construction workers (219 firms with almost 2300 employees were involved in the project in 2009, and 1479 workers were involved in 2010, as compared with MEMC's staff of 500). This has led to the presence of 580 persons when the construction site is operating. The workers belong to different companies and are all present at the same time, in addition to the usual number of 230-250 MEMC employees at the facility.

MEMC has devoted significant resources to training and familiarizing outside construction personnel with the rules of behaviour required for meeting the company's conditions of safety and environmental friendliness, both during normal operations and in case of emergency.



The complexity of the work can be also seen in the number of contractors (at least three) and the numerous individuals who are responsible for coordinating construction operations. In turn, these people necessarily have had to interface with one another to exchange both general information and specific information on risks, so that the various separate operational "scenarios" could be handled effectively. All this has required 4300 hours of work by the safety coordinator hired by MEMC.

GEOGRAPHIC LOCATION AND ENVIRONMENTAL CONTEXT

The MEMC production site is located in the municipality of Merano, in the Alto Adige region of Italy, specifically in the Sinigo industrial zone, which is classified as an "Industrial Zone of Provincial Interest" in Merano's Municipal Urban Plan (MUP).

On the north, the factory is bordered by an agricultural area classified as an "agricultural green zone" in the MUP. The closest house in this direction is located over 50 meters beyond the factory boundary, and the first buildings in the hamlet of Sinigo are located 200 meters away from the boundary.

To the east, the company's facility is delimited by the porphyry landform of the Adige river valley, which is characterized by vineyards, wooded areas, bushes and, in the section facing the factory, by broad sections of a rocky, rugged wall that are part of an area classified as an "area of geodynamic processes" in the Geological Zoning classification of the MUP.

Small factories and businesses are located to the south of the site.

The western boundary consists of provincial road no. 117, which connects Merano and Bolzano. Beyond this road, the area facing the factory is mostly used for "completion of production installations", and it is here that the parking area for employees is located. More to the north, on the other hand, is an "area for residential completion". The Adige River is located beyond this area, around 300 meters to the west. The old centre of Merano is situated around 4.5 kilometres north of the factory. The municipality has a population of approx. 38,000. The residential area of Sinigo, which is part of the municipality of Merano, is located around a half a kilometre north of the factory.

The areas in the municipality that are closest to the factory are Cermes, Lana, Postal and Marengo, with populations of 1,400, 11,000, 1,700 and 2,500, respectively.

The MEMC site can easily be reached by car by taking the A22 motorway to Bolzano and then the Merano-Bolzano superhighway to the Lana – Zona Industriale exit.

The railway stations of Postal, Maia Bassa (where a railway freight yard is located) and Merano Central on the Bolzano-Merano railway line are situated only a few kilometres from the factory.

The factory is approx. 25 kilometres from Lainburg Airport (ABD – Aeroporto Bolzano Dolomiti) in the province of Bolzano.

This area is distinguished by a lack of significant environmental problems, as can be gathered by analyzing the documentation on which provincial and municipal planning is based. The most important problem consists of emissions released by traffic and by the domestic combustion of fuels.

MEMC'S POLICY FOR THE ENVIRONMENT, HEALTH AND SAFETY

MEMC's "Policy for the Environment, Health and Safety" is a combination of objectives that the Company is pursuing to protect the environment, and the health and safety of its staff and the local population.

The Policy is defined and underwritten by the managers of every one of the Company's departments, who in this way, underline their own full support and involvement in it.

AMBIENTE, SALUTE E SICUREZZA: POLITICA MEMC Spa

MEMC
TECHNOLOGY IS BUILT ON US

È Politica di MEMC Electronic Materials SpA condurre il complesso delle attività nell'ottica del continuo miglioramento delle prestazioni nei campi della tutela ambientale e della prevenzione e protezione dai rischi di incidente rilevante e degli infortuni.

Perseguire questo obiettivo significa per l'Azienda essere coerenti con i valori qui elencati:

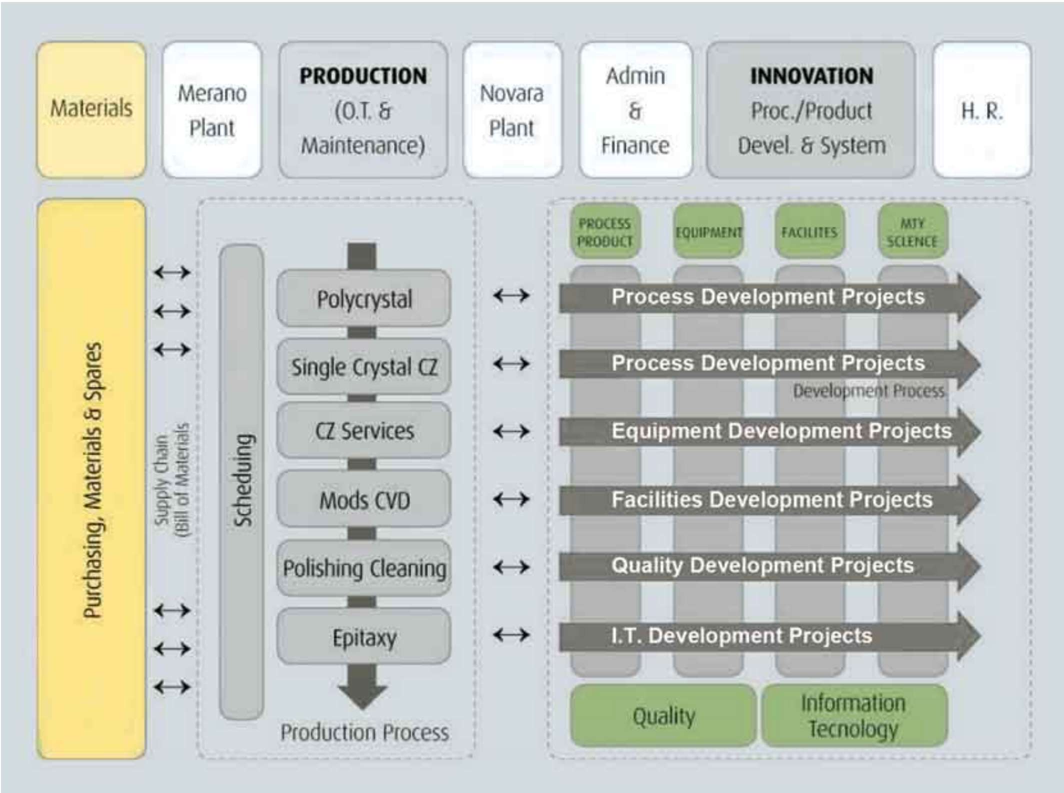
- *SIAMO UN' AZIENDA LEADER NELLA PRODUZIONE DI SILICIO PER IL MERCATO DELLA MICROELETTRONICA E PER LE APPLICAZIONI DI SOLARE FOTOVOLTAICO. VOGLIAMO MANTENERE E MIGLIORARE NEL TEMPO I NOSTRI STANDARD DI QUALITÀ, DI GESTIONE DELL'AMBIENTE E DELLA SICUREZZA.*
- *DISPONIAMO DI RISORSE UMANE QUALIFICATE ED ESPERTE, CHE OPERANO NELL' AMBITO DI UN' ORGANIZZAZIONE, SUPPORTATA DA ADEGUATI SISTEMI E PROCEDURE, IN CUI RUOLI E RESPONSABILITA' SONO DEFINITI COERENTEMENTE CON GLI INDIRIZZI LEGISLATIVI IN MATERIA DI TUTELA AMBIENTALE, SALUTE E SICUREZZA SUL LAVORO.*
- *CONSIDERIAMO PRIORITARIE LE ATTIVITA' DI PREVENZIONE DEI CASI DI EMERGENZA, MA DIAMO ALTA RILEVANZA ANCHE AGLI EVENTI PREVEDIBILI, PER ESSERE PREPARATI A GESTIRLI CON LA MASSIMA EFFICACIA, IN PIENA COLLABORAZIONE CON LE AUTORITÀ PREPOSTE, AL FINE DI SALVAGUARDARE L'INTEGRITA' FISICA DELLE PERSONE E L'AMBIENTE ESTERNO.*
- *NELL' OTTICA DEL MIGLIORAMENTO CONTINUO, VOGLIAMO ANDARE OLTRE IL SEMPLICE RISPETTO DELLE LEGGI VIGENTI. PERTANTO, MANTENIAMO ATTIVO UN SISTEMA DI GESTIONE PER OBIETTIVI DELLA TUTELA AMBIENTALE, DELLA SALUTE, DELLA SICUREZZA SUL LAVORO, BASATO SULLA VALUTAZIONE PERIODICA E CONDIVISA DEI RISCHI E DEGLI IMPATTI AMBIENTALI E SU ATTIVITA' DI MIGLIORAMENTO PROGRAMMATE E VERIFICATE ANNUALMENTE.*
- *SIAMO FORTEMENTE ORIENTATI, ANCHE PER L'EVIDENTE VANTAGGIO ECONOMICO,AD UTILIZZARE RESPONSABILMENTE LE RISORSE NATURALI ED A RIDURNE PROGRESSIVAMENTE I CONSUMI, A MINIMIZZARE LA PRODUZIONE DI RIFIUTI ED A PREVENIRE OGNI FORMA DI INQUINAMENTO DELL' ARIA, DELL' ACQUA E DEL SUOLO.*
- *CREDIAMO CHE IL COINVOLGIMENTO E LA CRESCITA PROFESSIONALE DELLE PERSONE SIANO UN MEZZO ESSENZIALE PER OTTENERE MIGLIORAMENTI SIGNIFICATIVI ANCHE IN AMBITO DI SICUREZZA, SALUTE E TUTELA AMBIENTALE. PER QUESTO SVILUPPIAMO ANNUALMENTE PROGRAMMI DI COMUNICAZIONE E DI ADDESTRAMENTO E FORMAZIONE SPECIFICI O INCLUSIVI DI TALI ASPETTI, COINVOLGENDO PER QUANTO UTILE E POSSIBILE LE PARTI ESTERNE INTERESSATE O LEGATE A VINCOLI CONTRATTUALI.*
- *SIAMO INSERITI IN UNA COMUNITÀ E IN UN CONTESTO SOCIALE ED AMBIENTALE CHE VOGLIAMO PRESERVARE E VALORIZZARE. PER QUESTO CI IMPEGNAMO AD APPLICARE LE MIGLIORI TECNOLOGIE DISPONIBILI, PER IL MIGLIORAMENTO DEL QUADRO ATTUALE E A SUPPORTO DI UN MODELLO DI SVILUPPO SOSTENIBILE.*

TUTTI NOI DIPENDENTI SIAMO IMPEGNATI A RENDERE VIVI ED OPERANTI QUESTI VALORI

Mauro Pedrotti *Presidente, MEMC S.p.A.*	**Marco Sciamanna** *Direttore, Unità Operativa Novara*	**Claudio Pasolli** *Direttore, Stabilimento Merano*
Fabrizio Leoni *Direttore, Innovazione e Sistemi*	**Mauro Pedrotti** *Direttore, Risorse Umane*	**Bruno Ferrari** *Direttore, Approvvigionamenti e Qualità Fornitori*

THE ORGANIZATIONAL STRUCTURE

The organizational structure of MEMC S.p.A. (with factories in Merano and Novara) is shown in the figure below.



The production system is organized into six departments - three in Merano (Polycrystal, Single Crystal CZ and CZ Services) and three in Novara - which are responsible for attaining operational goals of quality, cost, efficiency and productivity in compliance with company procedures and with applicable laws on environmental protection and workplace safety.

The Supply Chain area is the only department responsible for supervising the planning and progress of production at both factories, and for the packaging and shipment of finished product. Its purpose is to ensure that the company's goals for production and prompt delivery are met.

Technological development of production processes, maintenance engineering, plant design, the Quality System and its laboratories, the computer systems, and industrial engineering are handled by the "Innovation" department through development projects that support the generation of new know-how. A group of technicians acts as the technical interface with production departments, in order to reconcile the company's technological development operations with its production requirements, and with the specific demands of the market.

Finally, the Business, Administration, Finance and Management Control departments at both factories are managed as single units, although each factory has its own Materials, Human Resources, and Safety and Environmental Protection departments.

Within the organizational structure described above, a management committee called the EHS Steering Committee has been created that is responsible for the annual planning of environmental protection and health/safety activities at both factories. To manage and coordinate these activities on the factory level, the EHS Steering Committee employs an operations committee called the EHS Committee, which

consists of the managers of the departments that have the greatest environmental impact.
Responsibility for implementing ESH policy and goals is shared by managers, persons in charge and employees according to the authority and limits associated with their positions. Each individual must answer for his actions to his superior, and each individual is responsible for his subordinates.

M.R.E.P.
Management Representative for Environmental Protection

MANAGEMENT COMMITTEE
(ESH Steering Committee)

President of MEMC S.p.A.
Materials Manager
Innovation Manager
Factory Managers at Merano and Novara
Logistics Manager
Human Resources Manager

OPERATIONS COMMITTEE
(ESH Steering Committee)

Factory Manager
Polycrystal Dept. Manager
Monocrystal Dept. Manager
Systems Innovation Manager
Equipment Innovation Manager

The Management Representative for Environmental Protection (M.R.E.P.) named by Management coordinates the work of the EHS Steering Committee and the EHS Committee.

ENVIRONMENTAL PROCEDURES

The environmental management document system at MEMC's Merano facility consists of procedures and operational regulations "per department". These procedures and regulations also contain instructions for the correct performance of tasks from the standpoint of safety and the environment, as well as "environmental" operational procedures and regulations (identified by the abbreviation ESH) that include: the basic procedures required by the regulations of reference, procedures for handling emergencies, and numerous operational regulations for dealing with environmental matters common to all departments (waste management, control of hazardous waste water discharge, handling of chemicals, housekeeping, etc.)

These environmental procedures include a definition of rules for regularly evaluating environmental aspects and impact, which is carried out according to the following criteria:

The following are considered for each direct environmental aspect: the regulatory framework; the potential impact on both the local and global level; the impact on the outside community; compliance with the environmental policy of the facility and with the environmental guidelines of the MEMC Group; management costs; customers' requests and possible further competitive advantages. This applies to aspects associated with normal and emergency operating conditions, aspects generated in the past (such as soil contamination), and aspects that will unavoidably be caused by activities which have not yet begun, but are planned for the future.

The following are considered for each indirect environmental aspect: the importance of the environmental impact that is apparently associated with the aspect; the frequency with which MEMC has utilized the entity that is causing the indirect environmental impact; the level of control that can be exerted by MEMC on the entity in question.

DESCRIPTION OF PRODUCTION PROCESSES

The Merano factory is subdivided into the following four operational departments, which are located in a number of dedicated buildings:

- polycrystal production (POLY area);

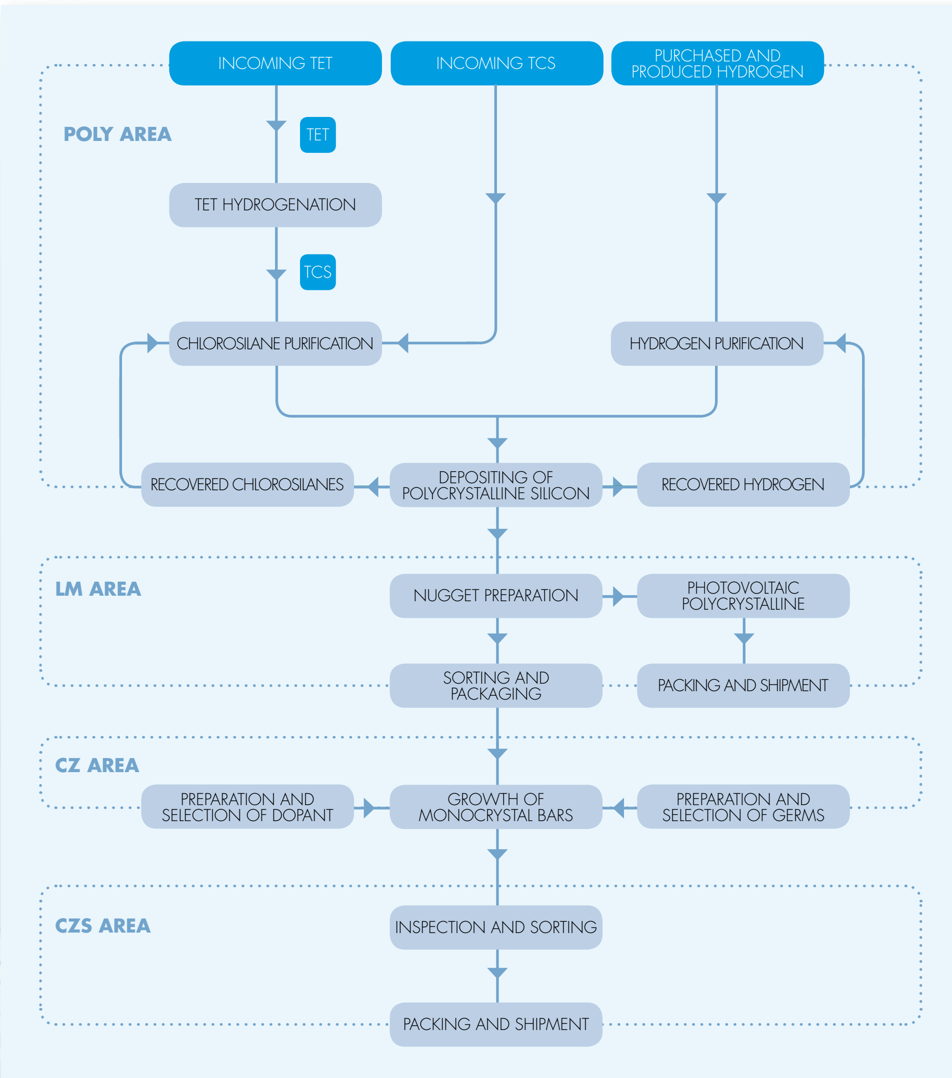
- polycrystal sorting and crushing (LM area);

- monocrystal production (CZ area);

- quality control and shipments (CZ Services area).

Production operations are served by the following "auxiliary plants": heating plants; plants for the treatment of emissions and waste water; refrigeration and air conditioning units; electrical stations and transformers; compressed air production units; water demineralization plants; emergency generators and UPS units; underground tanks for collecting spills in an emergency; fire fighting systems.

The processing cycle is shown on the diagram below in simplified form. The individual phases in the process, with the relative associated environmental aspects, are described later on.

