CONFINDUSTRIA
PER LA SOSTENIBILITÀ

SOL Group

Convegno Efficienza Energetica - Assolombarda

Milano, 24 aprile 2012

Business Description

SOL is a multinational company dedicated to the production, applied research and sales of industrial, medicinal, pure and special gases, as well as in home care services. SOL is a company listed at Milan Stock Exchange since 1998

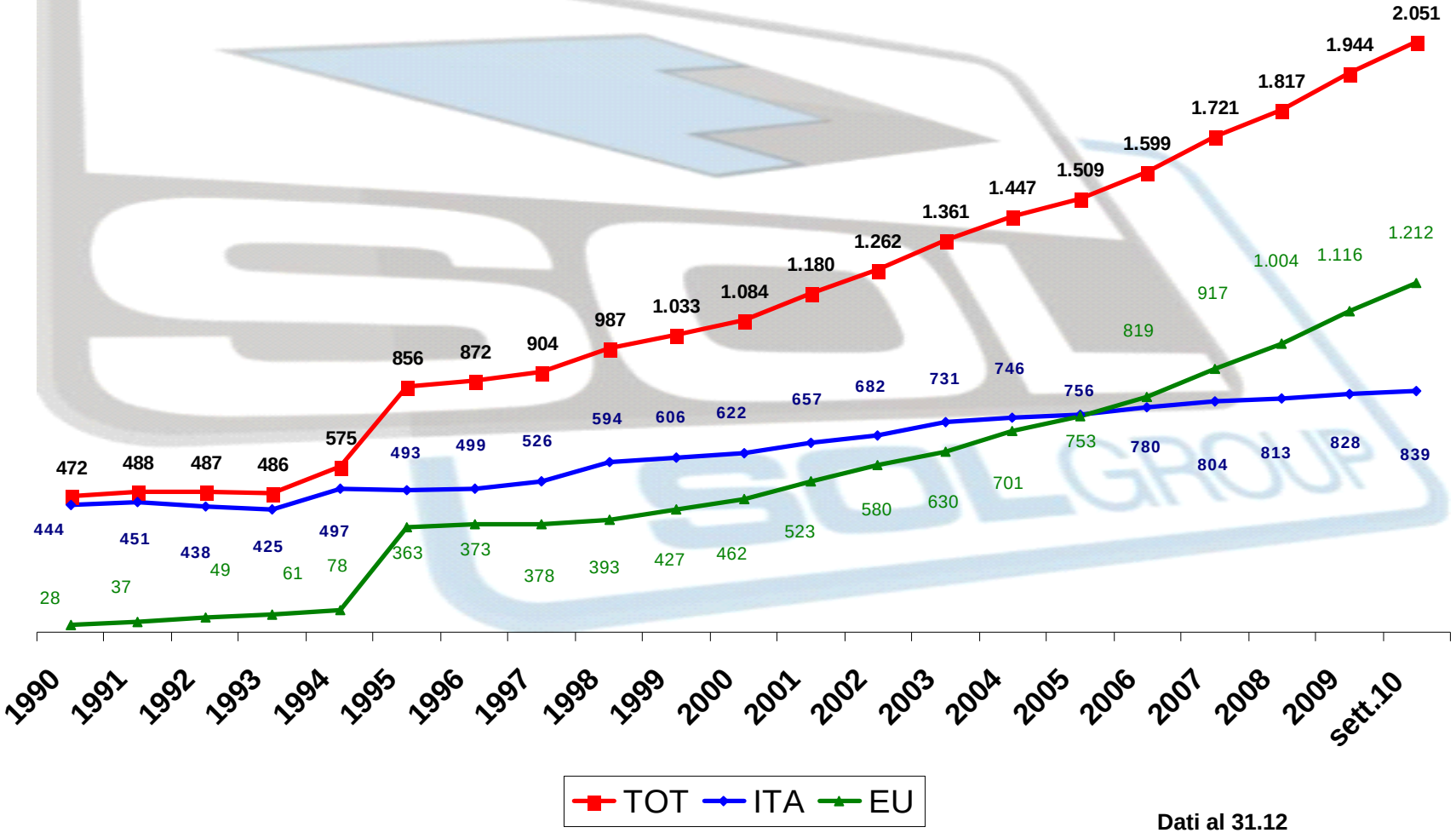
Industrial gases

Home Care

Key numbers al 31.12. 2011

- *2,268 dipendenti*
- *34* stabilimenti primari di processo, *42* secondari (filling station)
- Più di *50.000* clienti and oltre *90* applicazioni tecnologiche
- Settore home care con più di *220.000* pazienti servizi gg
- Fatturato di Euro *555,7* milioni nel 2011
- Constante crescita negli ultimi 10 anni (CAGR = **9.0%**)
- Elevati consumi energetici : > **600 GWh/anno**

Personale Gruppo SOL: suddivisione per nazionalità (1990-sett.10)