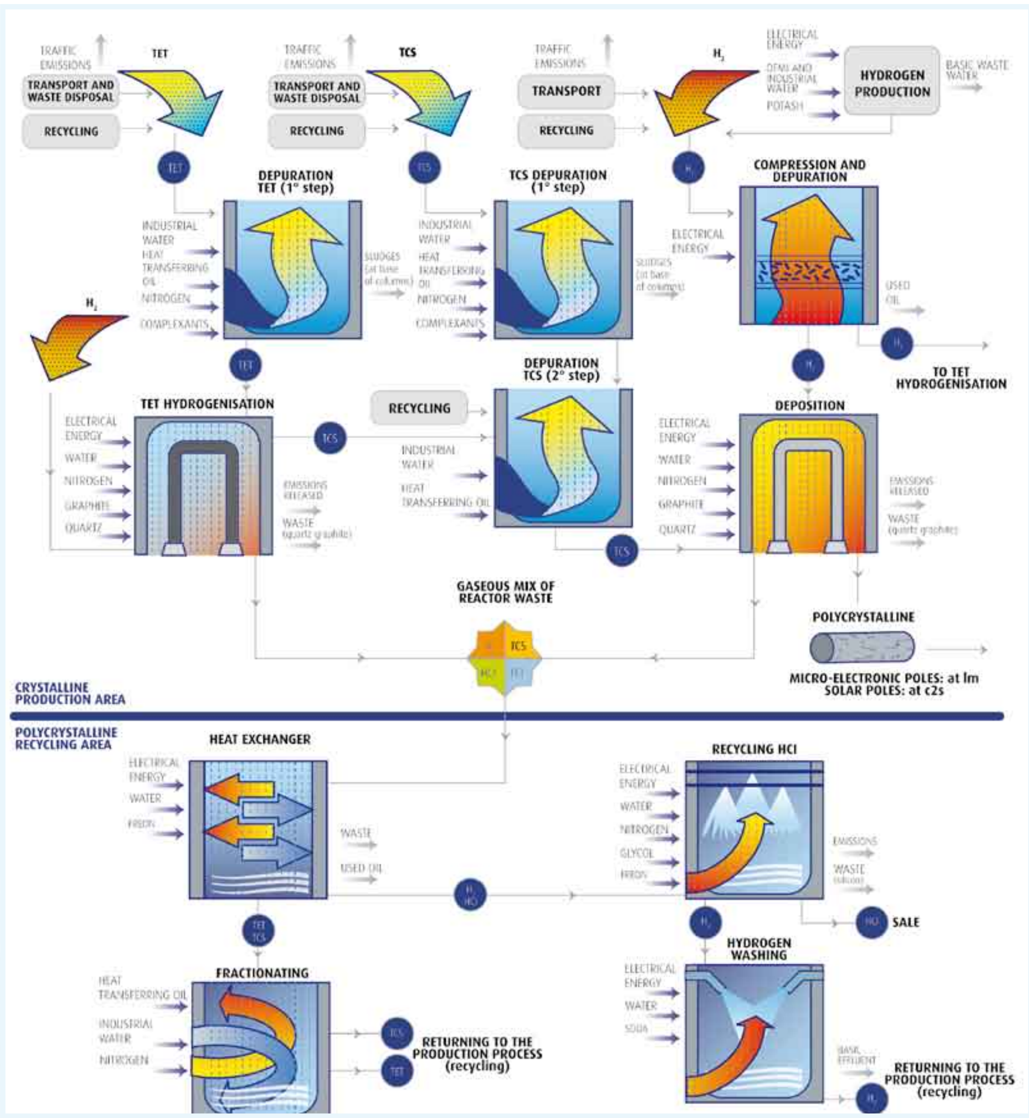


POLYCRYSTAL PRODUCTION

In the Poly area, the raw materials (hydrogen and silanes) are placed in special reactors, where chemical reactions take place at 1,100 °C. This causes these materials to deposit as solid silicon "agglomerates" on special supports called "cores" placed in the reactors. After deposition has been completed, the reactors are allowed to cool and are then opened.
The silicon agglomerates are removed and sent either to the LM department (if they will be used in microelectronics) or to the CZ Services department (if they will ultimately be sold on the solar power market).

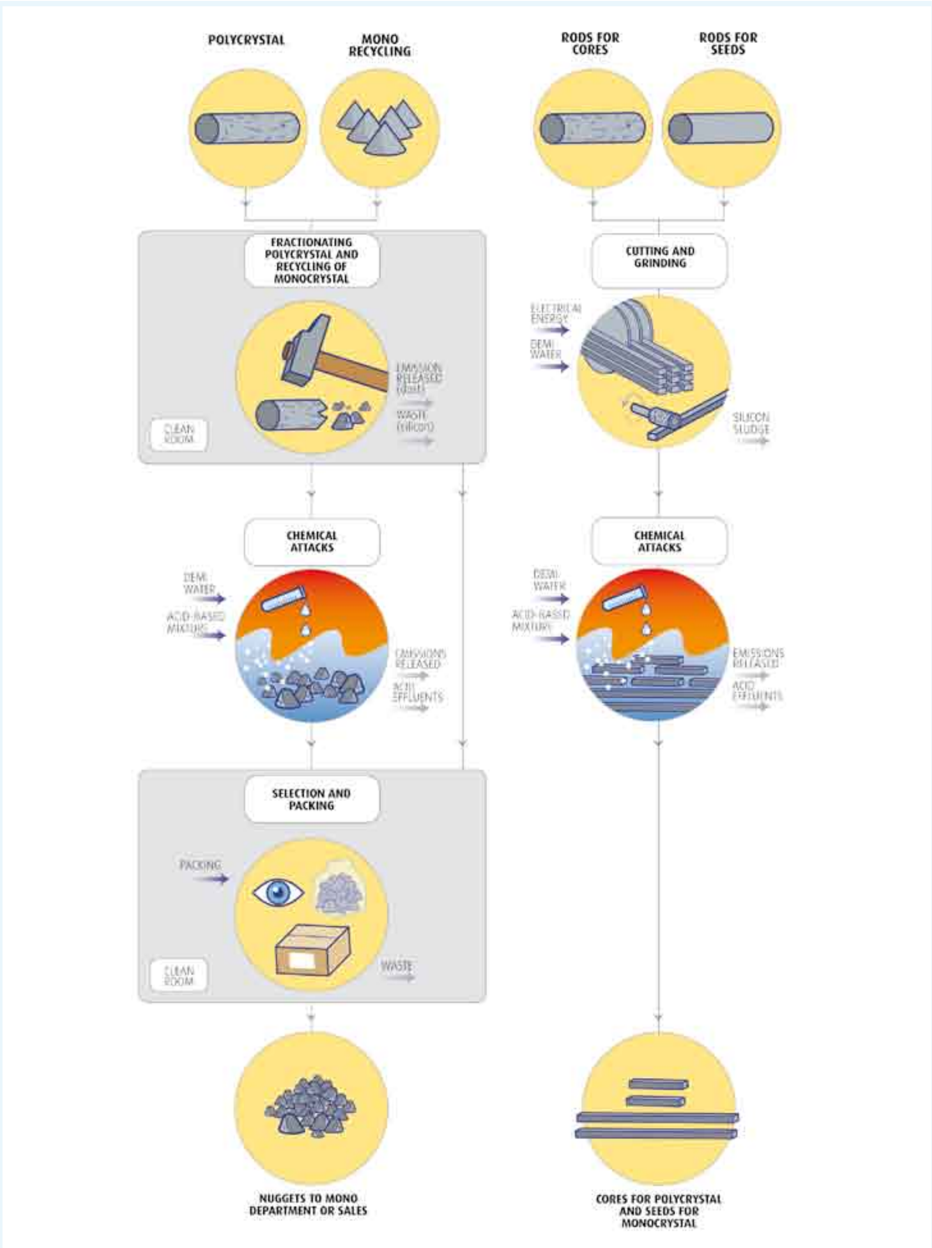
Before being placed in the reactors, the raw materials are subjected to a series of purification treatments in distillation and complexation columns. The raw materials that have not reacted are discharged from the reactors upon completion of crystal deposition. They are then re-purified and ultimately recycled back into the production process.

The temperature required for the reaction is achieved electrically. The reactors are cooled by a water cooling system, which is a completely closed system in the new plant.



POLYCRYSTAL SORTING AND CRUSHING

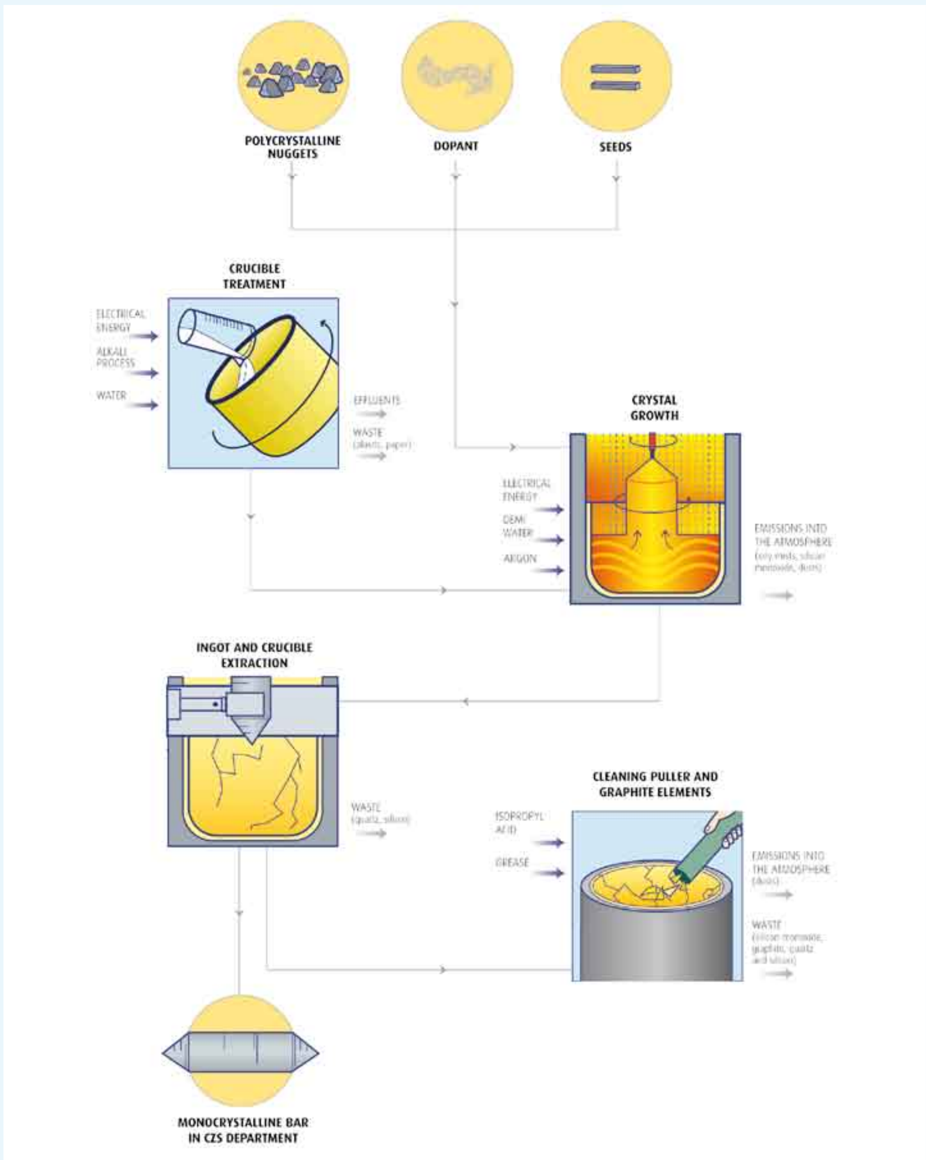
In the LM department, polycrystal arriving from the Poly department and monocrystal from the CZ department are both crushed into nuggets. These are then moved on to the next step, in which monocrystals are grown and melted in the Mono department; or, the nuggets are sold after quality control is carried out by chemical attack (if necessary). The LM department is also responsible for producing the cores that are loaded into the reactors in the Poly department, where the silicon crystals are deposited, and the "seeds" that are employed in the CZ department for growing monocrystals.` Both items are made from bars (of polycrystal and monocrystal, respectively) that are suitably cut, machined and subjected to quality control by chemical attack.



MONOCRYSTAL PRODUCTION

In the CZ department, nuggets arriving from the LM department are placed in special crucibles and melted in electric ovens at a temperature of around 1,400°C. Then, a small monocrystal "seed" made in the LM department is first immersed into the surface of the melted silicon and then slowly removed as the melted material cools off. In this way, the melted silicon solidifies around the seed to form a cylindrical "ingot", which (unlike polycrystal) has the crystallographic properties required for microelectronic use.

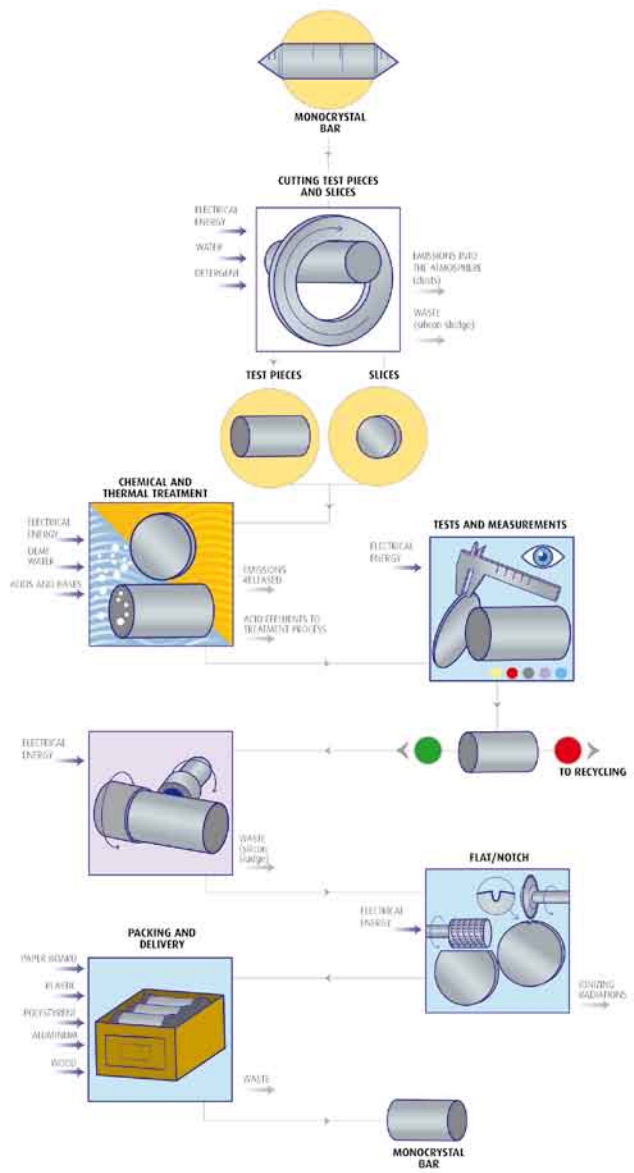
After the "ingot" has reached the established size, the growth cycle is interrupted. The oven is opened when it is completely cool, and the ingot is removed for transfer to the CZ department.



QUALITY CONTROL AND SHIPMENT

In the CZ Services department, the ingots arriving from the CZ department are subdivided into chunks or slices, according to specification, and subjected to the required quality controls on resistivity, oxygen and carbon content, crystallographic perfection, absence of crystallographic defects, and lifetime. The bars whose samples pass quality control are machined and then "marked" with flat bevelling or with a V-shaped cut (notch), which allows the type of conductivity and the orientation of the crystal to be identified.

Crystals for the solar market are also checked in this department. Material that passes the quality controls is packed and shipped, while recoverable material not complying with specifications is sent to the LM department for reuse in the production cycle.



PRODUCTION

The table below shows production data expressed as percentage variation in total production (polycrystal and monocrystal) as compared with 2000, which is used as the reference year.

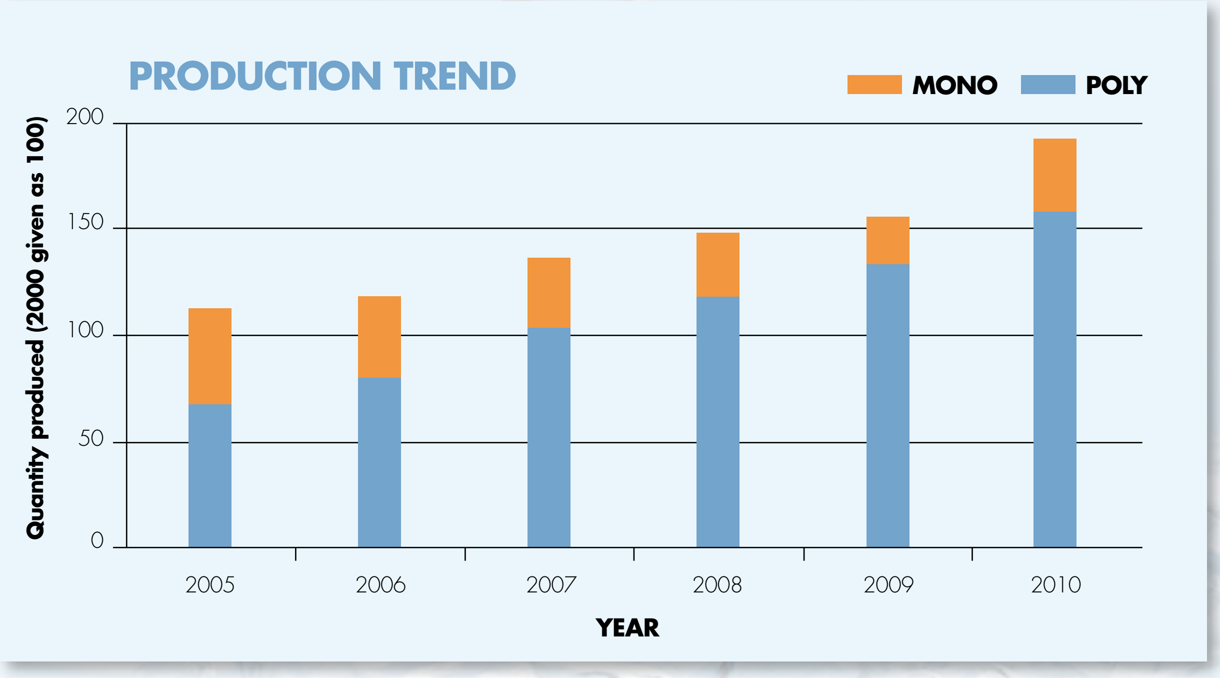
The data shows a positive trend over the last few years, which is partially due to the increasing demand for silicon on the solar photovoltaic market.

Table 1 - Production at MEMC Merano

SILICON PRODUCTION

Year	% tons of silicon as compared with 2000
2000	100
2001	71
2002	78
2003	87
2004	100
2005	112
2006	118
2007	136
2008	146
2009	154
2010	192

Figure 4 – Graph of production trends



ENVIRONMENTAL ASPECTS
Direct Environmental Aspects
Energy Resources

The energy sources used in the Merano factory are **electrical energy**, **fuel oil**, **diesel oil** and **natural gas.**

Electrical energy accounts for almost all the energy consumed by the factory and is mainly used in processes involved in the growth of (poly and mono) silicon crystals, the hydrogenation of TET into TCS, and the production of hydrogen. Electricity is supplied at high voltage and then transformed in on-site electrical substations for internal uses at medium and low voltage.

Fuel oil with a low sulphur content is used to feed the boiler, which heats the thermal oil used in processes that purify and recycle chlorosilanes.

Diesel fuel and **natural gas** are used to heat some of the factory buildings which are not served by the cooling water recovery system. **Diesel fuel** is also used in company vehicles (for internal movement, and for the emergency team), and to power emergency generators.

Over the past decade, numerous projects have been completed for increasing energy efficiency and reducing energy consumption per unit of product. These projects have lowered total specific energy consumption from approx. 680 GJ/t silicon in 2000 to approx. 530 GJ/t silicon in 2010, electricity consumption from approx. 680 GJ/t silicon to approx. 530 GJ/t silicon, and fuel consumption from approx. 50 GJ/t silicon to approx. 27 GJ/t silicon.

When all the new sections of the production system have been placed into service, it is reasonable to assume that total energy consumption - and consumption of electricity in particular - will increase. However, as mentioned previously and as can be gathered from the data for 2010, the new high-efficiency systems will enable specific consumption to be kept relatively stable.

The 2010 data on material and energy consumption was significantly affected by activities involved in starting up the new production units. These activities had nothing to do with silicon production. When the production phase is normalized, more reasonable data that is not adversely affected by the commissioning and start-up of the plant will be available. The table shows an increase in specific consumption in 2010, which was due to consumption not generated by production, but rather during conditioning of the new plant systems. For this reason, improvements in consumption figures are expected in 2011.

The tables below show data on separate and overall consumption figures per energy source for the period 2005-2010.

Table 2 - Overall energy consumption

OVERALL ENERGY CONSUMPTION

Year	Total consumption Gj	Electrical energy Gj	Fuel oil Gj	Gasoline Gj	Natural gas Gj	Specific Gj/t silicon
2005	1,009,767.7	946,860.3	60,609.2	1,578.5	716.7	603.8
2006	1,017,798.8	948,232.7	67,319.8	1,513.5	732.7	581.9
2007	1,078,143.9	1,011,557.9	64,090.7	1,637.7	857.9	532.9
2008	1,115,587.5	1,051,609.9	62,284.1	749.3	857.9	512.3
2009	1,196,254.8	1,130,981.2	63,320.5	1,309.2	643.9	521.0
2010	1,515,500.5	1,438,758.1	74,546.9	1,675.5	520.0	530.5

Table 3 – Electricity consumption

ELECTRICITY CONSUMPTION

	Total	Specific	
Year	Gj	Gj/t silicon	% (2000=100)
2005	946,860	566.2	91.3%
2006	949,664	542.9	80.1%
2007	1,011,558	500.0	73.8%
2008	1,051,610	482.9	71.3%
2009	1,130,981	492.6	72.7%
2010	1,438,758	503.6	74.3%

Table 4 – Consumption of fuels

ELECTRICITY CONSUMPTION

	Energy consumption			Specific	Trend
Year	Fuel oil Gj	Gasoline Gj	Natural gas Gj	Gj/t silicon	% (2000=100)
2005	60,609.2	1,578.5	716.7	37.6	75%
2006	67,319.8	1,513.5	732.7	39.8	79%
2007	64,090.7	1,637.5	857.9	32.9	66%
2008	62,284.1	1,637.5	944.1	29.4	60%
2009	63,320.5	1,309.2	643.9	28.4	57%
2010	74,546.9	1,675.5	520.0	26.9	53%

Figure 5 - Overall energy consumption

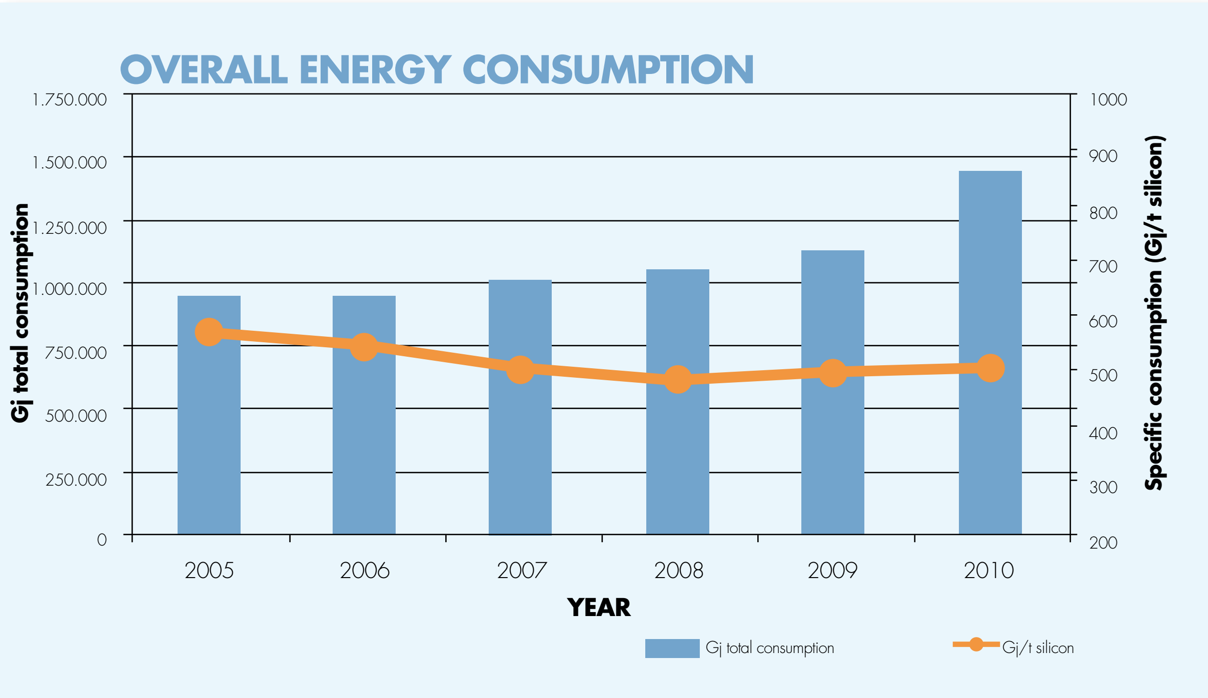


Figure 6 - Electricity consumption

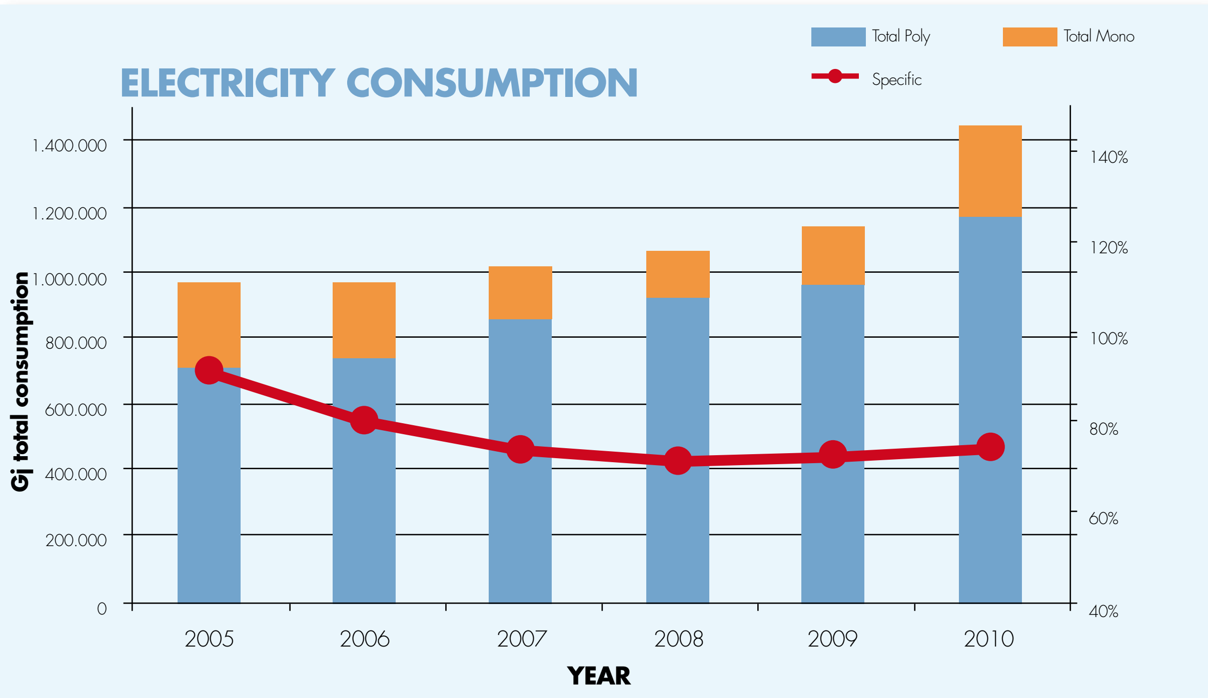
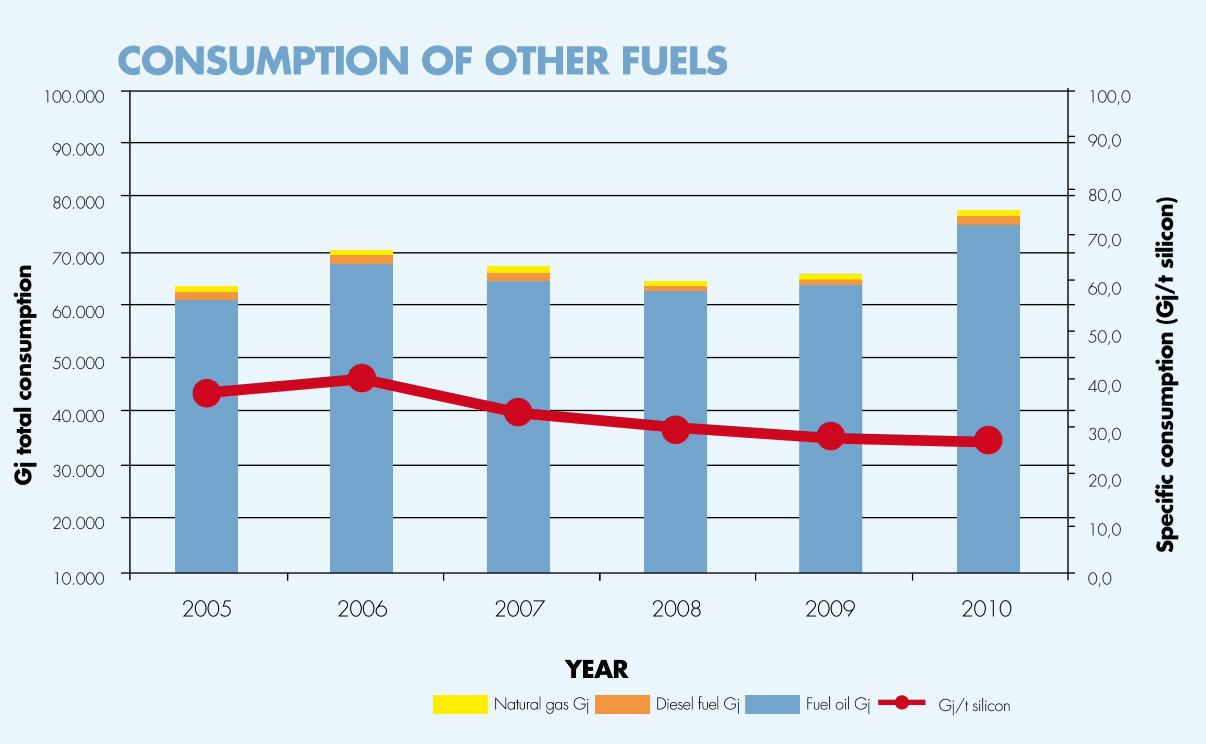


Figure 7 - Consumption of fuels



In November 2010, data began to be collected on the energy exchanged (both consumed and transferred) due to district heating. Meaningful data will be available in late 2011.

In any event, the figure below shows the values for November-December 2010 and the first quarter of 2011.

Figure 8 – Energy transferred for district heating

DISTRICT HEATING

Year		Therm. energy (MWh)	Therm. energy (Gj)
		Exchange of thermal energy	
2010	NOVEMBER	530.41	1,909.48
	DECEMBER	2,203.35	7,932.06
2011	JANUARY	2,933.06	10,559.02
	FEBRUARY	2,568.14	9,245.30
	MARCH	2,349.10	8,456.76

Notes on the units of measurement used

The following conversion factors were used when calculating the various indicators in joules:

1 MWh = 3.6 GJ (for electricity)
1 TOE = 41.868 GJ (for fuels)
(sources: IEA; ENEA; World Energy Council)

The decision to start from TEPS when expressing the consumption of fuels in GJ was made for two "practical" reasons: first of all, because MEMC is still required to report its energy consumption figures in TEPS to FIRE every year, so these values will in any case by calculated by our Energy Manager. For example, Legis. Decree no. 115 dated 30 May 08 and directive EC/32/2006 on the efficiency of final uses of energy and energy services provides conversion factors only for fuel oil and natural gas.

Energy consumption in TOE is calculated by applying the following conversion factors, as set out in MICA memorandum no. 219/F dated 2 March 1992 "Article 19 of Italian Law no. 10/1991. Obligation to name and receive an annual report from a Technical Specialist responsible for the conservation and intelligent use of energy":

- Diesel fuel:	1 t	= 1.08 TOE;
- Fuel oil:	1 t	= 0.98 TOE;
- Natural gas:	1000 Nm3	= 0.82 TOE
- Electrical energy supplied at high voltage:	1 MWh	= 0.23 TOE.

WATER RESOURCES

The MEMC production process requires the use of water for cooling and, to a lesser degree, for operating certain plant systems (distillation columns, compressors).

The required water is taken from the aquifer through eight wells, as authorized by the Province of Bolzano in Decree no. 240 dated 25 May 2006 (protocol no. 37.1/74.05.03/7587), which replaced all previous authorizations.

Over the past decade, numerous optimization projects have been completed which have enabled more water to be recycled into the production process.
These projects have reduced the amount of water that must be taken from the wells to achieve the same level of production.

In fact, the more than 12 m^3 of water required to produce 1 Kg of silicon in 2001-2003 was reduced to 5 m^3 of water per Kg of silicon produced in 2008-2009. What's more, this value was further reduced in 2010 to approx. 4 m^3 of water per Kg of silicon produced, thanks to the closed-circuit cooling system with evaporating towers mentioned previously, which covers the entire amount required by the new sections.

In particular, drinking water is still used mostly in the cafeteria, in bathrooms, and for testing emergency fixtures (showers and eye washing stations). The increase in absolute terms in the consumption of drinking water over the past few years has been due to additional use by outside personnel from firms working at the construction site that was set up to expand the facility.

Presumably, the consumption figures will return to their previous values after the construction site is closed and the average number of persons in the factory is reduced.

The tables below show separate consumption figures per type (industrial/drinking water) for the period 2005-2010.

Table 5 - Consumption of groundwater for industrial purposes

CONSUMPTION OF GROUNDWATER

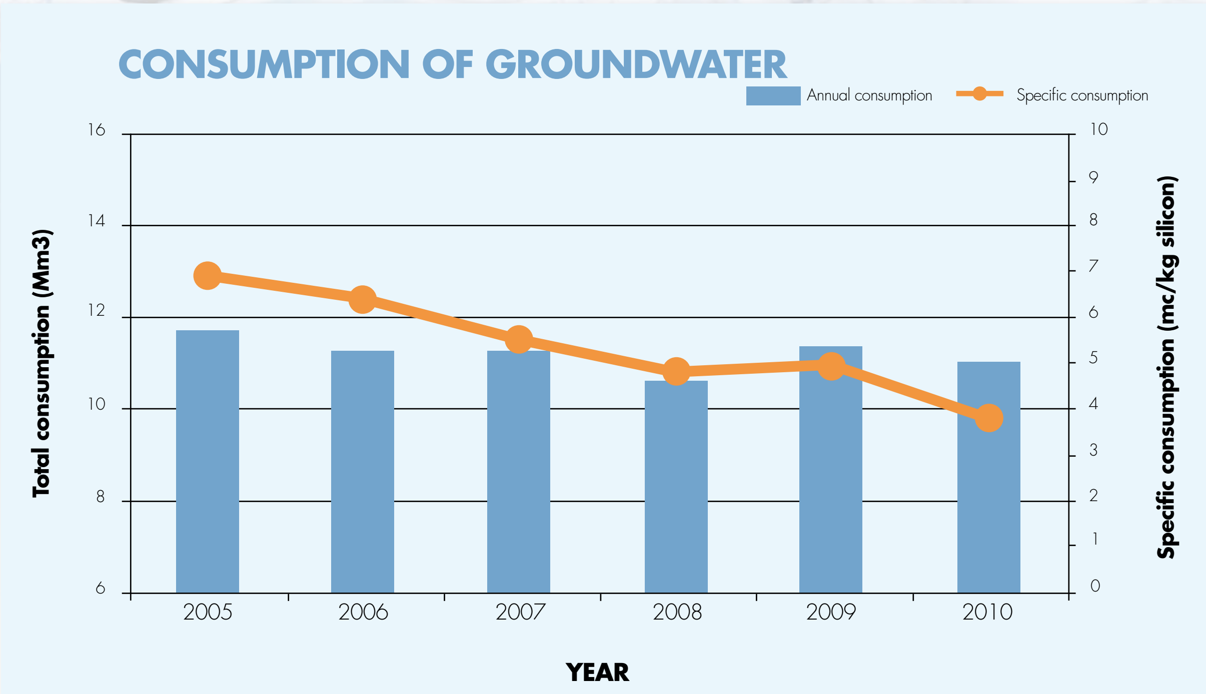
	Total	Specific	% (2000=100)
Year	**Mm³/year**	**m³/Kg silicon**	**%**
2005	11.72	7.0	71
2006	11.31	6.5	66
2007	11.29	5.6	57
2008	10.60	4.9	49
2009	11.35	4.9	50
2010	11.03	3.9	39

Table 6 - Consumption of drinking water

CONSUMPTION OF DRINKING WATER

Year	Total m³/year	Specific m³/person	%
2005	41,778	99.24	108
2006	41,112	100.27	109
2007	50,868	121.99	133
2008	47,912	112.73	123
2009	64,124	106.87	117
2010	74,812	93.52	102

Figure 9 – Groundwater



CONSUMPTION OF RAW AND AUXILIARY MATERIALS

The tables below contain data on the consumption of raw materials (hydrogen, TCS, TET – expressed as % of specific consumption as compared with the year 2000) and of the hazardous substances and chemical preparations (with annual consumption of over 100 kilograms) that are used in auxiliary operations and processes.