Dati al 31.12

Les principali società chimiche Italiane – Risultati 2010/2009

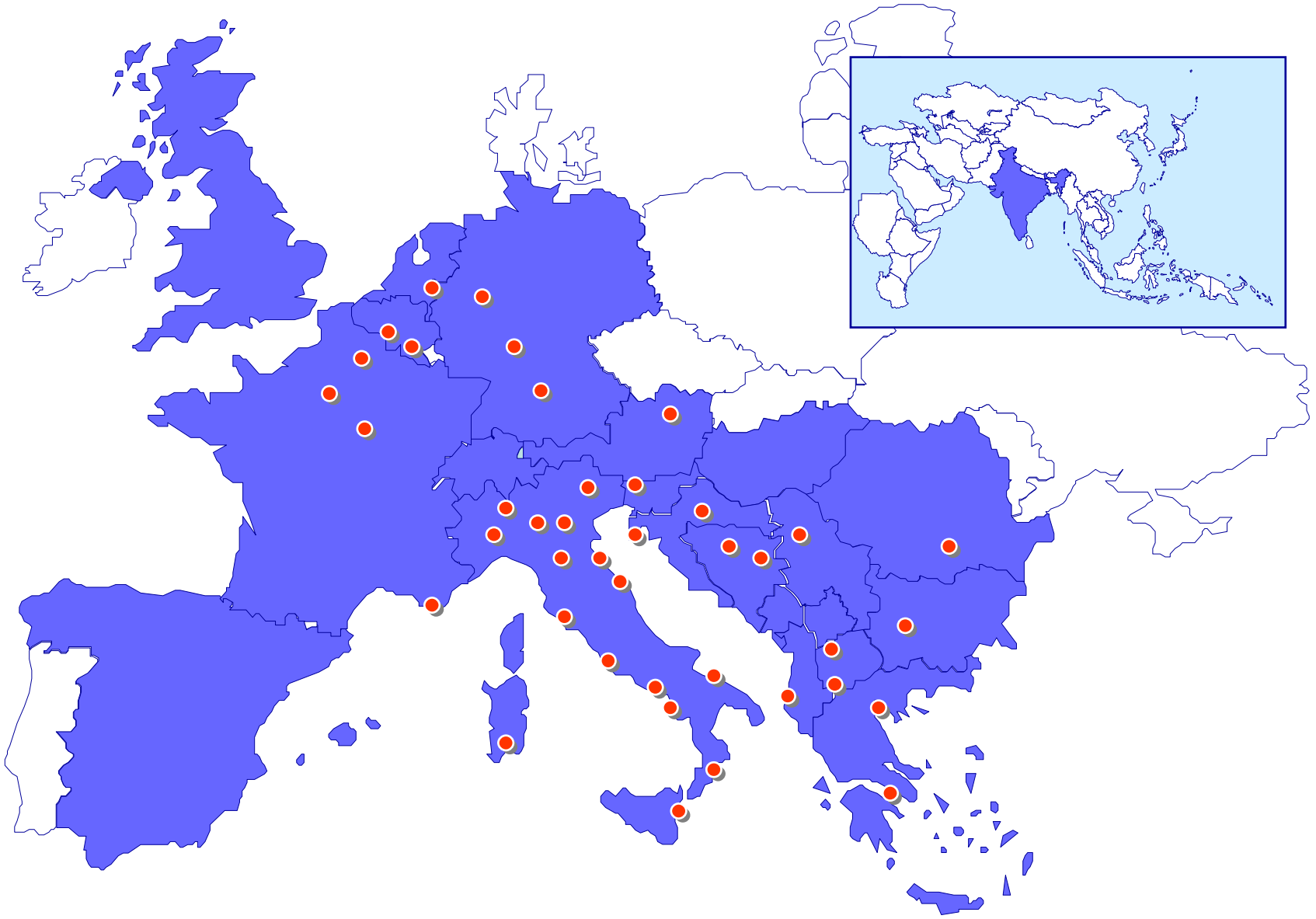
(milioni Euro)	Vendite mondiali 2010	Vendite mondiali 2009	%	Vendite Italia 2010	Vendite Italia 2009
1° Polimeri Europa	6138	4203	46%	4821	3128
2° Gr.Mossi&Ghis.	1970	1508	31%	383	298
3° Gruppo Mapei	1832	1670	10%	744	654
4° Radici Group	1161	774	50%	605	465
5° Gruppo Bracco	719	666	8%	527	498
6° Gruppo P & R	692	611	13%	487	441
7° Polynt Group	614	420	46%	483	340
8° Gruppo COIM	550	420	31%	327	240
9° Gruppo SOL	519	463	12%	302	276
10°Gr.Colorobbia	470	400	18%	211	178
11°Gruppo SIAD	452	415	9%	265	250
12°Gruppo Aquafil	432	338	28%	249	201
13°Gruppo Sapio	431	390	11%	414	377
14°Gruppo Lamberti	368	287	28%	253	156
15°Dobfar Holding	315	320	-2%	271	241
16°Gr.Sipcam-Oxon	310	335	-7%	142	155
17°Intercos Group	267	226	18%	134	127
18°Gruppo Zobele	258	211	22%	54	54
19°Sadepan Chimica	255	226	13%	185	170
20°Gruppo Desa	210	199	6%	210	199