Table 7 - Raw materials

CONSUMPTION OF RAW MATERIALS

Year	CHLOROSILANES values % t/t poly as compared with 2000	HYDROGEN values % t/t poly as compared with 2000
2005	101	173
2006	101	102
2007	99	127
2008	86	106
2009	84	85
2010	85	124

WATER CONSUMPTION

Chemical formula: **H_2**
Boiling point: **- 253°C**
Flammability limit:
4 – 75 (% volume in air)

Hydrogen is found in nature as a colorless, odorless gas.
It is extremely flammable and forms explosive mixtures with air.
No toxicity or adverse environmental effects are known.
High concentrations of hydrogen in the air may cause asphyxia.

TRICHLOROSILANE (TCS)

Chemical formula: **$SiHCl_3$**
Liquid density: **1.335 g/cm³**
Melting point: **- 127° C**
Boiling point: **32° C**

TCS is a colorless gas with a sharp odor. It is a liquid at room temperature, but is used in the gaseous state in the production process.
TCS is highly flammable and corrosive. It develops hydrochloric acid in the presence of moisture.
It irritates the respiratory tract and is harmful if released into the environment because it increases acidity.

SILICON TETRACHLORIDE (TET)

Chemical formula: **$SiCl_4$**
Liquid density: **1.48 g/cm³**
Melting point: **- 68.8° C**
Boiling point: **57.3° C**

TET is a colorless gas with a sharp odor. It is purchased and transported in liquid form, but is used in the gaseous state in the production process.
TET is corrosive; it develops hydrochloric acid fumes in the presence of moisture.
It irritates the respiratory tract and is harmful if released into the environment because it increases acidity.

Table 8 - Consumption of hazardous substances and preparations > 100 Kg/y

AUXILIARY MATERIALS	DANGER SYMBOL	Consumption 2,005 t	Consumption 2,006 t	Consumption 2,007 t	Consumption 2,008 t	Consumption 2,009 t	Consumption 2,010 t
Hydrochloric acid 37%	Corrosive	2.1	1.9	1.6	1.4	1.2	1.5
Hydrofluoric acid 40%	Corrosive, Very toxic	36.6	36.6	26.5	20.6	16.4	19.8
Nitric acid 65% - 70%	Corrosive	3.2	5.4	4.8	3.6	3.0	4.1
HNO3/HF/acetic acid mixtures	Corrosive, Toxic	325.8	302.7	247.0	231.5	218.1	288.4
Caustic potash 50%	Corrosive	44.7	25.7	46.4	52.2	68.8	29.7
Caustic soda 50%	Corrosive	853.3	924.9	1,088.5	1,201.6	1,152.4	1,240.8
Ammonia 30%	Corrosive, Dangerous for the environment	0.4	0.3	0.3	0.3	0.3	0.3
Chromium trioxide 30%	Corrosive, Toxic	3.3	2.7	1.7	1.1	1.0	0.8
Hydrogen peroxide 30-33%	Corrosive	8.9	9.1	8.0	4.4	3.8	3.7
Ethanol and isopropyl acid	Highly flammable, Irritant	1.6	1.4	0.8	1.4	0.9	1.5
Solveclean	Harmful	0.8	0.8	0.8	0.8	0.8	0.6
Fuel oil fluid	Toxic	1,473.2	1,640.7	1,562.2	1,518.0	1,543.3	1,816.9
Gasoline	Toxic	20.1	39.0	36.2	16.6	29.0	37.1
Freon 22	Dangerous for the environment	5.6	8.3	8.1	5.4	8.0	-
R23	Dangerous for the environment	14.6	7.7	1.9	1.2	-	16.5
R507A	Dangerous for the environment	-	-	-	-	-	3.0

Figure 10 - Consumption of silanes

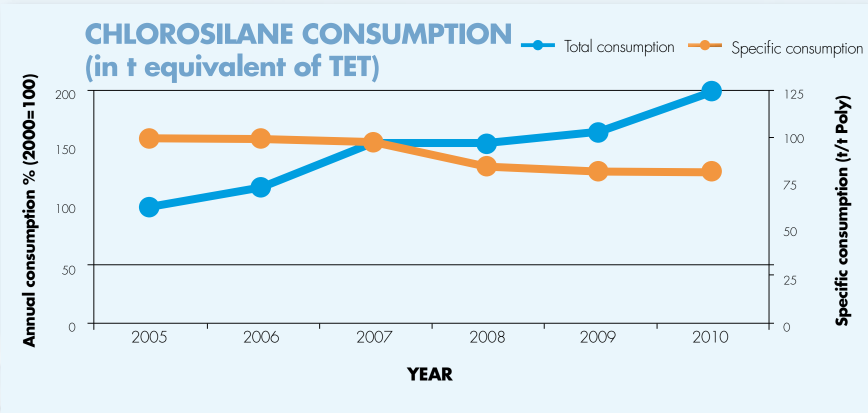
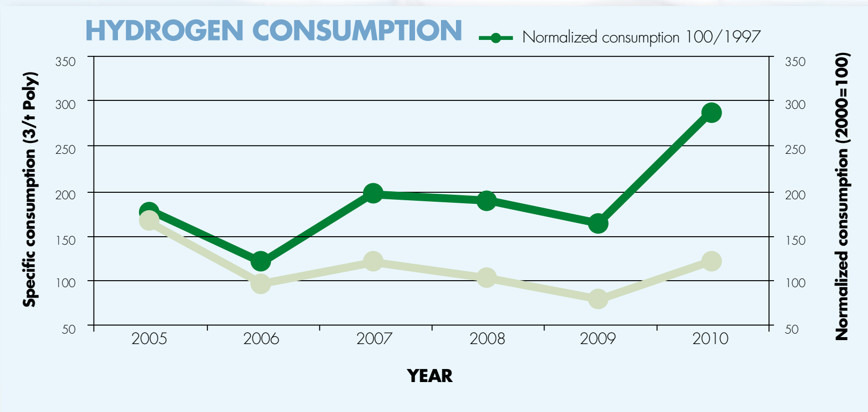


Figure 10 - Consumption of silanes



Examining the data on **Table 7**, one can observe that no significant variations have occurred in the specific consumption of chlorosilanes. The higher specific consumption of hydrogen as compared with the two preceding years was caused by its use during the commissioning of new plant systems.

Looking at the data on **Table 8**, one can see that no particular variations occurred in 2010, as mentioned previously, since the significant increase in production that occurred that year must be considered when interpreting these values. However, the following aspects are noted:

- no Freon (R22) was consumed, thanks to a ban on the use of virgin R22 in all equipment, the consumption of R23 and R507 increased, which was essentially due to their use in new equipment

- a slight reduction in the consumption of chromium trioxide occurred; it was impossible to eliminate this substance from the production process because certain types of defects in silicon crystal can be revealed only through the use of chromium trioxide

- the consumption of potash decreased in 2010 because the De Nora cells required no major maintenance.

The data on the other types of consumption continues to hover around values which are in line with their respective historical trends.

ATMOSPHERIC EMISSIONS

The table below lists the operations and processes that release significant amounts of emissions into the atmosphere (as authorized by the latest Integrated Environmental Authorization dated 12/01/11, protocol no. 13390) along with the results of the latest monitoring program carried out in November 2010 and January 2011 (which revealed that these emissions are within the limits specified in the Authorization).

As mentioned previously, the expansion program did not create new points of emission (the three new points - E35, E36 and E37 - stem from the need to separate the effluents produced by new processes in the CZ department that use phosphorous and arsenic) and will not cause substantial variations in the emissions released during quality controls; in fact, these emissions will increase only to an insignificant degree, given the different quality control requirements for solar silicon.

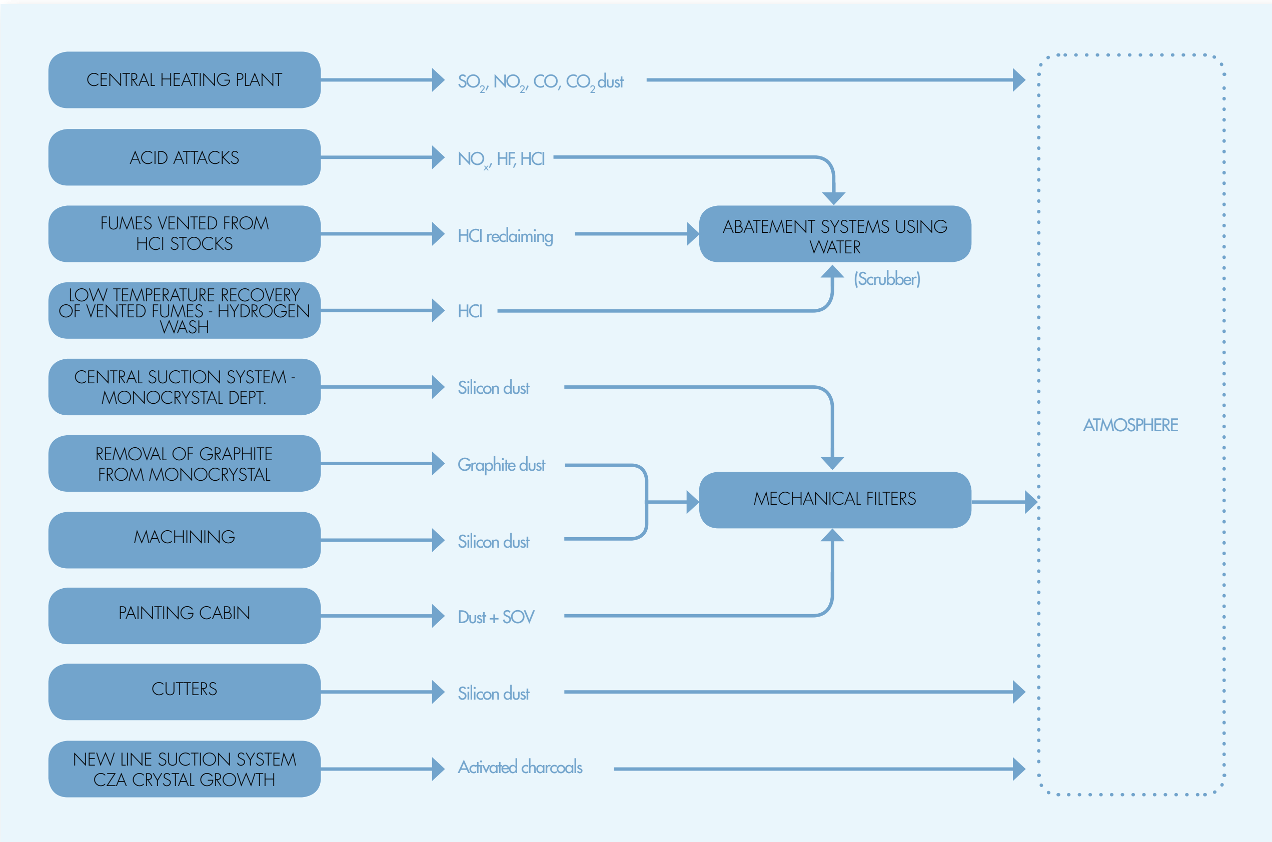


Table 9 - Results of emissions tests performed for self-monitoring

Point	Pollutant		Value	Flow rate	Mass flow	IEA limit no. 1779 dated 18/6/08 (confirmed in IEA 13390 dated 12/1/2011)*	Daily mass flow	Annual mass flow
			mg/Nm3	Nm3/hr	kg/hr	mg/m3	kg/d	kg/y
3	HCl		1.38	4,557.0	0.006	30	0.151	55.089
4	Total dust		25.30	4,050.0	0.090	80	2.160	788.400
B1d	Oxygen		6.29	2,025.0	0.013	3%	0.306	111.596
B1e	Oxygen		6.85	2,025.0	0.014	3%	0.333	121.512
B1d	Nitrogen oxides		275.00	2,025.0	0.557	400	13.365	4,878.225
B1e	Nitrogen oxides		380.00	2,025.0	0.770	400	18.468	6,740.820
B1d	Sulphur oxides		87.61	2,025.0	0.177	1700	4.258	1,544.043
B1e	Sulphur oxides		88.42	2,025.0	0.179	1700	4.297	1,568.394
B1d	Carbon monoxide		7.49	2,025.0	0.015	100	0.364	132.830
B1e	Carbon monoxide		6.00	2,025.0	0.012	100	0.292	106.434
5	Hydrochloric acid		1.55	13,502.0	0.021	30	0.502	183.330
	Hydrofluoric acid	<	0.10	13,502.0	0.001	5	0.032	11.828
	Total chromium	<	0.01	13,502.0	0.000	5	0.003	1.183
	Nitrogen oxides	<	0.10	13,502.0	0.001	50	0.032	11.828
12	Total dust		0.41	3,102.0	0.001	30	0.020	7.373
	Silicon as SiO2	<	0.10	3,102.0	0.000	5	0.005	1.812
13	Total dust		0.54	317.0	0.000	30	0.002	0.629
	Silicon as SiO2	<	0.10	317.0	0.000	5	0.000	0.116
16	Total dust		0.10	1,705.0	0.000	30	0.003	0.956
17	Total dust		0.13	627.0	0.000	30	0.001	0.233
	Silicon as SiO2	<	0.10	627.0	0.000	5	0.001	0.183
20	Total dust		0.27	7,081.0	0.002	30	0.030	10.959
	Silicon as SiO2	<	0.01	70.8	0.000	5	0.000	0.004
25	Total dust		7.08	286.0	0.002	80	0.004	1.013
	Nitrogen oxides		79.606	286	0.004	150	0.008	1.993
	Sulphur oxides		1.00	286.0	0.000	1700	0.001	0.143
	Carbon monoxide		56.84	286.0	0.016	100	0.033	8.129
	Oxygen		13.94	286.0	0.004	3%	0.008	1.993
	Bacharach index				0.000	1	0.000	0.000
26	Total dust		1.32	29,853.0	0.039	3	0.118	29.577
	COT		22.49	29,853.0	0.671	(*)	2.014	503.55

Point	Pollutant	Value		Flow rate	Mass flow	IEA limit no. 1779 dated 18/6/08 (confirmed in IEA 13390 dated 12/1/2011)*	Daily mass flow	Annual mass flow
		mg/Nm3		Nm3/hr	kg/hr	mg/m3	kg/d	kg/y
27	Total dust		0.69	6,780.0	0.005	30	0.009	2.346
32	Total dust		0.10	775.0	0.000	30	0.001	0.226
	Silicon (as SiO2)		0.10	775.0	0.000	5	0.001	0.226
33	Total dust		0.26	1,402.0	0.000	30	0.009	3.156
	Silicon (as Si02)		0.10	1,402.0	0.000	5	0.003	1.228
34 (former 21)	Total dust		0.15	1,648.0	0.000	30	0.006	2.108
	Silicon as Si02		0.10	1,648.0	0.000	5	0.004	1.444
35	Phosphine	<	0.10	480.1	0.000	1	0.001	0.421
36	Total dust	<	1.00	363.8	0.000	30	0.009	3.187
	Silica	<	n.a.	363.8	n.a.	5	n.a.	n.a.
	Arsenic	<	0.01	363.8	0.000	1	0.000	0.032
37	Total dust	<	1.00	211.6	0.000	30	0.005	1.854
	Silica		n.a.	211.6	n.a.	5	n.a.	n.a.
	Arsenic	<	0.10	211.6	0.000	1	0.001	0.185

(*) For information regarding authorization to release volatile organic compounds (V.O.C.), see part 1, point 5 of Attachment C to Italian Provincial Law no. 8 dated 16 March 2000. This law subdivides the V.O.C. into four classes with different prescribed emission limits that depend on the class and the mass flow involved.

The legislation specifies that the total concentration of compounds belonging to the same class may not exceed the limits indicated for that class, and that the total concentration of all compounds analyzed may not exceed the limit indicated for the highest class.

While the monitoring performed by an accredited laboratory shows compliance with the limits for each class, this table only shows the aggregate data.

The following tables and graphs show estimated carbon dioxide emissions generated from the combustion of fuel oil, diesel fuel and natural gas, and the estimated emission of carbon dioxide equivalent calculated from the consumption of the refrigerant gases known as R22, R23 and R507.

Table 10 – CO2 equivalent emissions – fossil fuels

CARBON DIOXIDE EMISSIONS

Year	Year				specific	Rate
	Fuel oil ktCO2	Gasoline ktCO2	Natural gas ktCO2	Total from combustion ktCO2	Overall ktCO2 tons of silicon	%
2005	4.355	0.126	0.033	4.515	0.003	80
2006	4.936	0.112	0.041	5.089	0.003	91
2007	5.117	0.115	0.049	5.281	0.003	94
2008	4.873	0.053	0.054	4.979	0.002	89
2009	4.877	0.092	0.037	5.005	0.002	89
2010	5.741	0.118	0.030	5.888	0.002	105