(milioni Euro)	Vendite mondiali 2010	Vendite mondiali 2009	%	Vendite Italia 2010	Vendite Italia 2009
21° Isagro	204	194	5%	104	108
22° Esseco Gr.	203	169	20%	104	92
23° Montefibre	190	165	15%	-	14
24° FIS	178	159	12%	178	159
25° FACI	165	130	27%	80	60
26° 3V P.Ind.	157	152	3%	93	120
27° Reagens	154	122	26%	81	65
28° Indena/IdB	145	145	0%	115	117
29° Inver	128	103	24%	91	70
30° Alcea	120	0		80	0
31° ICR	121	0		121	0
32° Sinterama	117	95	23%	62	50
33° Index	116	117	-1%	116	117
34° Zach System	115	0		77	0
35° Silvateam	111	90	23%	80	75
36° Gr.Bozzetto	110	90	22%	65	48
37° Deborah Gr.	106	101	5%	82	101
38° Paglieri	104	92	13%	104	92
39° Sabo	103	0		103	0
40° Syndial	101	85	19%	101	85

Nota: società con capitale a maggioranza italiano; i valori si riferiscono ai prodotti chimici (prod. farmaceut. non inclusi); classifica fondata sui dati forniti dalle aziende – associate e non – che hanno aderito all'inchiesta di Federchimica.

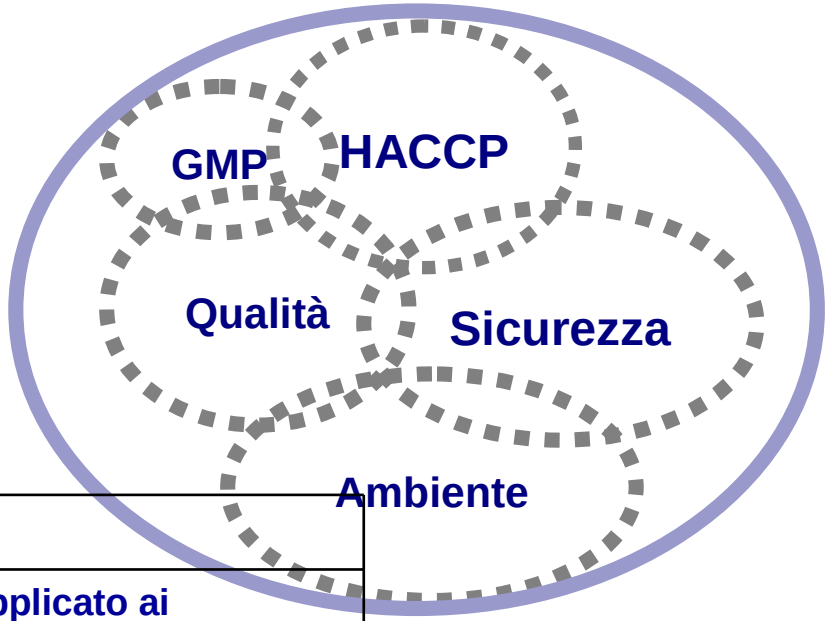
Fonte: Federchimica

Main Production Facilities



La scelta del Gruppo SOL

Sistema di Gestione integrato



ISO 9001 →	Sistema di gestione Qualità
ISO 13485 →	Sistema di gestione qualità applicato ai Dispositivi medici
OHSAS 18001 →	Sistema di gestione della sicurezza
ISO 14001 →	Sistema di gestione Ambientale
GMP	Good Manufacturing Practice Farmaceutiche
ISO 22000 →	Sistema di gestione della sicurezza alimentare
ISO 50001 →	Sistema di gestione dell'energia

Certificazioni a fine 2011

International Standard	N. Certified Sites	1st Registration obtained
ISO 9001	74	1994/1996
ISO 13845	6	1998
ISO 14001	9	1998/1999
GMP	54	1998
EMAS	2	2000
OSHAS 18001	30	2005
ISO 22000	13	2007
ISO 50001	1	2011

ISO 50001 coerente con la politica di sviluppo sostenibile

CONFINDUSTRIA
PER LA SOSTENIBILITÀ

Adesione a Responsible Care	**:**	**1995**
Codice Etico di comportamento	**:**	**2005**
Adozione del Modello di Organizzazione e controllo	**:**	**2006**
Carta dei Principi per la Sostenibilità Ambientale	**:**	**2012**

Esperienza ISO 50001
Stabilimento di Francoforte

Motivazioni della certificazione ISO 50001

Bundesamt
für Wirtschaft und
Ausfuhrkontrolle

§ 41 Abs. 1 Nr. 2 i.V.m. Abs. 2 S.3

Erneuerbare-Energien-Gesetz für Unternehmen des produzierenden Gewerbes

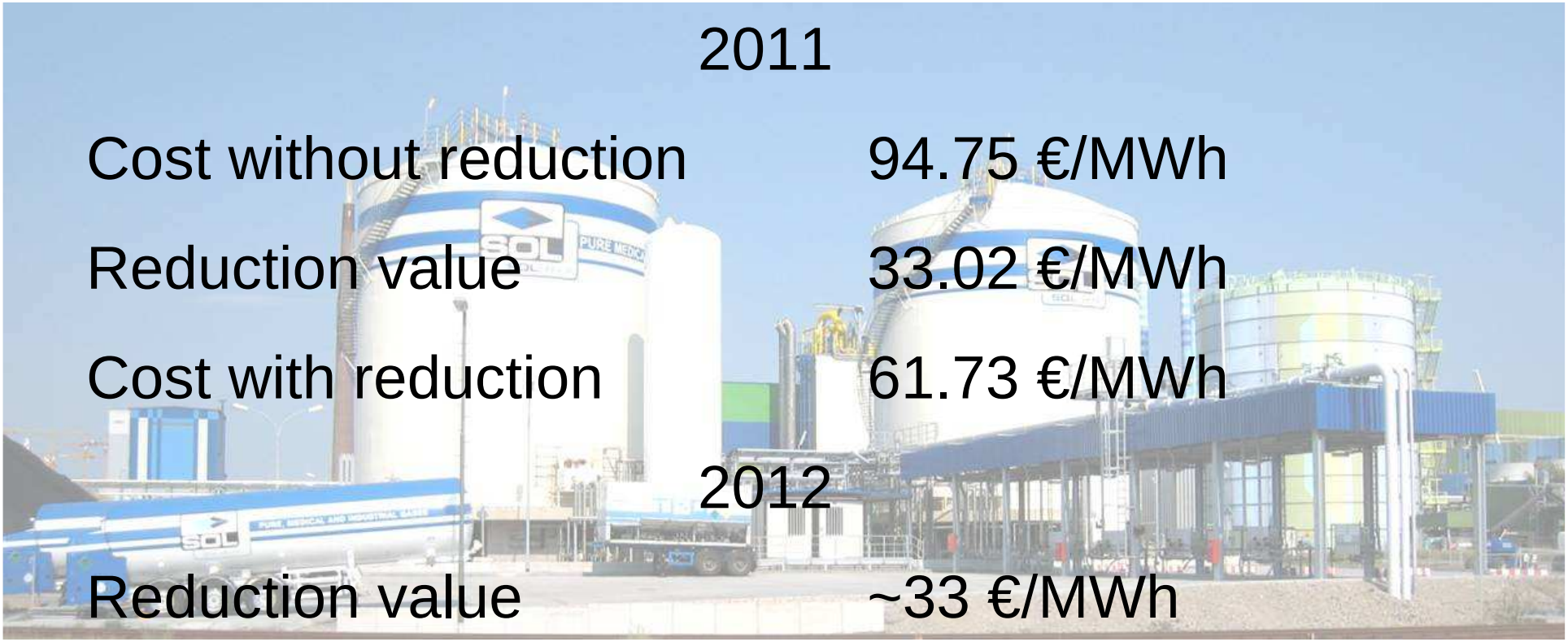
Imprese manifatturiere con grandi consumi

Sconto sul costo dell'energia

Solo con l'implementazione di misure di risparmio energetico

Dimostrabile con l'implementazione di un sistema di gestione dell'energia

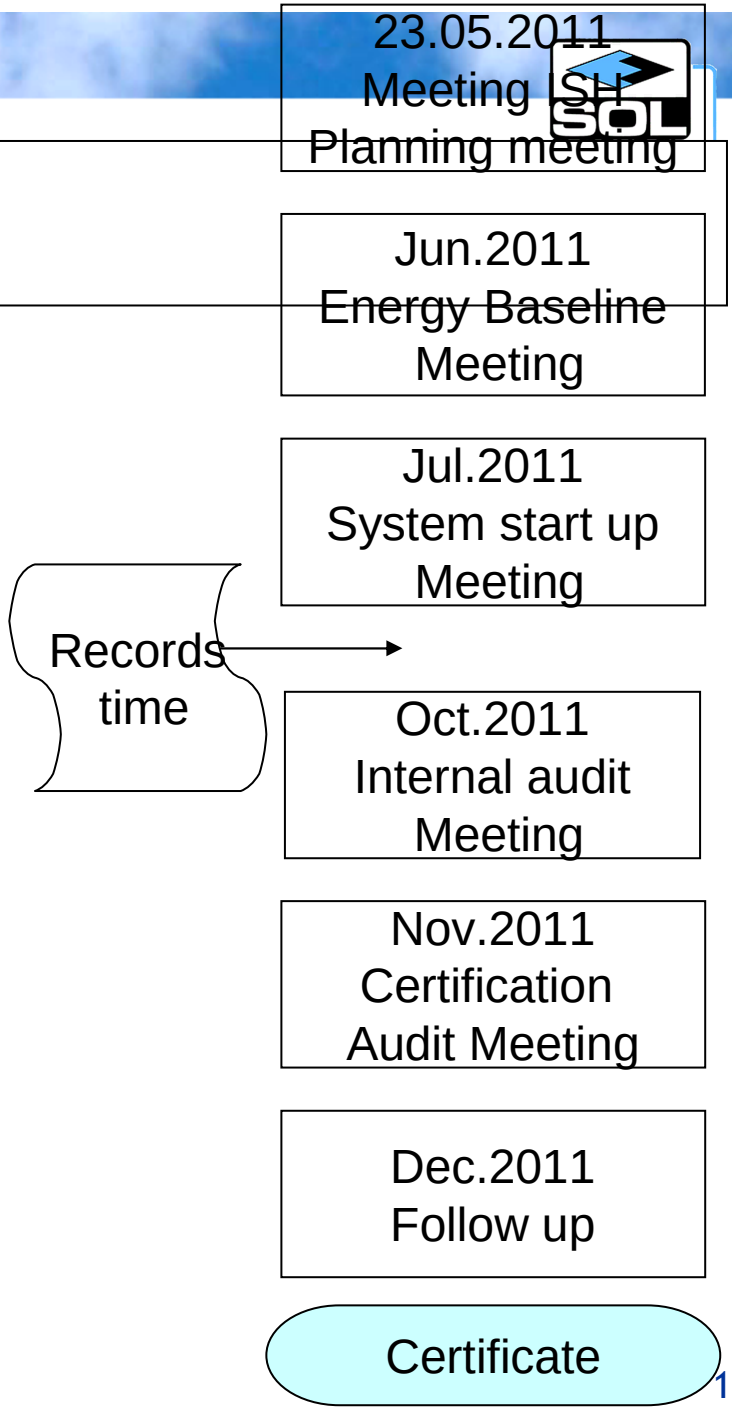
Rilevanza economica



2011	
Cost without reduction	94.75 €/MWh
Reduction value	33.02 €/MWh
Cost with reduction	61.73 €/MWh
2012	
Reduction value	~33 €/MWh