Figure 12 – Graph of CO2 equivalent emissions – fossil fuels

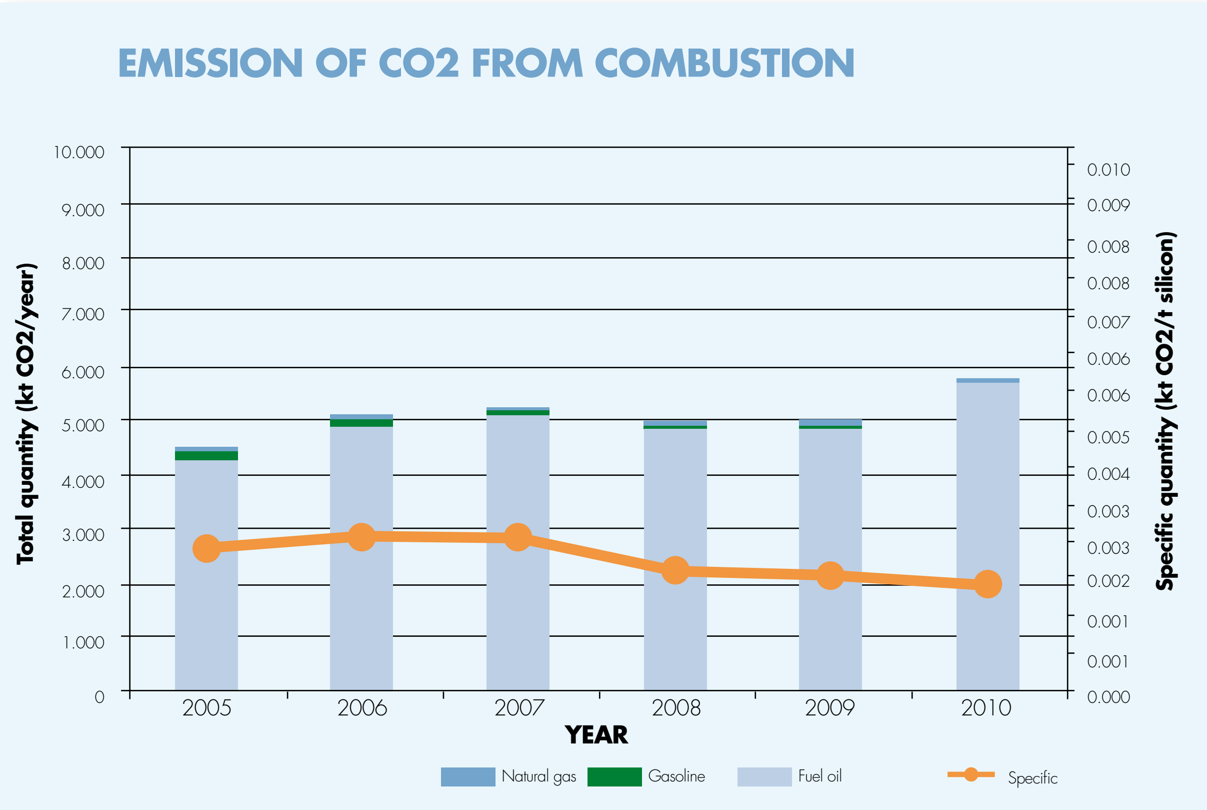
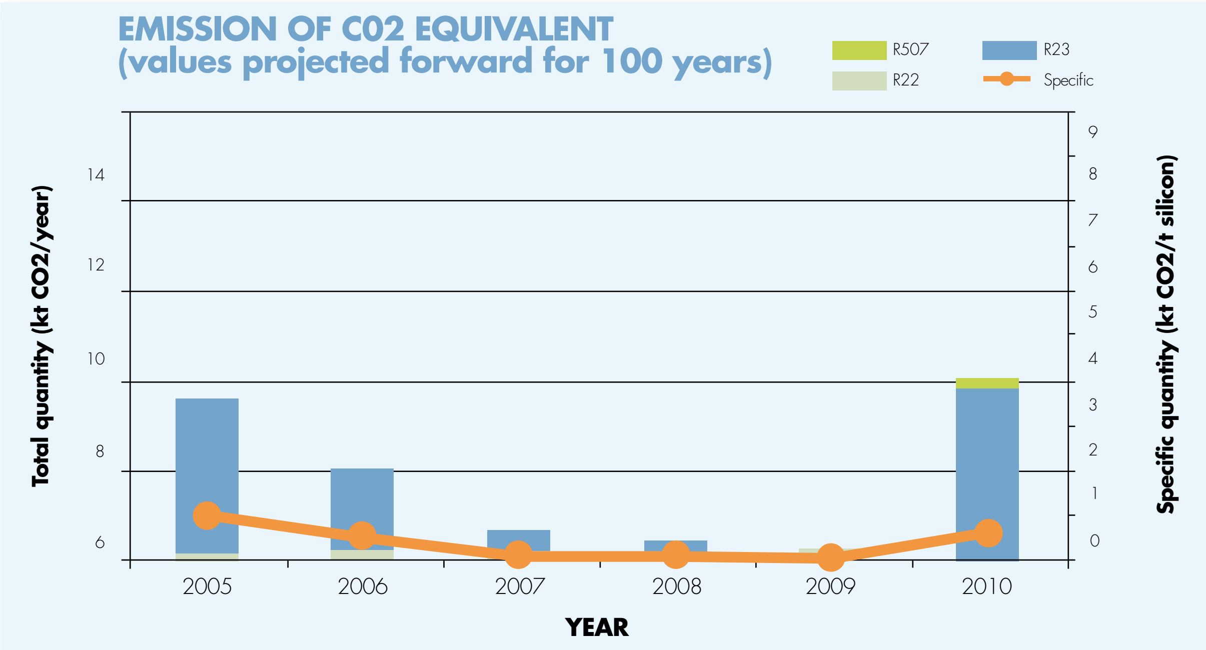


Table 11 – CO2 equivalent emissions – refrigerants

CARBON DIOXIDE EQUIVALENT EMISSIONS						
	Year				specific	Rate
Year	R22 ktCO2	R23 ktCO2	R507 ktCO2	Total from ktCO2	Overall ktCO2 tons of silicon	%
2005	8.4	170.2	0.0	178.6	0.11	220
2006	12.4	90.2	0.0	102.6	0.06	120
2007	12.2	22.5	0.0	34.6	0.02	47
2008	8.1	14.0	0.0	22.1	0.01	30
2009	12.0	0.0	0.0	12.0	0.01	16
2010	0.0	193.5	9.9	203.4	0.07	275

Figure 13 – Graph of CO2 equivalent emissions – refrigerants



The data shows a trend that is consistent with consumption figures for fossil fuels and refrigerants. The reasons were given previously in the sections "Energy Consumption" and "Consumption of Auxiliary Materials".

In this regard, it must be noted that the significant increase in CO2 equivalent emissions in 2010 was almost entirely due to the use of R23 for filling new equipment.

NOTE ON MONITORING GREENHOUSE GAS EMISSIONS

Greenhouse gas emissions are monitored by MEMC voluntarily. In fact, the factory is not included in the field of application of European Parliament and Council Directive 2003/87/EC, which implemented a system of trading greenhouse gas emissions within the European Union. Among other obligations, it requires obtaining authorization to emit greenhouse gases and mandates monitoring of emissions over time, with certification of the results of the monitoring by an accredited body.

MEMC has identified its greenhouse gas sources as the combustion of fossil fuels (diesel fuel, fuel oil and natural gas) and the emission of refrigerant gases (R22, R23 and R507).

Combustion generates carbon dioxide (CO_2), which is the main gas causing the greenhouse effect. The quantity of CO_2 emitted by MEMC in Merano is estimated by multiplying the consumption of combustibles by the following conversion factors:

• Between 2000 – 2006, the factors indicated in the CIPE (Italian Interministerial Economic Planning Committee) Resolution dated 25 February 1994 entitled "Approval of a National Program to reduce carbon dioxide emissions by 2000 to the levels in 1990" are as follows:

Gasoline	1 TOE = 3.10 t CO_2
Fuel oil	1 TOE = 3.07 t CO_2
Natural gas	1 TOE = 2.35 t CO_2

Since 2007, the factors indicated in Italian Directorial Decree no. Dec/Ras/854/05 dated 1 July 2005 promulgated by the Italian Ministry for the Environment and Territory and by the Italian Ministry of Productive Activities have been as follows:

- Diesel fuel	1 ton = 3.173 t CO_2
Fuel oil	1 ton = 3.21 t CO_2
Natural gas	1 Std m^3 = 1.966 t CO_2

In 2009, the factors indicated in Resolution no. 14/2009 from the Italian Ministry for the Environment and for Territorial Protection and by the Italian Ministry of Productive Activities, regarding notification of greenhouse gas emissions pursuant to Directive 2003/87/EC, which updated the coefficients contained in the Directorial Decree cited above, were as follows:

- Diesel fuel	1 ton = 3.173 t CO_2
Fuel oil	1 ton = 3.16 t CO_2
Natural gas	1 Std m^3 = 1.957 t CO_2 ;

As for refrigerant gases, a calculation was made of emissions in terms of "carbon dioxide equivalent" by multiplying the consumption of gas by the following GWP (Global Warming Potential):

- R22 (CHClF2 chlorodifluoromethane):
  GWP (100 years) = 1,500
  (source: IFC Inc USA si GHG Protocol

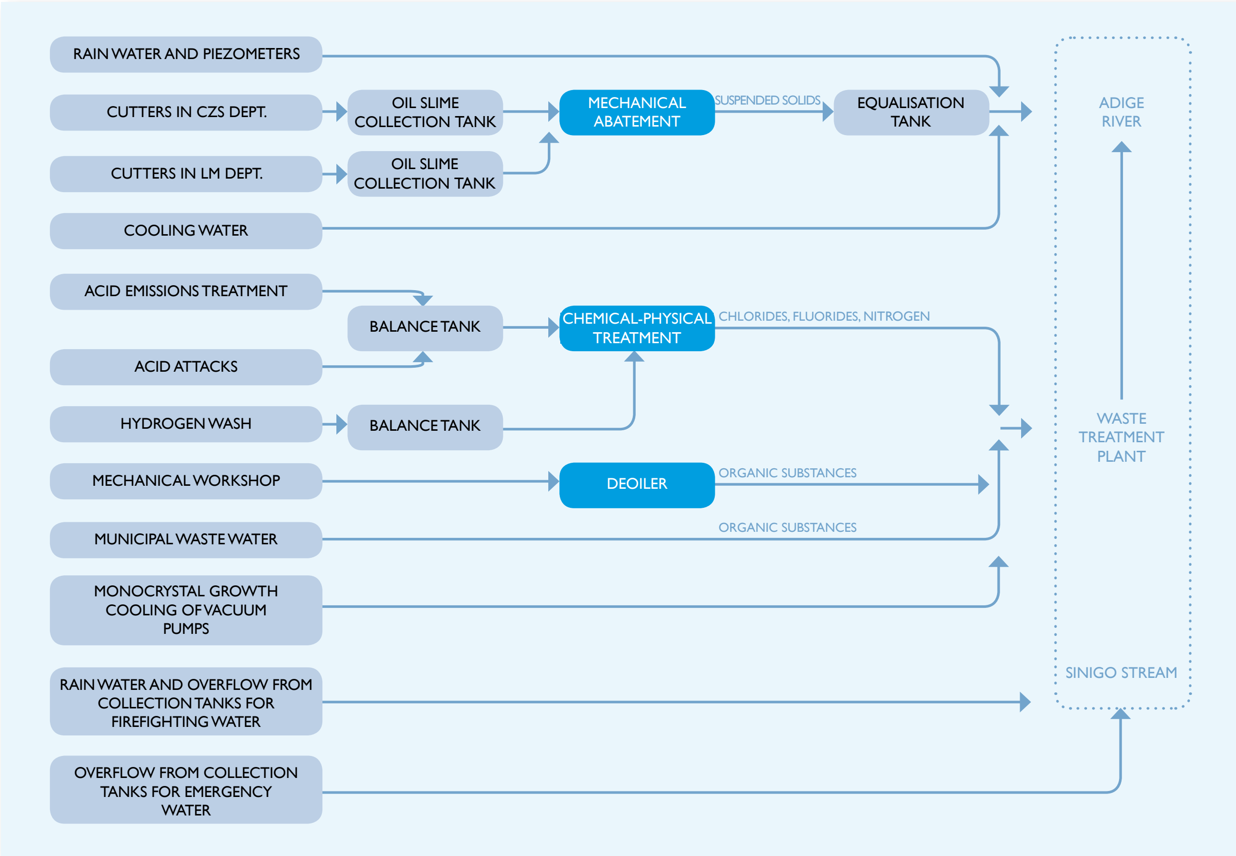
- R23 (CHF3 trifluoromethane):
  GWP (100 years) = 11,700
  (source: IPCC Second Assessment Report, 1996);

- R507a (mixture of R125/134a)
  GWP (100 years) = 3.300
  (ASHRAE Standard 34)

The Global Warming Potential (GWP) represents the ratio between the warming caused by a gas over 100 years and the warming caused by the same quantity of carbon dioxide (CO_2) during the same period. Therefore the value of carbon dioxide is one.

WATER DISCHARGES

The figure below schematically shows the layout of water discharge points at the factory, as authorized by the latest Integrated Environmental Authorization dated 12/01/11, protocol no. 13390.
The figure depicts the operations and processes that generate waste water, the substances contained in it, the on-site and off-site waste water treatment systems that are used to abate pollutants, and the final body that receives the treated water.

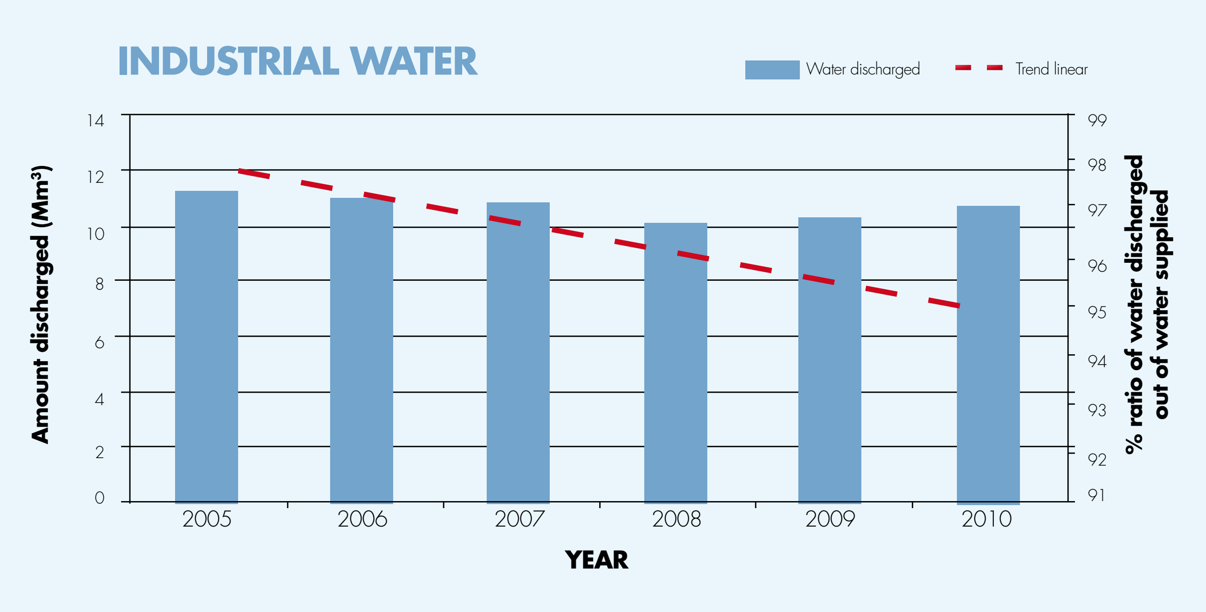


The following table and graph show the water volumes directly discharged into the Adige River, which receives most of the effluents from the manufacturing process.

Table 12 – Water discharged / water supplied

Year	FINAL WATER DISCHARGE - AMOUNT DISCHARGED			
	Water discharged into body of Mm³/year	Water discharge purified Mm³/year	Water supplied Mm³/year	Discharged supplied %
2005	11.27	0.06	11.72	97
2006	11.05	0.10	11.31	99
2007	10.93	0.10	11.29	98
2008	10.16	0.09	10.60	97
2009	10.27	0.12	11.35	92
2010	10.59	0.14	11.01	97

Figure 15 – Water discharged / water supplied



The following tables and graphs show the amounts of nitrites, nitrates, fluorides and chlorides discharged directly into the Adige River. The data confirms that all levels are within prescribed limits.

Table 13 – Substances discharged into the Adige River

NITRITES (AS N)

Year	Limit (*) mg/litre	Maximum concentration mg/litre	Average concentration mg/litre
2005	0.6	0.02	0.02
2006	0.6	0.006	0.004
2007	0.6	0.020	0.01
2008	0.6	0.020	0.011
2009	0.6	0.030	0.015
2010	0.6	0.060	0.032

NITRATES (AS N)

Year	Limit (*) mg/litre	Maximum concentration mg/litre	Average concentration mg/litre
2005	20	5.7	2.9
2006	20	2.4	2.0
2007	20	2.17	1.98
2008	20	2.3	2.2
2009	20	4.7	2.5
2010	20	2.3	2.07

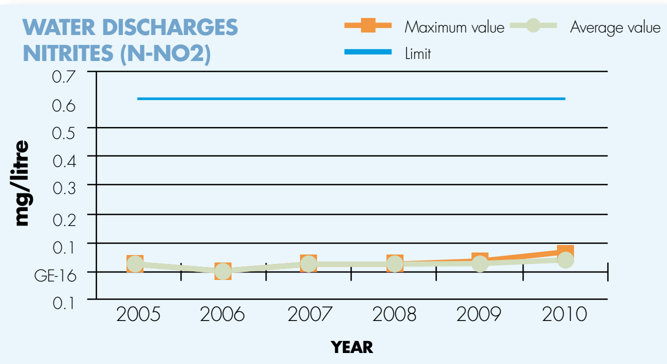
FLUORIDES

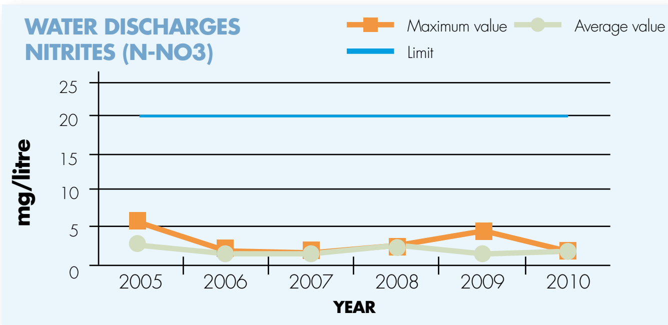
Year	Limit (*) mg/litre	Maximum concentration mg/litre	Average concentration mg/litre
2005	6	0.5	0.4
2006	6	0.5	0.3
2007	6	2.1	0.5
2008	6	0.5	0.4
2009	6	0.5	0.4
2010	6	1.3	0.6

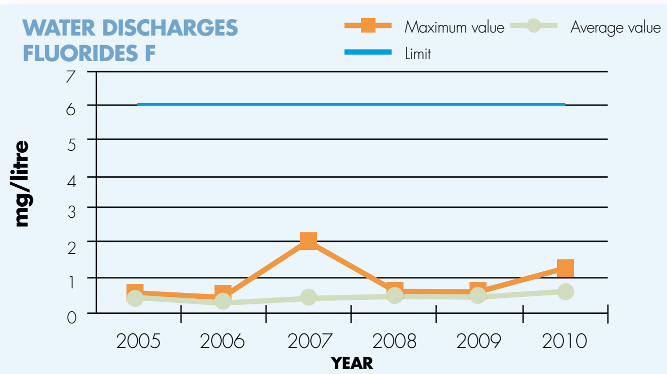
CHLORIDES

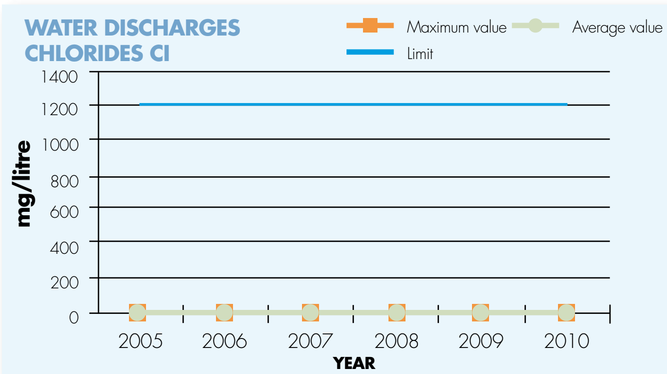
Year	Limit (*) mg/litre	Maximum concentration mg/litre	Average concentration mg/litre
2005	1200	12.0	9.8
2006	1200	12.8	8.6
2007	1200	20	9.71
2008	1200	16.5	11.14
2009	1200	12	8.67
2010	1200	18	9.95

Table 16 – Substances discharged into the Adige River









WASTE

The following diagrams illustrate the waste produced at the Merano factory and include information on the operations that generate it, the way it is handled on-site, and its final destination (recycling/recovery or disposal).

Fig. 17 – Diagram showing treatment of special non-hazardous waste

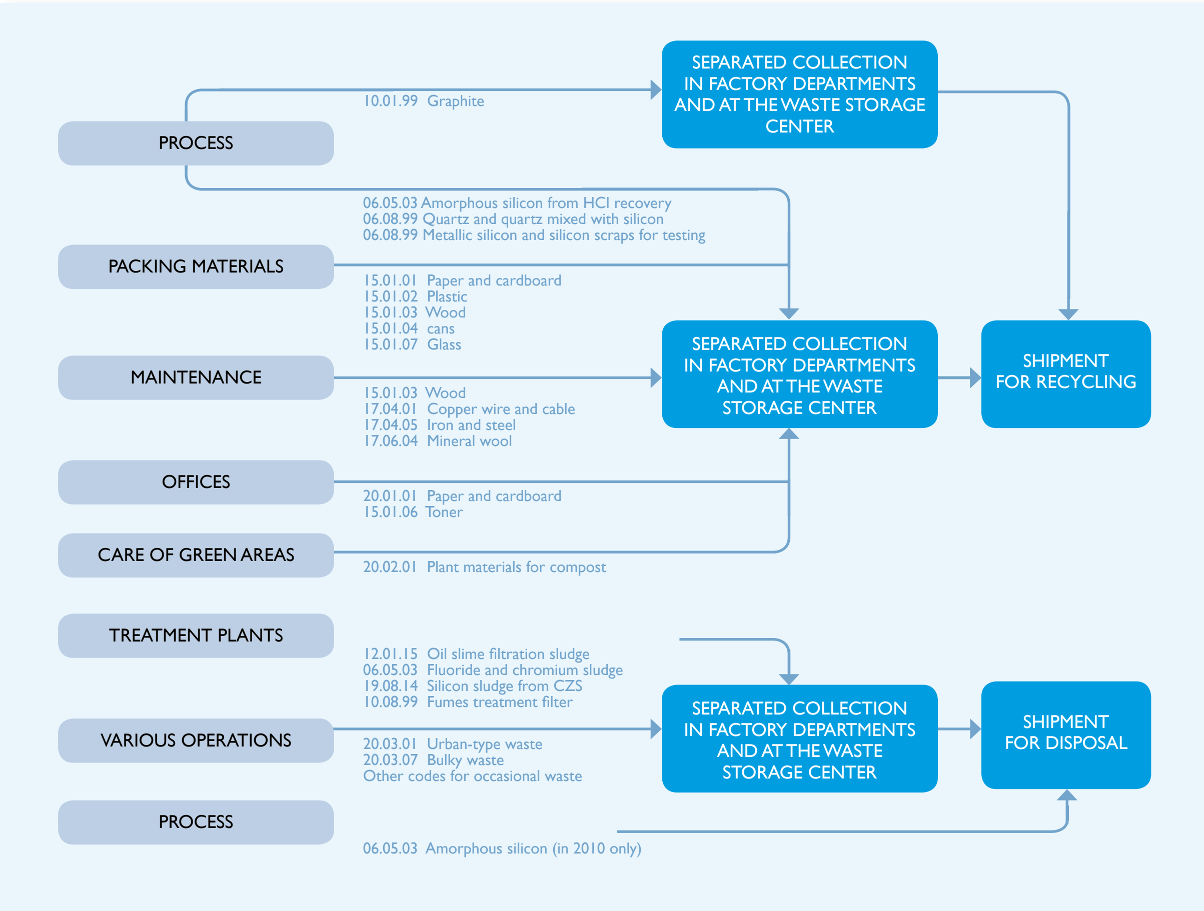
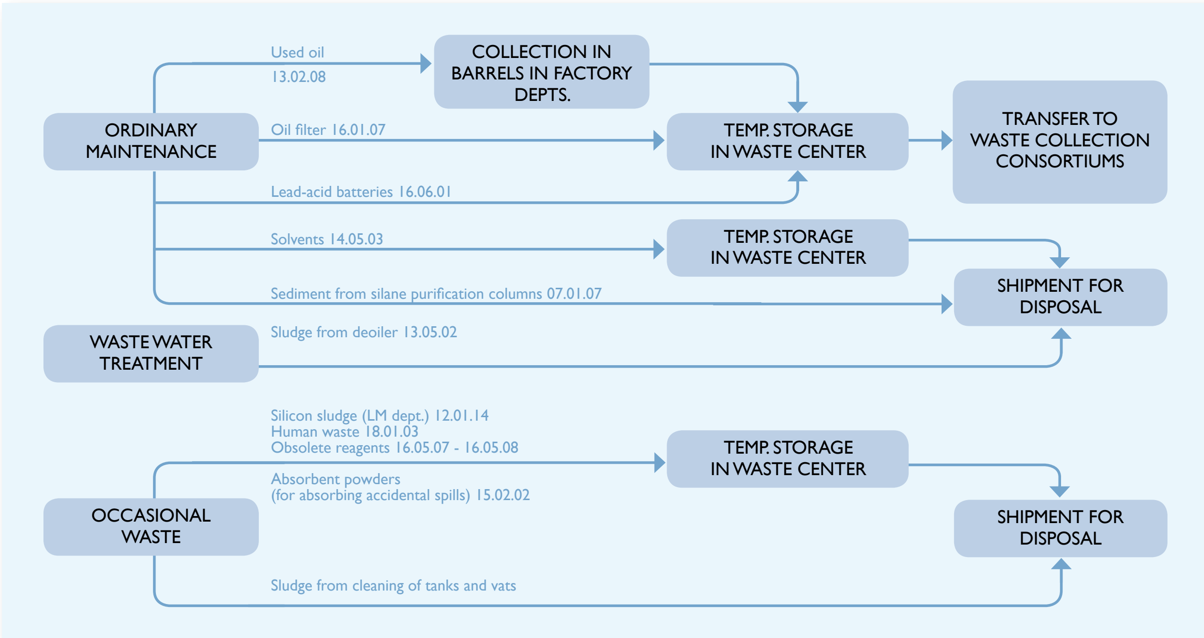


Figure 18 – Diagram illustrating special hazardous waste



The two tables below contain a summary of the waste produced at Merano, as subdivided by destination (recovery or disposal) and type (hazardous or non-hazardous) during the period 2005-2010.

Table 14 - Summary of waste and its destination

CARBON DIOXIDE EQUIVALENT EMISSIONS

Year	WASTE DISPOSED t/year	WASTE RECYCLED t/year	WASTE TOTAL t/year	WASTE SPECIFIC t/t Si	% OF WASTE RECYCLED OUT OF THE TOTAL
2005	883	398	1,230	0.74	32%
2006	775	290	1,065	0.61	27%
2007	557	573	1,130	0.56	51%
2008	397	765	1,162	0.53	66%
2009	733	696	1,429	0.62	49%
2010	931	731	1,662	0.58	44%

Table 15 - Special hazardous waste

PRODUCTION OF HARZARDOUS WASTE

Year	annual	specific		
	t/year	t/year/t silicon	% Production Waste compared to Year 2000	% of waste hazardous out of the total
2005	61	0.04	133	5%
2006	78	0.04	133	7%
2007	102	0.05	167	9%
2008	143	0.07	233	12%
2009	198	0.09	287	14%
2010	397	0.14	463	24%

It must be pointed out that the above data is expressed in absolute terms, and that an increase in the types of waste most closely associated with the production process (particularly quartz, non-hazardous silica, ARA, production sludge, sludge left after purification) was expected in response to the increase in production in 2010.

As compared with 2009, the only information of note is the following variation that cannot be attributed to the usual fluctuations in the production process and with disposal during special maintenance operations: in 2010, a large quantity of amorphous silica classified as "hazardous" was sent out for disposal. A portion of this substance was produced because of a malfunction in an existing filter press, and a portion was generated during the commissioning and setup of a new filter press.

Also, the plant now produces a "new" hazardous waste containing arsenic (CER 06.04.03). This waste is being generated by a new production line for highly doped crystals.

RECLAMATION: ENSURING THE SAFETY AND PROTECTION OF SOIL AND GROUNDWATER

MEMC is strongly committed to protecting the soil and groundwater, and has worked with professionals in this sector for some time on reducing the toxic debt generated on-site by past operations, as well as on eliminating all sources of pollution during normal operation. In fact, a soil contamination event is now possible only if an extraordinary accident occurs (that is, an accident whose probability of occurrence is so low that it is unlikely to happen), thanks to the technical modifications made to plant systems over the years, the changes that have been effected in the way the systems are run, and an expansion project for preventing this type of impact.
The following is a summary of the company's efforts for defining environmental problems - and for securing, reclaiming and monitoring the soil and water - which have been made over the years.

Activities carried out before Ital. Decree 471/99

The first monitoring program for determining the quality of the aquifer under the factory dates back to 1990.

These first investigations uncovered the presence of nitrates and fluorides leaking out of underground piping that carries exhausted chemicals. To correct the problem, collection tanks were coated with resin and refurbished, and the underground piping was completely replaced and/or insulated with a double wall. Also, a more detailed testing program was implemented along the path taken by these lines in order to determine the degree of contamination more precisely.

Subsequent investigations also revealed the presence of chlorinated solvents. This contamination was traced to cleaning operations performed on the piping using organic solvents (trichloroethylene and trichloroethane), which the company immediately eliminated from the production cycle. Also, corrective action was taken which consisted of creating a "hydraulic barrier" hydrogeologically downstream from the production site. This involved drilling five continuously pumping wells on the southern boundary of the site. Their purpose is to contain the contamination "inside" company property.

Also, the contaminated aquifer was "washed" until the year 2000 by injecting unpolluted water into several wells located hydrogeologically upstream of the site.

The southern area of company property was reclaimed in 1991. An exploratory investigation of soil conditions in that area uncovered contamination of the topsoil with heavy metals, the source of which was the past production of sulphuric acid at the site. After the existing industrial buildings were demolished, the portions of the terrain exceeding legal limits were excavated and sent to a special dump. The area was then transferred to the Province of Bolzano, which zoned it for industrial and business expansion.

Activities carried out after Ital. Decree 471/99

In the year 2000, activities began for the description and drafting of reclamation/securing projects, pursuant to decree 471/99, for "former cafeteria" areas (an external zone facing the factory) and several internal areas at the factory.
Given the sizeable organizational effort, technology and financial resources required by these projects - both during development and planning, and during the executive phase - they were elaborated over a

number of years.

The endeavour began with an historical investigation to reconstruct the operations carried out at the site in the past, so that points of potential contamination could be identified, and all the data and information from test programs completed in the past could be collected. Based on this information, and with the goal of describing in greater detail the degree of "current" contamination at the site, the possible "mobility" of existing pollutants, the risk to human health deriving from these pollutants, and the site-specific limits, additional drilling was planned and carried out (after approval by the competent authorities) to collect and analyze soil samples, and also to lay piezometers for collecting and testing the groundwater. Based on the additional information obtained in these tests, reclamation/securing plans were developed to outline the actions which needed to be taken in order to reduce contamination - and the consequent risks to persons and the environment - to the levels prescribed by law.

After the projects were approved by the competent authorities, MEMC began its reclamation/securing operations.

In particular, the southern part of the area facing the factory (the area with the former cafeteria building) was reclaimed in 2002 by removing soil with levels of metal contamination exceeding the limits prescribed by regulations. This soil was sent to a special dump. The reclaimed area was then transferred to the Province.

In 2003, work was done on the external "former cafeteria, north side" area and in internal areas called "hydrogen tank cars" and "gas holder".
With regard to the "former cafeteria, north side" area, the work included removal of approx. 80 m3 of soil that exceeded the site-specific limits calculated through risk analysis. The dig was refilled using excavated soil, and the area was secured by paving it and by laying underground piping for collecting rain water. A monitoring well was also installed downstream from the area to monitor the level and quality of the water table. The work was examined and approved by the competent offices of the Province of Bolzano, and is subjected to regular testing. The resulting data is forwarded to the Province.

With regard to the work in internal areas, in this case as well the soil was removed, tested, and then sent to recovery or disposal plants, depending on its characteristics and contamination level. This work was also inspected and approved by the competent offices of the Province, and a report drawn up at the end of reclamation was sent to the Province.

The work for reclaiming and securing the internal areas was completed in 2004. This work involved the excavation of approx. 1,100 m^3 of soil, which was sent to an outside treatment plant for separation of the fraction that was contaminated beyond site-specific limits (this fraction was disposed of in an authorized dump) from the portion that could be reused for refilling the dig itself (refilling was completed with "new" soil when necessary). The operation was unique because it was necessary to bypass, remove and subsequently restore several underground infrastructures[2].

In 2008, the necessary work began for sorting and reclaiming soil that had been excavated as part of the expansion project, based on the protocol contained in a project dated 8 July 2008, which was approved by the City of Merano (with Prot. no. 20853 dated 23 July 2008) and by the Province of Bolzano (with Prot. no. 405797 dated 29 July 2008). As occurred in the past, the project involved selective digging, sampling of the piles

[2] When this work was completed, a document with protocol No. 29.6/62.07.07/4600 was issued which specified that creation of barriers and monitoring of the aquifer would continue.

of soil in conjunction with the Province (which was notified of the dates of sampling and the results of the tests performed on the piles), the forwarding of soil contaminated beyond legal limits to authorized treatment plants, and reuse of the remaining soil for refilling. The refilling process was completed in March 2011.

It is pointed out that from 2009 to 2010, several wells with piezometers (specified in the monitoring plan) were transferred as a result of the expansion project. In any case, monitoring of the remaining wells confirmed the trends observed in previous years; i.e., there was contamination of the aquifer closest to the surface (of lesser interest for human use), but this was limited thanks to the proven effectiveness of the hydraulic barrier in containing contamination within the MEMC areale. The monitoring yielded the following results:

- heavy metals: no limits were exceeded;

- selenium and fluorides: rates oscillated around legal limits;

- chlorinated solvents: contamination caused by past operations still present;

- arsenic: contamination increased slightly, which in all probability was caused by the elimination of surface material that covered lenses of arsenic; as a result, the arsenic was washed away to a greater extent. In any case, barrier creation and monitoring of the aquifer are continuing, as specified in the project approved and authorized by the Provincial Environmental Protection Agency with protocol No. 29.6/62.07.07/2593 dated 13/5/04.

The monitoring has confirmed the effectiveness of the hydraulic barrier in containing contamination inside the MEMC areale.

VISUAL IMPACT; USE OF LAND; EFFECTS ON BIODIVERSITY

A factory's visual impact is essentially determined by the particular situation in which it is located. However, it is emphasized that the project was subjected to an environmental impact study, with positive results, in which every aspect was examined by the competent authorities; i.e., visual impact, use of land, and impact on biodiversity. Also, a positive feature of the new "reactor room" is that the plant systems with the classic look of a chemical factory on the side facing the road are effectively concealed, which was exactly the goal of MEMC designers and of the international commission that examined and approved the expansion project (after the required changes were made).

It is clear that the presence of this factory in the local area necessarily results in the use of land and the resulting effects on biodiversity. However, it is felt that these aspects are not critical, especially when one considers the "good quality" of the environmental matrices, as determined by the competent authorities.

NOISE

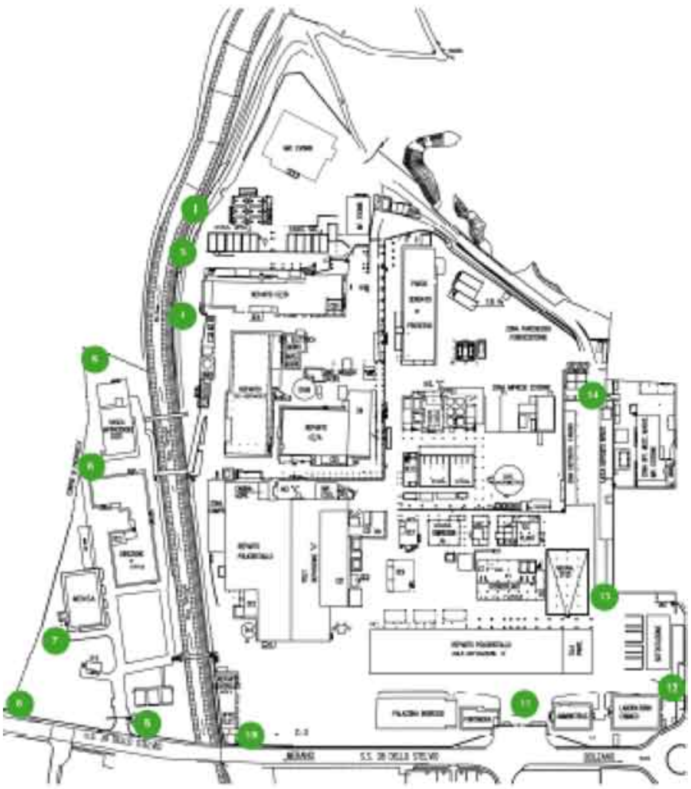
The Integrated Environmental Authorization issued on 12 January 2011 by the Province of Bolzano, and the Decree of the President of the Province no. 39/2008, require compliance with the following limits:

Table 16 – Acoustic impact - Limits

Values to comply with:	Day (6:00 AM – 22:00 PM)		Night (22:00 PM – 6:00 AM)	
	IEA	DPP	IEA	DPP
At factory boundary	70 db(A)	65 db (A)	70 db (A)	65 db(A)*
At surrounding homes	55 db (A)	-	45 db (A)	-

(*) Until 31/12/2012, after which time the value must decrease to 55 dB(A)

The latest monitoring program was conducted in September, October and November of 2010 by an expert who is listed on of the provincial register of acoustic technicians. The results, which are summarized in the following figure, are all within the prescribed limits.



Point of measure (see map)	LA eq BY DAY in dBA	LA eq AT NIGHT in dBA
1	65.5**	61.5**
3	61.0**	59.5**
4	63.0**	56.5**
5	60.0	57.5
6	58.0	57.00
7	55.0	50.5
8	61.5*	52.5
9	65.5*	56.5
10	64.5*	60.0
11	69.5*	60.0
12	67.5*	55.0
13	70.0*	64.0
14	63.0	59.0

* It was impossible to eliminate the noise produced by vehicular traffic at these points. Such noise has proved to be the predominant part of the noise produced by operations at the production facility.

**Noise from Sinigo Stream

TRAFFIC

It has been mentioned that an average of 230 persons are present at the factory on average, but higher levels are reached when the construction site is operating. Furthermore, all raw materials reach the factory over the road (this is also true for the railway tank cars carrying silanes, which must be unloaded).

All this generates traffic flows which are worthy of attention, given what was expressed in the preceding paragraph regarding the impact of traffic on air quality in the Merano area.

In this regard, as things currently stand, the corrective actions that are possible can mainly be concentrated on the movement of persons, since the benefits expected from the start-up of the TCS production plant and the internal hydrogen production plant include a reduction in traffic flow from the transport of silanes, hydrochloric acid and hydrogen.