Project deadlines … at a first planning

- Planning and baseline
- Management review
- Records available
- Internal audit
- Date on Certificate < 31.12.2011
  - External audit
  - Time to solve major NCs (if any)



Dettagliato Riesame iniziale

SFF Energy Management
First assessment Report

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List of annexes

Annex 1a: Linde offer
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Annex 2: list of equipments
Annex 3: performance test
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Annex 6: PMS
Annex 7: Job description of production manager
Annex 8: Job description of mechanical maintenance manager
Annex 9: register of improving energy efficiency opportunities

International Organization for Standardization

INTERNATIONAL STANDARD

ISO 50001

First edition
2011-06-15

Energy management systems — Requirements with guidance for use

Systèmes de management de l'énergie — Exigences et recommandations de mise en œuvre

Studio dei requisiti del sistema

Documentazione

Registrazione

Comparison between ISO 50001 and EN 16001

Legend:	yellow= difference between standards	Blue = documentation req.	Violet = record req.
50001		**16001**	**Notes**
4.1 General requirements The organization shall: a) establish, document, implement, maintain and improve an EnMS in accordance with the requirements of this International Standard; b) define and document the scope and boundaries of its EnMS; c) determine how it will meet the requirements of this International Standard in order to achieve continual improvement of its energy performance and of its EnMS.		**3.1 General requirements** The organization shall: a) establish, document, implement and maintain an energy management system in accordance with the requirements of this standard; b) define and document the scope and the boundaries of its energy management system; c) determine and document how it will meet the requirements of this standard in order to achieve continual improvement of its energy efficiency.	
4.2.1 Top management Top management shall demonstrate its commitment to support the EnMS and to continually improve its effectiveness by: a) defining, establishing, implementing and maintaining an energy policy; b) appointing a management representative and approving the formation of an energy management team; c) providing the resources needed to establish, implement, maintain and improve the EnMS and the resulting energy performance; NOTE Resources include human resources, specialized skills, technology and financial resources. d) identifying the scope and boundaries to be addressed by the EnMS; e) communicating the importance of energy management to those in the organization; f) ensuring that energy objectives and targets are established; g) ensuring that EnPIs are appropriate to the organization; h) considering energy performance in long-term planning; i) ensuring that results are measured and reported at determined intervals; j) conducting management reviews.		**3.4.1 Resources, roles, responsibility and authority** Top management shall ensure the availability of resources essential to establish, implement, maintain and improve the energy management system. Resources include human resources, specialized skills, technology and financial resources. Roles, responsibilities and authorities shall be defined, documented and communicated in order to facilitate effective energy management. (...	a) defining, establishing, implementing and maintaining an energy policy; → EN 16001 @ 3.2 energy policy d) identifying the scope and boundaries to be addressed by the EnMS; → EN 16001 @ 3.2 energy policy
4.2.2 Management representative Top management shall appoint a management representative(s) with appropriate skills and competence, who, irrespective of other responsibilities, has the responsibility and authority to: a) ensure the EnMS is established, implemented, maintained, and continually improved in accordance with this International Standard; b) identify person(s), authorized by an appropriate level of management, to work with the management representative in support of energy management activities; c) report to top management on energy performance; d) report to top management on the performance of the EnMS; e) ensure that the planning of energy management activities is designed to support the organization's energy policy; f) define and communicate responsibilities and authorities in order to facilitate effective energy management; g) determine criteria and methods needed to ensure that both the operation and control of the EnMS are effective; h) promote awareness of the energy policy and objectives at all levels of the organization.		...) The organization's top management shall designate a management representative who, irrespective of other responsibilities, shall have defined roles, responsibility and authority for: a) ensuring that an energy management system is established, implemented and maintained in accordance with this standard; b) reporting on the performance of the energy management system to top management for their review, with recommendations for improvement. Note The management representative may be designated as energy manager.	
4.3 Energy policy The energy policy shall state the organization's commitment to achieving		**3.2 Energy policy** Top management shall establish, implement and maintain an energy policy for	