In fact, MEMC, the municipal government and the public mass transit company have recently prepared a "Plan for Home-Job Commuting" for company staff. Its goal is to help reduce traffic on local roads by promoting good habits such as car pooling, bicycling and public transit.

It must be remembered, however, that these measures do not always meet the actual needs of staff, particularly those who must travel from local areas which are not yet served by an efficient public transit system, and individuals whose family obligations unavoidably require them to use their own vehicles.

ASBESTOS

An updated list of the buildings and the parts of structures that still contain asbestos is available at the PAS. The condition of these buildings and structures is evaluated every year. Traces of asbestos were found in several areas being excavated during the expansion project. After the asbestos was found, the necessary reclamation plans and relative work were carried out as prescribed by law.

PCB/PCT

No PCB/PCT is found in the factory.

All equipment purchased and installed in 2009 and 2010 for the expanded polycrystal production plants contain insulating oils that are free from PCB/PCT.

ODOURS

There are no sources of odour during normal operation.

IONIZING AND NON-IONIZING RADIATION

There are no sources that emit ionizing and non-ionizing radiation into the external environment.

VIBRATIONS

There are no sources of vibration strong enough to impact the environment.

INDIRECT ENVIRONMENTAL ASPECTS

The indirect environmental aspects that have been considered significant up to now are:

- "On-site" production by outside companies;

- aspects associated with the "life cycle" of silicon for photovoltaic panels;

- relationships with suppliers that offer materials or services which are critical from the environmental and safety standpoints, including outside companies not headquartered on-site;

- the activities of outside companies operating on-site;

- communication with outside interlocutors;

- socioeconomic contributions to the local area.

"ON-SITE" PRODUCTION BY OUTSIDE COMPANIES

As stated in the previous section, the expansion project required the installation of the following new production units for the raw and auxiliary materials required by the Merano factory:

- a new chlorosilane synthesis unit with relative supplementary systems (chlorosilane purification, fractioning and storage) built by EDIT (Evonik Degussa Italia), whose jointly placed facilities are located on the eastern side of the factory; this unit will produce TCS, a raw material used in MEMC production;

- a new nitrogen production unit (an on-site Air Liquide system, currently under construction).

The environmental benefits of the chlorosilane synthesis unit consist of a reduction in environmental risk generated during transport.
Also, in both the above cases, these benefits consist of reduced traffic due to fewer movements of raw materials.
The principal environmental impacts caused by the chlorosilane synthesis plant consists of energy consumption, the use of raw materials, the production of waste, the release of emissions into the atmosphere, and waste water discharge. In any event, the relative plant systems were designed and built by leading companies in their sectors and have all the features that are necessary for minimizing environmental impact.

It is important to point out that MEMC can exert the degree of control over these suppliers that is usually possible on its "providers of goods and services", by concentrating on the required documentation submitted for obtaining authorization to perform their activities and on any audits agreed upon with MEMC.

SOLAR PHOTOVOLTAIC POWER
ASPECTS ASSOCIATED WITH THE LIFE CYCLE[3]

In terms of the safety of the relative plants and of energy yield, the technology of photovoltaic cells based on crystalline silicon is currently the most reliable approach that can be applied on a large scale, both in small systems for domestic use, and in medium and large power plants distributed over a large area.

This high reliability is mostly due to the physical properties of silicon and its stability over time. In fact, there is experimental evidence that the photovoltaic cells used in solar power modules can operate continuously for 25 years, and that the predicated useful life of a plant is at least 30 years.

The modules now on the market offer efficiency on the order of 15%, even though photovoltaic cells with 18% efficiency are set to appear on the market shortly.

The "environmental benefits" that can be obtained by using photovoltaic systems to produce electricity are proportional to the total quantity of energy produced during the "life" of these systems, assuming that the photovoltaic power replaces power supplied by power stations fed with fossil fuels (in other words, the benefits are proportional to the CO2 emissions that are avoided and the quantities of fossil fuels that are saved). In this regard, it is noted out that the so-called "energy pay-back time" (the time needed for a plant to produce the amount of energy that was required for building it) now varies from two to four years, as compared with the 20-30 years of useful life of a plant.

The most significant "environmental costs" associated with the use of photovoltaic cells consist of the energy required for production/purification of the silicon, as well as the amount of surface occupied during operation; i.e., after the photovoltaic cells have been installed.

During operation, there is no impact in terms of emissions or consumption. Furthermore, photovoltaic modules are currently designed to protect and conserve the landscape, and the modules can be used to perform multiple functions (for example, as ventilated facades, roof shading and skylights).

[3] The content of this paragraph was taken from an Environmental Impact Study performed by MEMC in 2007, in cooperation with professionals at ICARO S.r.l. as part of the environmental impact procedure that was carried out to obtain approval of the expansion project. The life cycle of silicon for photovoltaic solar use was taken into consideration, because development of the photovoltaic market is the main reason why the decision was made to expand the Merano facility.

However, no similar reasoning was developed for the life cycle of silicon produced for use in microelectronics or for the life cycle of hydrochloric acid: since the wide variety of final uses for these products in terms of applications and sectors of use makes it difficult to effect a similar evaluation unless it is made in general terms (such as the potential impact associated with transformation of silicon in factories similar to the MEMC facility in Novara). In any case, MEMC is continuing its efforts toward reducing its environmental impact regardless of the uses to which its products are subsequently put, to the extent that such efforts are technically and economically feasible.

THE PHOTOVOLTAIC CONVERSION PROCESS

Solar radiation is converted into a stream of electrons in a photovoltaic cell - a device consisting of a thin slice of semiconductor (generally monocrystalline or polycrystalline silicon).
Silicon (Si1428) has 14 electrons, 4 of which are valence electrons; i.e., they are available for bonding to form pairs (covalent bonds) with 4 other valence electrons in 4 other silicon atoms.
Silicon is usually "doped" by inserting boron atoms (valence 3 - pos. doping - lack of electrons - positive charge) into the crystal structure of the silicon. One face of the cell, on the other hand, is doped by high-temperature diffusion of small quantities of phosphorous (valence 5 - neg. doping - surplus of electrons - negative charge). Thus, there is an electrical potential difference in the transition area of the cell.

An electron struck by electromagnetic radiation takes on a quantum unit of radiant energy and moves to a higher energy level, and also becomes free to move around in the semiconductor and to generate a flow of electricity in the presence of an electrical field.
When a photovoltaic cell is exposed to light, electric charges are generated in the silicon due to the photoelectric or photovoltaic effect, and if the two sides of the cell are connected to a load, a flow of electrons will occur in the form of a continuous electric current.
The power of a photovoltaic cell varies with temperature and incident light. As a result, standard conditions of reference must be defined if comparisons are to be made. To this end, the power generated by a photovoltaic cell is measured in peak watts (Wp), which is the power supplied by the cell at 25°C under 1000 W/m^2 of solar radiation whose spectrum is the same as the spectrum that natural light takes on after travelling through a mass of atmosphere which is 1.5 times the mass (the so-called Air Mass) enveloping the Earth (i.e., AM 1.5).
The yield of the conversion process (i.e., the percentage of incident solar energy that the cell can convert into electron flow) varies with the semiconductor used.
A cell that is 10 cm long on each side, for example, can produce approx. 1.5 peak watts (Wp) at a voltage of 0.6 volts. An assembly of 36 electrically connected cells (with area of approx. 0.5 m^2) form a module (with rating of approx. 50 Wp).

MANAGING RELATIONS WITH CRITICAL SUPPLIERS

The following suppliers are considered to be "critical" from the environmental standpoint:

- Suppliers of hazardous substances and preparation, in particular with regard to the "environmental reliability" of the supplier, the transport method used, and the services that are offered after the sale. The inherently critical nature of purchased goods is evaluated in advance and is one of the aspects which is directly managed by MEMC. In particular, before new chemical substances and preparations are introduced into the factory, they must have the joint approval of the management's representative for the protection of the environment and the physician in charge, who assess their hazardous characteristics according to various parameters (including their intended use, the nature of the processes involved, the presence of other hazardous substances, the type of exposure, etc.). This assessment is carried out according to the provisions of MEMC's specific management procedure;

- Suppliers that handle waste produced by MEMC (transport companies and firms authorized for recycling/recovery or disposal);

- Transport companies that carry MEMC products;

- Suppliers of goods and services required in the day-to-day operation of the factory and possible emergency situations. This category thus includes:

• designers of plant systems / processes;

• suppliers involved in regular and special maintenance, expansion projects for the factory (building construction, utility systems, insulation, painting, electrical systems, cleaning, etc.) and cafeteria services;

• suppliers of other professional services that may impact the environment (environmental and safety consultants, and test laboratories in particular).

The selection of critical suppliers is based on specific technical, economic, qualitative and environmental criteria. These criteria are assessed by a special company committee in accordance with MEMC's vendor rating procedure before orders are assigned and are subsequently re-assessed at regular intervals.

Part of this evaluation process is based on evidence provided by candidates concerning the precautions they take to protect the environment. This may include EMAS registration or ISO 14001 certification, for example. In their absence, the adoption of specific operational practices or procedures is favourably considered, especially when evaluating the small or very small local companies - typical of the Alto Adige business system - that work with MEMC, particularly for maintenance work.

Of course, each supplier is carefully evaluated for its "reliability" and professionalism.

Suppliers of waste management services (those businesses involved in the collection, transport, recycling and disposal of the waste produced by MEMC) are of course subjected to all the assessments required by law (the possession, adequacy and completeness of required authorizations). Suppliers who handle the recovery/recycling and disposal of hazardous waste for MEMC are also given at least one initial inspection at their site of operation, which is repeated if necessary. Transport companies who carry waste, on the other hand, are checked periodically to ensure that they have the documents and equipment required by law.

With regard to transport, goods travel mainly over the road, mainly because of geographic and infrastructural hindrances that have made it unfeasible - and still make it impossible - to choose rail or sea transport. Thus, in this case as well, the elements MEMC considers are the reliability and professionalism shown by the supplier not only when it makes the offer, but also when its service is delivered. The evaluation basically consists of checks of documents and inspections of the vehicles required for providing transport services that are subject to national and international laws on the transport of dangerous goods.
Given its importance, this aspect has already been discussed to some extent in the description of the production process. The same can be said for the inspection of documents that must be made pursuant to art. 26 of Ital. Legis. Decree 81/06 and in all cases that fall under the heading, "management of construction sites". In its relations with the relative companies, MEMC is also active in other ways. All third parties operating on-site are informed of the risks that exist at the factory and of the behaviour that is required in order to carry out their tasks safely and with respect for the environment. They are also informed of MEMC's Environmental Policy and of the requirements of the environmental management system that concern them.

MEMC's vigilant surveillance procedures include periodic audits whose purpose is to ensure compliance with instructions, and to maintain control over the substances used and the waste materials produced.

ACTIVITIES OF COMPANIES OPERATING ON-SITE

At present, the only supplier with "permanent status" at the site is a company that performs painting/ sandblasting.

Besides what was specified in the preceding paragraph, in order to organize its operations properly and ensure an adequate level of housekeeping, MEMC has marked off and identified special areas for the safe storage of this company's materials and waste (which are managed independently by the company).

COMMUNICATION

Communication is another important tool for relating to the outside world. MEMC employs this tool to underline its commitment to the environment, to increase the interest of its numerous internal and external partners in this issue, to demonstrate its serious and constant commitment to environmental protection and - last but not least - to remind people of how deeply rooted the factory is and of the important social role it has always played in the local area.

It should be noted that in response to the company's various communication projects, the Province of Bolzano has praised MEMC for "...its considerable commitment to the ongoing development of new technologies and processes that pay increasing attention to the environment, and to the company's relations with the local area" (taken from a letter from the Vice-President of the Province, Mr. Christian Tomasini, dated February 3, 2010).

SOCIOECONOMIC CONTRIBUTION

MEMC makes an undeniable socioeconomic contribution to the surrounding local area. Besides the company's 500 current employees, almost all of whom reside in Alto Adige, one must also consider the associated economic activity generated by the outside companies that operate permanently at the site (cafeteria service, cleaning service, painting and other maintenance, consulting services) or who are "on call". Almost all these companies are based in Alto Adige.

The expansion has made - and will continue to make - a substantial contribution: The expansion has made - and will continue to make - a substantial contribution: approx. 50 new employees were hired in 2009, 80 more were added in 2010, and another 80 are expected to be hired by the end of 2012.

IMPORTANCE OF ENVIRONMENTAL ASPECTS

The tables below show the result of an evaluation of direct and indirect environmental aspects that was carried out for 2010 using the methods described in the previous section, “Environmental Procedures”.

VERY IMPORTANT (red) IMPORTANT (yellow) NOT IMPORTANT (green)

DIRECT ENVIRONMENTAL ASPECTS

CONDITIONS OF OPERATIONS		Normal	Emergency	Previous
1.A	Electricity consumption	VERY IMPORTANT	NOT IMPORTANT	
1.B	Fuel oil and diesel fuel consumption	IMPORTANT	NOT IMPORTANT	
1.C	Natural gas consumption	NOT IMPORTANT		
2.A	Consumption of water for industrial purposes (groundwater)	VERY IMPORTANT	NOT IMPORTANT	
2.B	Consumption of water from the aqueduct (drinking water)	IMPORTANT		
3	Consumption of raw materials	IMPORTANT		
4.A	Consumption of auxiliary materials used in production	IMPORTANT		
4.B	Consumption of auxiliary materials for product testing	IMPORTANT		
4.C	Consumption of auxiliary materials for auxiliary plants	IMPORTANT		
4.D	Consumption of auxiliary materials for maintenance and services	NOT IMPORTANT		
4.E	Consumption of paper, cardboard, wood, plastic	NOT IMPORTANT		
6.A-H	Emissions released into the atmosphere (Hydrochloric acid, HF, SOX, CO, CO2, dust, dust from combustion, organic substances)	IMPORTANT	IMPORTANT	
6.C	Emissions released into the atmosphere (NOX)	VERY IMPORTANT	IMPORTANT	
7	Emissions dispersed into the atmosphere (combustion fumes)	NOT IMPORTANT	IMPORTANT	
8-9	Water discharges (pH, COD, mineral oils, Cu, Zn, Cr, N, Cl-, Fl-, suspended solids)	IMPORTANT	IMPORTANT	
10.A	Special hazardous waste	IMPORTANT	IMPORTANT	
10.B	Special non-hazardous waste	IMPORTANT	IMPORTANT	
10.C	Recyclable waste	IMPORTANT		
10.D	Special non-hazardous waste – Recycled Si from quartz/Si	IMPORTANT		
11	PCB	NOT IMPORTANT		NOT IMPORTANT
12.A	ODS	IMPORTANT	IMPORTANT	
12.B	GWS	IMPORTANT	IMPORTANT	
13	Asbestos	NOT IMPORTANT		NOT IMPORTANT
14	Odours	NOT IMPORTANT	NOT IMPORTANT	
15	External noise	IMPORTANT	NOT IMPORTANT	
16	Radiation	NOT IMPORTANT		
17	Vibration	NOT IMPORTANT	NOT IMPORTANT	
18	Soil contamination		IMPORTANT	IMPORTANT
19	Consumption of land	IMPORTANT		
20	Visual intrusion	NOT IMPORTANT		
21	Traffic	NOT IMPORTANT		
22	Effects on biodiversity	IMPORTANT	NOT IMPORTANT	

INDIRECT ENVIRONMENTAL ASPECTS

ON-SITE PRODUCTION BY OUTSIDE COMPANIES	
A	Production of TCS by Degussa (future impact)
B	Nitrogen production (future impact)
C	District heating - heat exchanging

ACTIVITIES PERFORMED OUTSIDE THE FACTORY

A	Recycling/disposal of non-hazardous waste
B	Recycling/disposal of hazardous waste
C	Acquisition of raw materials (TET, TCS, hydrogen)
D	Acquisition of hazardous chemicals with T, T+, N classification
E	Acquisition of hazardous chemicals with C, F+, F classification
F	Acquisition of hazardous chemicals with T, T+, N classification
G	Acquisition of hazardous chemicals, spare parts and other consumable materials
H	Acquisition of electricity
I	Acquisition of fuel oil and diesel fuel
L	Acquisition of natural gas
EXTERNAL TRANSPORT	
A	Transport of non-hazardous waste
B	Transport of hazardous waste
C	Transport of raw materials (dopants)
D	Transport of raw materials (TET, TCS)
E	Transport of hazardous chemicals
F	Transport of non-hazardous chemicals, spare parts and other consumable materials
G	Transport of product (silicon)
H	Transport of product (Hydrochloric acid)
I	Transport of persons
PROCESSING/USE OF PRODUCT SUPPLIED BY MEMC	
A	Transformation of silicon
B	Use for chips
	Use for photovoltaic cells
C	Disposal of silicon
D	Use of hydrochloric acid

ACTIVITIES IN LOCAL AREA

A	Communication/awareness raising
B	Socioeconomic impact

LIST OF APPLICABLE REGULATIONS IN THE ENVIRONMENT FIELD

The table below contains a summary of the applicable regulations in the environmental field and the relative position of MEMC.