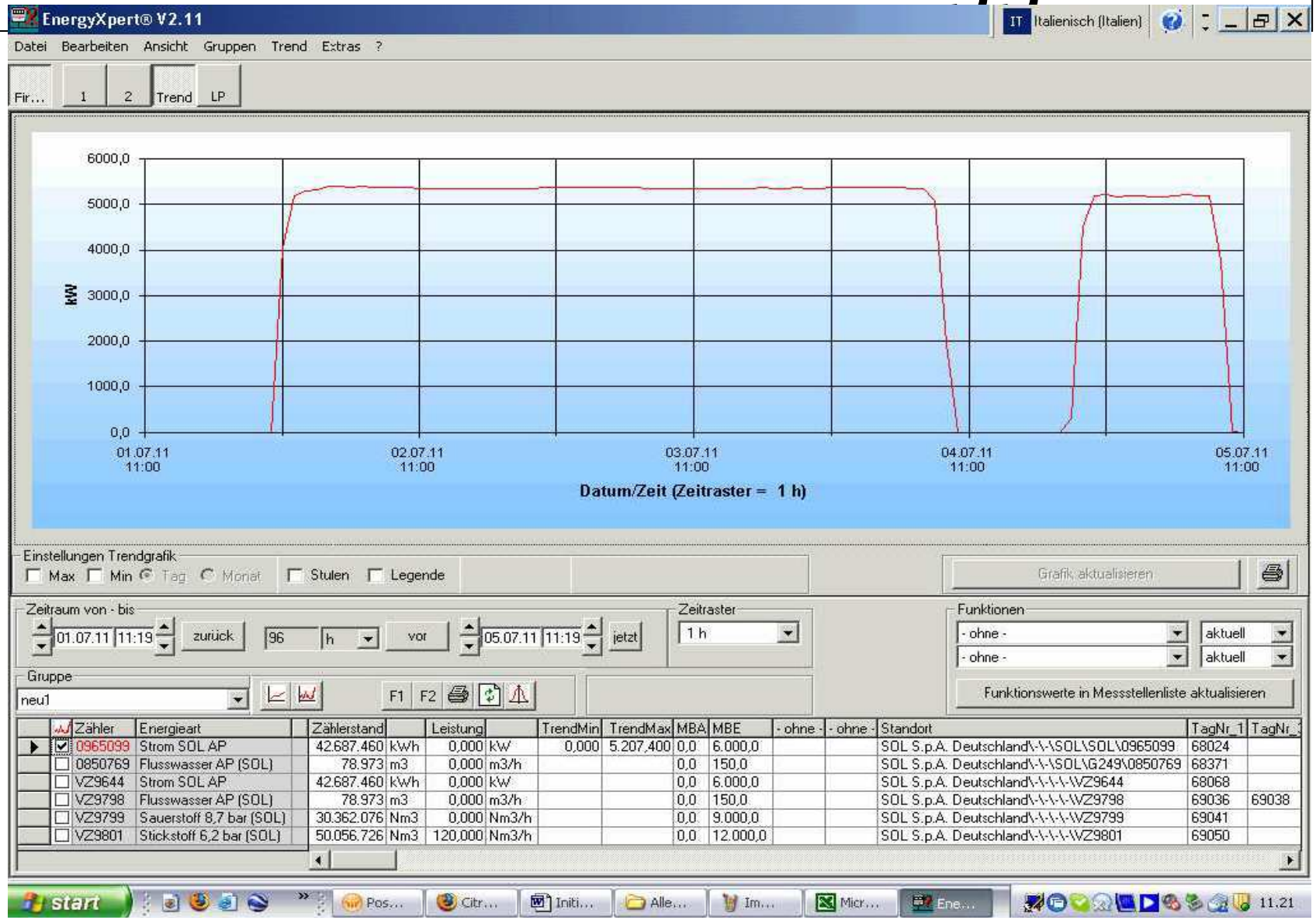
Analisi dei consumi suddivisi per apparecchiatura

Übersicht E-Maschinen / Verbraucher SOL Werk Frankfurt am Main

Compressori

Nr.	Beschreibung	Hersteller	Typ	Baujahr	Steuerung	Art	Std	Last KW	Anzahl	Last Gesamt	Bemerkungen	%Anteil	Zwischs.
1	ACE Recycle Kompressor N2	Atlas Copco	GT040N 4K1	2009	DCS	P		5600	1	5600		88,471	
2	Gebläsekühler	Evapco	LSTA-8P-364SN	2008	DCS	P		11 / 45 kw	6	270		4,266	97,35%
3	Feedgad Kompressor	RKR	2C26Z	2009	DCS	P		76,9 - 182,3	1	182,3		2,880	
4	Kühlwasserpumpe 1	Rotos	NE 25x40 NR3	2008	DCS	P		110	1	110	nur 1 in Betr.	1,738	
5	Ladepumpe LIN 1	Tecnocryo	GBS 155 / 4,5-4,9-C13	2008	SET	P		11	1	11		0,174	
6	Ladepumpe LIN 2	Tecnocryo	GBS 155 / 4,5-4,9-C13	2008	SET	P		11	1	11		0,174	
7	Sammelbehälter LIN	SMI	Behälterbegleitheizung	2010	Auto	P		4,4	1	4,4		0,070	
8	Ladepumpe LOX 1	Tecnocryo	GBS 155 / 4,5-4,9-C13	2008	SET	P		11	1	11		0,174	
9	Ladepumpe LOX 2	Tecnocryo	GBS 155 / 4,5-4,9-C13	2008	SET	P		11	1	11		0,174	
10	Ladepumpe LOX M	Tecnocryo	GBS 155 / 4,5-4,9-C13	2008	SET	P		11	1	11		0,174	
11	Sammelbehälter LOX	SMI	Behälterbegleitheizung	2011	Auto	P		4,4	1	4,4		0,070	
12	Ozon Wasserpumpe	Grundfoss	CRN90-1 A-7-G-E HQQE	2008	Auto	P		7,5	1	7,5		0,118	
13	Ozon Generator	Ozonia	MCP 20	2008	DCS / Auto	P		5,5	1	5,5		0,087	
14	Klimaanlage Linde Container	Fujutsu	AOY18KNBNL	2009	Auto	P		1,85	1	1,85		0,029	
15	Ozon Kaltwassersatz	MTA	TAE EVO M05	2008	Auto	P		1,6	1	1,6		0,025	
16	Klimaanlage Analysecontainer	Daikin	FTXS 42G Inverter(kühlen-heizen)	2009	Auto	P		1,46 /1,57kw	1	1,57	Klas. A	0,025	1,33%
17	Wasseraufbereitungsanlage	Nalco		2009	Auto	P		1	1	1		0,016	
18	Sandfilter Kühlturm			2008	Auto	P		0,5	1	0,5		0,008	
19	TK Analysegerät CO/CO2	Siemens	Ultramat	2009	Auto	P		0,075	3	0,225		0,004	
20	PR Analysgerät CO/CO2	Siemens	Ultramat	2009	Auto	P		0,075	2	0,15		0,002	
21	PR Analysegerät H2O	Panametrics	MMS35	2009	Auto	P		0,035	2	0,07		0,001	
22	TK Analysegerät H2O	Ametek	303B	2009	Auto	P		0,02	3	0,06		0,001	
23	TK Analysegerät O2	Panametrics	Delta F	2009	Auto	P		0,05	1	0,05		0,001	
24	PR Analysegerät O2	Panametrics	Delta F	2009	Auto	P		0,05	1	0,05		0,001	
25	Ladepumpe LIN T	Tecnocryo	GBS 155 / 4,5-6,9-C13	2008	SET	P		22	1		bei Bedarf	0,000	
26	Ejektor N2	Howden	VRE0560/6011W148/11	2008	manuell	P		37	1		bei Bedarf	0,000	
27	Ejektor O2	Howden	VRE0560/6011W148/11	2008	manuell	P		37	1		bei Bedarf	0,000	
28	Kühlwasserpumpe 2	Rotos	NE 25x40 NR4	2008	DCS	P		110	1		nur 1 in Betr.	0,000	
29	Heizung Büros	Dimplex	DXW 325	2008	manuell	B		2,5	10	25		0,395	
30	Heizung Fahrerhäuser	AEG		2011	manuell	B		2	4	8	nur Winter	0,126	
31	Brückenkran 15to	Bonfanti	Bitrave t25 CO 8030	2008	manuell	B		20	1	20		0,316	
32	Klimaanlage Büro	Hitachi	RAK-35NH6A/RAI-50NHSA/RAM-90QH5	2009	manuell	B		6,5	1	6,5		0,103	
33	Strassenbeleuchtung	Osram	NAV T 250 E40 250W	2009	Sensor	B		0,25	25	6,25		0,099	
34	Beleuchtung Maschinenhaus I	Osram	HQI E400W/D E40	2009	manuell	B		0,4	9	3,6		0,057	
35	Ablüfter Maschinenhaus			2008	manuell	B		1,1	3	3,3		0,052	
36	Beleuchtung Büro + Lager I	Osram	Leuchstoffröhren 4 x 18W	2009	manuell	B		0,072	33	2,376		0,038	
37	Ablüfter Pumpenraum			2008	manuell	B		1,1	2	2,2		0,035	
38	Kopiergerät	Konica	Bizhub 250	2009	Auto	B		1,35	1	1,35		0,021	
39	Schwenkkran Cold Box 0,5to	Demag	D-AB180 Ser No 5532432-1	2009	manuell	B		0,3 / 1,2kw	1	1,2		0,019	
40	Computer	verschd.		2009	manuell	B		0,2	4	0,8		0,013	1,32%
41	Beleuchtung Kühlturm I	Schuch	Leuchstoffröhren 2 x 36W	2009	manuell	B		0,072	7	0,504		0,008	
42	Beleuchtung Lagertanks	Schuch	Leuchstoffröhren 2 x 18W	2009	Sensor	B		0,036	15	0,54		0,009	
43	Beleuchtung Tankstelle	Schuch	Leuchstoffröhren 2 x 18W	2009	Sensor	B		0,036	12	0,432		0,007	
44	Beleuchtung Cold Box	Schuch	Leuchstoffröhren 2 x 36W	2009	Sensor	B		0,072	5	0,36		0,006	
45	Beleuchtung Kühlturm A	Schuch	Leuchstoffröhren 2 x 18W	2009	Sensor	B		0,036	9	0,324		0,005	
46	Beleuchtung Büro + Lager A	Schuch	Leuchstoffröhren 2 x 36W	2009	Sensor	B		0,072	3	0,216		0,003	
47	Beleuchtung Maschinenhaus A	Schuch	Leuchstoffröhren 1 x 36W	2009	Sensor	B		0,036	6	0,216		0,003	
48	Beleuchtung Analysecontainer	Schuch	Leuchstoffröhren 2 x 36W	2008	manuell	B		0,036	5	0,18		0,003	
49	Rauchfilter Büro	Trion	S60	2010	manuell	B		0,13kw	1	0,13		0,002	
50	Notdusche EG Waage	Hughes	HN01180	2009	manuell	B		0,025	1	0,025	nur Winter	0,000	
51	Notdusche Tankstelle	Hughes	HN01181	2009	manuell	B		0,025	1	0,025	nur Winter	0,000	
									Total	6329,75 kw	Kontrolle	100,000	100,000%