ENVIRONMENTAL ASPECT	REFERENCE	LEGAL REQUIREMENTS	MEMC's POSITION
ENERGY CONSUMPTION	It. L. 10/91	Annual report on the factory's total consumption of primary sources, and appointment of an Energy Manager	Report on consumption and name of the Energy Manager sent every year before 30th April
HYDROGEN CONSUMPTION	It. R.D. 1775/33 It. Leg. D. 152/06 It. Prov. Law 8/2002 It. Prov. Law 7/2005 It. Prov. Law 6/2007	Report existing wells Report re-drilling of existing wells	**It. Decree no. 240** dated 25/5/06 - Ref. no. 37.1/74.05.03 7587 Authorizes offtakes with new maximum flow capacities: Well no. 1 - Beyond Sinigo (Z/3927-3) Well no. 2 - Beyond Sinigo (Z/4706-3) Well no. 3 - Beyond Sinigo (MZ/6-5) Well no. 4 - Beyond Sinigo (Z/5281-3) Well no. 1 - Sports field (MZ/6-8) Well no. 2 - Sports field (Z/3927-1) Well no. 3 - Sports field (Z/3920-1) Well no. 4 - Sports field (Z/3927-2)
ATMOSPHERIC EMISSIONS	It. Leg. D. 152/06 It. P.L. 8/00	Integrated Environmental Authorization Compliance with prescribed limits	Integrated Environmental Authorization issued by the Province of Bolzano on: **12 January 2011**
WATER DISCHARGES	It. Leg. D. 152/06 It. P.L. 8/02		
NOISE	It. L. 447/95 It. Pres. D.39/2008		
IPPC	It. Leg. D. 152/06 It. Prov. Law 5/2007		
WASTE	It. Leg. D. 152/06 and associated regulations It. Prov. Law 04/06	Compliance with the volume limits and times for temporary dumping of waste within factory grounds. Keep a register on the loading and unloading of oil. Compile the accompanying form. Report to the Chamber of Commerce on the type and quantity of waste produced and disposed of (MUD environmental report form)	Temporary dumping managed in prescribed manners. Registers and forms compiled and kept for the periods and in the ways prescribed. Annual filing of the MUD environmental report form by the deadline prescribed by law
	DM 17.12.2009 "SISTRI"	Enrolment in the SISTRI and use of its portal for recording the movements of waste (loading/unloading logs, forms, MUDs)	Enrolment carried out, now awaiting its activation

ENVIRONMENTAL ASPECT	REFERENCE	LEGAL REQUIREMENTS	MEMC's POSITION
PCB	It. Pres. D. 216/88	Report to the Provincial administration on the presence within the factory of devices, plants or fluids containing PCB in concentrations in excess of 50 ppm	First report on 29th May 1989, second report on 21st February 1990
SUBSTANCES DAMAGING TO THE OZONOSPHERE	EC/1005/2009 Regulation It. Pres. Decree 15.02. 2006, no. 147	Inventory of devices containing substances that may deplete the ozonosphere. Implementation of measures to prevent emissions of such substances during maintenance operations.	Inventory was taken of devices containing Freon 22 (the only substance damaging to the ozonosphere used in the factory), and is updated in the event of changes. Technical and operational measures were taken to prevent the emission of such substances into the atmosphere.
		As of 1 January 2010, it is no longer possible to use virgin HCFCs (such as R22) for cooling purposes	Upgrade of plant systems to use an alternative refrigerant, when possible
GREENHOUSE GASSES	EC/842/2006 Regulation	Inventory of equipment that contains greenhouse gas, and taking measures to keep this equipment under supervision Checking the relative plant systems at the intervals specified in regulations, and keeping the CD "Plant Instruction Booklet" readily available	Inventory of systems containing greenhouse gas Instruction booklets complying with regulations, supplied by MEMC Instruction booklets complying with regulations, supplied by qualified maintenance personnel
ASBESTOS	It. Pres. D. 215/88	Inventory of materials on site that may contain asbestos Presentation of reclamation plans for disposing of goods containing asbestos	Inventory updated annually Reclamation plans presented for all the removals carried out
CHEMICALS	It. Leg. D. 81/08 It. Leg. D. 334/99 REACH, CLP regulations	Periodic analyses of risks	Risk analysis document pursuant to It. Leg. D. 81/08
		Notification and information provided to the public	Regularly sent to Province of BZ, It. Ministry of Environment and City of Merano
		Safety report	Regularly sent to government commissioner, Province of BZ
		Appointment of consultant for the safe transport of dangerous goods Consultant's annual report on transport safety and dangerous goods	Consultant appointed Annual report drawn up
		Registration with REACH	Registration with REACH for trichlorosilane, silicon tetrachloride, hydrochloric acid, silicon
		Updating/safekeeping of safety information	Updated safety information also available digitally
SOIL NAZIONE CONTAMINATION	It. Leg. D. 152/06 It. D. of Prov. Council 1072/05	Reclamation of contaminated sites	Reclamation completed

ENVIRONMENTAL IMPROVEMENT PROGRAM

2010-2011-2012 ENVIRONMENTAL PROGRAM
Summary of actions ending in December 2010

IMPROVEMENT ACTION	OBJECTIVE	DEADLINE	DEPARTMENT RESPONSIBLE	RESULT
ENERGY CONSUMPTION – NORMAL OPERATING CONDITIONS				
OBJECTIVE: TO REDUCE THE ELECTRICITY CONSUMPTION				
1.A.27 Engineering and starting up a "High energy efficiency reactor" used for growing polycrystal	To reduce by 25% the specific consumption of electricity for producing silicon in the reactor	December 2010	Innovation	Basic engineering completed, civil engineering phase in progress, 2011 is target date for beginning construction
1.A.28 District heating. Implementation of systems that provide heat for domestic purposes to the local supply company	To reduce the energy required for cooling fluids in cooling towers (estimated at 50 MW/ season)	Spring 2011	Innovation	Action completed Objective reached
1.A.29 District heating. Implementation of systems that provide heat for domestic purposes to the local supply company	To reduce energy/hour (combustion of raw materials), estimated at $35*10^3$ MJ	Spring 2011	Innovation	Action completed An estimated reduction in hourly energy consumption of $20.4*10^3$ MJ was already recorded in January 2011
1.A.30 Implementation of electronic (inverter) control of the speed of electric motors (with total power rating of approx. 0.5 MW)	To reduce the consumption of electricity used for powering the motors	December 2011	Innovation	Action completed
1.A.31 Installation of heat recovery systems that use exhaust gasses to preheat the feed mix	To reduce energy consumption (0.11 kWh/Kg of TET fed into the plant)	December 2010	Innovation	Action completed
1.A.32 Installation of new Pyrochemshield and Pyroflexchem insulation technology to replace old insulation	To reduce energy consumption and be able to reuse the insulation after it is removed.	December 2010	Polycrystal	Action completed
WATER CONSUMPTION – NORMAL OPERATING CONDITIONS				
OBJECTIVE: TO REDUCE THE CONSUMPTION OF GROUNDWATER				
2.A.09 Engineer the water network for the expansion of the poly plant in order to recycle most of the water	To reduce the specific consumption of well water from 5.5 m^3/t to 4.5 m^3/t	December 2010	Innovation	The completion deadline for the project has been rescheduled to December 2011 to give priority to the expansion plan
2.A.10 Engineer the water network for the expansion of the poly plant in order to recycle most of the water	Install evaporation towers to cool the water circulating instead of well water	December 2010	Innovation	Action completed
OBJECTIVE: TO REDUCE THE CONSUMPTION OF DRINKING WATER				
2.B.1 Inspect the factory water network to optimize consumption	To install flow meters and take measures to reduce consumption by 10%	December 2010	Innovation	The completion deadline for the project has been rescheduled to December 2011 to give priority to the expansion plan

CONSUMPTION OF AUXILIARY MATERIALS USED IN PRODUCTION				
OBJECTIVE: TO REDUCE THE CONSUMPTION OF FUELS (FUEL OIL AND DIESEL FUEL)				
4.A.5 Replace certain plant components with new, high-efficiency components. Increase the efficiency of hydrochloric acid recovery, with resulting reduction in the use of soda fume abatement columns	Estimated 10% reduction in consumption of caustic soda	December 2010	Innovation	Action completed Objective of reducing specific consumption reached
4.A.10 Build a natural gas-fired heating plant to replace the current fuel oil-fired plant	To use natural gas instead of fuel oil. To reduce specific consumption from 0.7 TOE/t silicon to 0.6 TOE/t of silicon	December 2011	Innovation	The project will begin in 2011
4.A.11 Dispose of diesel fuel-fired air compressor (sandblasting cabin)	To save 10,000 l of diesel fuel/ year	December 2011	Innovation	Action completed A new electric compressor has been installed
4.A.12 Increase the efficiency of the boilers in the central heating plant and optimize the heat recovery loop	Estimated 5% reduction in the consumption of fuel oil	December 2010	Polycrystal	Action completed Objective partially reached, with a total savings of 3.2% (not including consumption for commissioning)
4.A.13 Recovery - by cryogenic cleaning - of graphite left after the processing cycle.	Estimated 1% reduction in the use of graphite	December 2010	CZ	The project has been postponed to 2011
4.A.14 Implementation and validation of new chemical attack processes for highlighting defects in crystallography	Estimated 40% reduction in the consumption of chromium mix	December 2010	CZ	Action completed A savings of 20% has been achieved in absolute consumption and 46% in specific consumption
ATMOSPHERIC EMISSIONS				
OBJECTIVE: TO REDUCE ATMOSPHERIC EMISSIONS OF CO2				
6.E.1 Increase the efficiency of the boilers in the central heating plant and optimize the heat recovery loop	To reduce CO2 production by reducing fuel consumption	December 2010	Polycrystal	Action completed A savings of 6% has been achieved in the specific consumption of fuel oil.
6.E.2.a Build a natural gas-fired heating plant to replace the current fuel oil-fired plant	To reduce the production of CO2 by 20% due to the difference in specific heat between fuel oil and natural gas	December 2011	Innovation	The project will begin in 2012. In the meantime, a project has been started for converting the current plant to natural gas by replacing only the burners
6.E.2.b Build a natural gas-fired heating plant to replace the current fuel oil-fired plant	To drastically reduce the production of dust due to combustion of gas instead of fuel oil	December 2011	Innovation	
6.E.2.C Build a natural gas-fired heating plant to replace the current fuel oil-fired plant	To drastically reduce the production of SO2 due to combustion of gas instead of fuel oil	December 2011	Innovation	The project will begin in 2012

WASTE				
OBJECTIVE: TO REDUCE THE EMISSIONS PRODUCED BY WASTE				
10.B.6 Replacement of the filter press that separates and packs down the fraction of SiO2 suspended in hydrochloric acid solution	A 2.5% decrease is expected in the specific quantity of sludge per unit of silicon produced	December 2010	Polycrystal	Action completed A 4% reduction per unit of silicon was observed (not including consumption for commissioning)
ODS				
OBJECTIVE: TO ELIMINATE THE USE OF R22				
12.5 Replace the Freon 22 refrigerating fluid in the entire CDI plant with new fluid	To replace Freon 22 with an alternative substance	December 2010	Innovation	The deadline has been postponed. All refrigeration systems associated with production will be converted to R507 starting in 2012
NOISE				
OBJECTIVE: TO REDUCE NOISE AROUND THE PERIMETER OF THE FACILITY				
15.A.1 Install special silencers on components of the plant that are identified as sources of noise emissions	An expected attenuation of noise on the northern side of the factory	December 2010	PAS	The project is still in progress The investigative phase has been completed, and the executive phase will begin in 2011
TRAFFIC				
OBJECTIVE: TO REDUCE THE TRAFFIC GENERATED BY SHIPMENTS OF RAW MATERIALS				
21.2 Replace certain plant components with new, high-efficiency components. Increase the efficiency of hydrochloric acid recovery, with resulting reduction in the use of soda fume abatement columns	To reduce industrial vehicle traffic by 6,000 km/year	December 2010	Innovation	Action completed (see note in 4.A.5). It has been determined that 5.250 km have been saved.
21.3 Engineer the process to reduce the production of chlorosilane mixture intended for the external market (-30%)	To reduce rail traffic in an amount equal to 60 boxcars, for a total of 100,000 km	December 2010	Polycrystal	The project is in progress and will be launched in 2011.
21.4 Investigate the practice of commuting and propose environmentally friendly mobility solutions or incentives for using public transit	To reduce commuter traffic (by 5%)	December 2010	HR	Action completed 7% of the population took part in the project, and traffic was reduced by over 5%
EMERGENCIES				
OBJECTIVE: TO REDUCE THE RISK AND EFFECTS OF SOIL CONTAMINATION				
E.18.6 Use suitable resins to coat the vats at the bottom of the soda columns that abate gasses leaving the reactors	Reduce presumed leaks and improve the aquifer	December 2010	Polycrystal	The project has been delayed Vat C3a has been completed. Vat C7a will be completed in 2011.

2011-2012-2013 ENVIRONMENTAL PROGRAM

IMPROVEMENT ACTION	OBJECTIVE	DEADLINE	DEPARTMENT RESPONSIBLE
ENERGY CONSUMPTION – NORMAL OPERATING CONDITIONS			
OBJECTIVE: TO REDUCE THE ELECTRICITY CONSUMPTION			
1.A.33 Construction of a "Reactor with high energy efficiency" for growing polycrystal silicon	To reduce the specific consumption of electricity required for producing silicon in the reactor by 25%	December 2012	Innovation
WATER CONSUMPTION – NORMAL OPERATING CONDITIONS			
OBJECTIVE: TO REDUCE THE CONSUMPTION OF GROUNDWATER			
2.A.9 Engineer the water network for the expansion of the poly plant in order to recycle most of the water	To reduce the specific consumption of well water from 5.5 m^3/kg to 4.5 m^3/kg	December 2011	Innovation
OBJECTIVE: TO REDUCE THE CONSUMPTION OF GROUNDWATER			
2.B.1 Inspect the factory water network to optimize consumption	To install flow meters and take measures to reduce consumption by 10%	December 2011	Innovation
CONSUMPTION OF AUXILIARY MATERIALS USED IN PRODUCTION			
OBJECTIVE: TO REDUCE THE CONSUMPTION OF FUELS (FUEL OIL AND DIESEL FUEL)			
4.A.10 Build a natural gas-fired heating plant to replace the current fuel oil-fired plant To use natural gas instead of fuel oil.	To reduce specific consumption from 0.7 TOE/t silicon to 0.6 TOE/t of silicon	December 2011	Innovation
OBJECTIVE: TO REDUCE THE CONSUMPTION OF GRAPHITE			
4.A.13 Recovery - by cryogenic cleaning - of graphite left after the processing cycle	Estimated 1% reduction in the use of graphite	December 2011	CZ
OBJECTIVE: TO REDUCE THE CONSUMPTION OF OXYGEN			
4.B.15 Implementation of a new automatic oxygen distribution station for highlighting defects	An expected 30% decrease in consumption	December 2011	CZ
OBJECTIVE: TO REDUCE THE CONSUMPTION OF QUARTZ			
4.B.16 Implementation of an acid attack technique for restoring quartz that has been overused, so that it can be reused in production	An expected 5% decrease in the specific consumption of quartz for the amount of poly produced	December 2011	Polycrystal
OBJECTIVE: TO REDUCE THE CONSUMPTION OF ACID			
4.B.17 Installation of an automatic hood for acid attack of the cores used to grow polycrystal	An expected 20% decrease in the specific consumption of acid mixture per amount of poly produced	December 2011	Polycrystal
OBJECTIVE: TO REDUCE THE CONSUMPTION OF DEMINERALISED WATER			
4.B.18 Installation of a new, automatic, reactor bell washing station that can handle a greater number of bars	An expected 2.5% decrease in the specific consumption of demineralised water per amount of poly produced	December 2011	Polycrystal

ATMOSPHERIC EMISSIONS			
OBJECTIVE: TO REDUCE ATMOSPHERIC EMISSIONS			
6.E.2.a Build a natural gas-fired heating plant to replace the current fuel oil-fired plant	To reduce the production of CO2 by 20% due to the difference in specific heat between fuel oil and natural gas	December 2011	Innovation
6.E.2.b Build a natural gas-fired heating plant to replace the current fuel oil-fired plant	To drastically reduce the production of dust due to combustion of gas instead of fuel oil	December 2011	Innovation
6.E.2.c Build a natural gas-fired heating plant to replace the current fuel oil-fired plant	To drastically reduce the production of SO2 due to combustion of gas instead of fuel oil	December 2011	Innovation
WASTE			
OBJECTIVE: TO REDUCE THE EMISSIONS PRODUCED BY PACKAGING WASTE			
10.b.7 Decreasing the packing material used for packaging solar polycrystal nuggets by increasing the weight contained in each package (from 5 to 20 Kg)		December 2011	Polycrystal
OBJECTIVE: TO REDUCE THE EMISSIONS RELEASED DURING PRODUCTION – WORK GARNMENTS			
10.b.8 Declassifying the CZB puller area to make it consistent with CZA	An expected 20% decrease in the waste caused by the use of work garments designed for places in "environment classes"	December 2011	CZ
ODS			
OBJECTIVE: TO REDUCE R22 EMISSIONS			
12.A.5 Replace the refrigerating fluid Freon 22 with new fluid in the entire CDI plant	To replace Freon 22 with an alternative refrigerant	December 2014	Innovation
NOISE			
OBJECTIVE: TO REDUCE EXTERNAL NOISE			
15.A.1 Install special silencers on components of the plant that are identified as sources of noise emissions	An expected attenuation of noise on the northern side of the factory	December 2011	
TRAFFIC			
OBJECTIVE: TO REDUCE TRAFFIC CAUSED BY TANK TRUCKS CARRYING FUEL OIL			
21.B.1 Build a natural gas-fired heating plant to replace the current fuel oil-fired plant	To reduce industrial vehicle traffic by 68,000 km/year	December 2012	Innovation
OBJECTIVE: TO REDUCE TRAFFIC CAUSED BY RAIL TRANSPORT OF SILANES			
21.B.3 Engineer the process to reduce the production of chlorosilane mixture intended for the external market	To reduce rail traffic by 60 boxcars, for a total of 100,000 km/year saved	December 2012	Innovation
EMERGENCIES			
OBJECTIVE: TO REDUCE POSSIBLE SOURCES OF SOIL/AQUIFER CONTAMINATION			
E.18.6 Use suitable resins to coat the vats at the bottom of the soda columns that abate gasses leaving the reactors	To reduce presumed leaks and improve the quality of the aquifer	December 2011	Polycrystal
SKILL, TRAINING AND AWARENESS			
OBJECTIVE: TO INCREASE THE LEVEL OF PARTICIPATION BY PERSONNEL			
To increase and improve the involvement of employees at the Merano factory in environmental themes, using bulletin boards in departments, committees, meetings and mail (and a possible contest)	To obtain at least ten reports of situations that are worthy of interest in terms of environmental improvement	December 2012	PAS

GLOSSARY

ENVIRONMENT

The context in which an organization operates, including the air, water, land, natural resources, flora, fauna, and human beings and their inter-relationships. This context extends from inside the organization to the overall system.

ENVIRONMENTAL ASPECT

An element of an organization's activities, products or services which has or may have an impact on the environment.

SIGNIFICANT ENVIRONMENTAL ASPECT

An environmental aspect which has or may have a significant impact on the environment.

DIRECT ENVIRONMENTAL ASPECT

An environmental aspect associated with an organization's activities, products and services that is subject to direct managerial control.

INDIRECT ENVIRONMENTAL ASPECT

An environmental aspect that may derive from interaction between an organization and third parties, and which may be influenced to a reasonable degree by that organization.

ENVIRONMENTAL IMPACT

Any positive or negative change to the environment, which derives - in whole or in part - from an organization's activities, products or services.

EMERGENCY

An abnormal event or accident that may affect the external environment.

TOXIC DEBT

Environmental pollution of one or more environmental matrixes (soil, subsoil, groundwater, air, surface waters) that was generated by activities carried out in the past.

The subject of this Environmental Statement for the year 2010 is the Merano factory of Memc Electronic Materials S.p.A..

This document has been edited in compliance with Article 6 of EC Regulation 1221 /2009 dated 19th March 2001.

The published data refer to the period 2000-2010.

This Environmental Statement was drawn up by the ESH department, and approved by the Management Committee: Managing Director of MEMC S.p.A. and the Directors of the Technologies and Human Resources departments.

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This Environmental Statement was approved by the environmental inspector at ERM Certification and Verification Services Ltd (number UK-V-0013), 2nd Floor, Exchequer Court, 33 St Mary Axe, London EC3A 8AA, on 03/06/2011. The next evaluation will be carried out by June 2012. The next Environmental Statement will be published in 2012.

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