Sistemi di Monitoraggio



Consumi energetici in relazione ai piani di produzione

Monthly Production Analysis

Period: 3 / 2011

Report: ANAPRM_C01

Print date : 08/04/2011
Print time : 10.09.39
Page 2 of 2

Site: 01920 Frankfurt
Type: Continuous

PERIOD: ALL Validated

Description	Meas Unit	Budget 2011	Budget YTD	Turn.YTD 2010	Turn. YTD	January (h.744)	February (h.672)	March (h.744)	April (h.720)	May (h.744)	June (h.720)	July (h.744)	August (h.744)	Septem. (h.720)	October (h.744)	Novemb. (h.720)	Decemb. (h.744)	Avg. Turn Month	T/Bdg YTD % Dev	TY2011/ TY2010 % Dev	TM2011/ TM2010 % Dev
Cumulative																					
ELECTRIC POWER																					
Liquefaction	Kwh	27.634.020	6.902.956	3.926.600	5.523.281	1.864.760	1.839.992	1.818.529										1.841.094	-20	41	
## Totals for Electric Power		27.634.020	6.902.956	3.926.600	5.523.281	1.864.760	1.839.992	1.818.529										1.841.094	-20	41	
SPECIFICS (energy)																					
Liquefazione	kWh/Nmc	0,620	0,620	0,662	0,618	0,632	0,609	0,613											-0,4	-6,7	
Cumulative						0,632	0,620	0,618													
Aggregate SPECIFICS																					
Liquidi vendibili Kwh/Nmc	kWh/Nmc	0,620	0,620	0,662	0,618	0,632	0,609	0,613											-0,36	-6,68	

Phase:																
Totals:																
Cumulative Totals:																

NOTE

Mese: gennaio

CS : Liquefazione a 80,3 % del carico nominale (perdite di avviamento incluse).
7 e 8 gennaio : avviamento il sabato sera causa problemi impianto ISH.

Mese: febbraio

CS : Liquefazione a 86,6 % del carico nominale (perdite di avviamento incluse).

Mese: marzo

CS : Liquefazione a 85 % del carico nominale (perdite di avviamento incluse).

Miglioramenti adottati

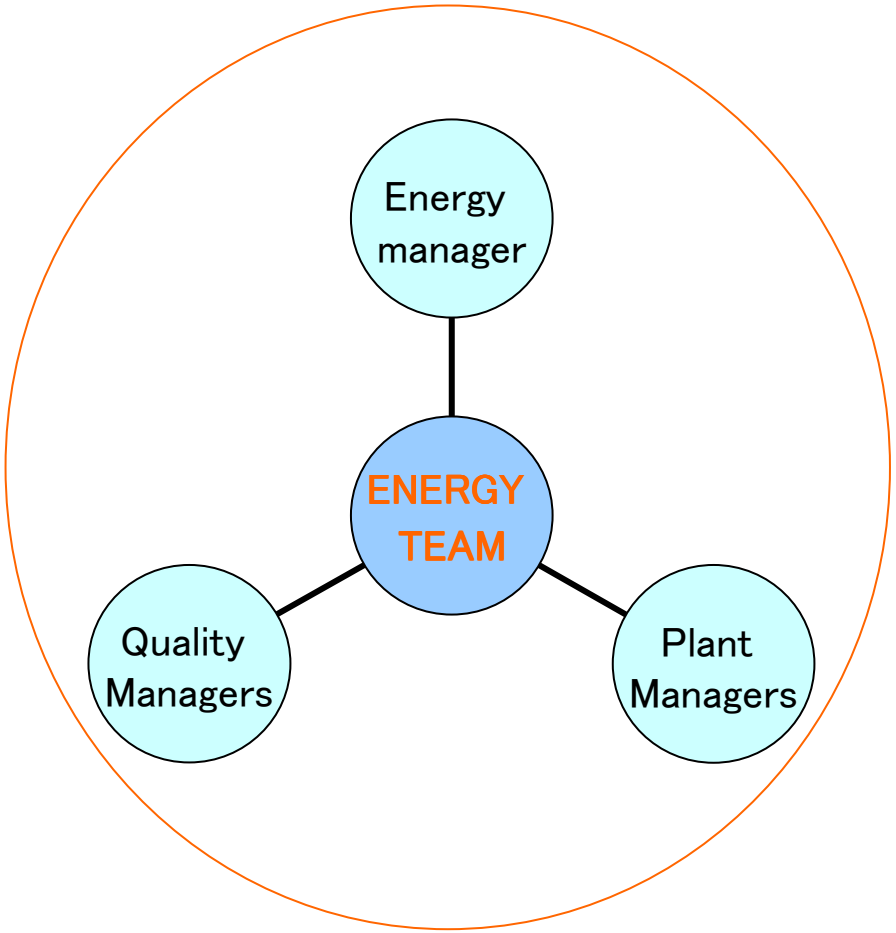
☺ Analisi dei consumi energetici suddivisa per singola apparecchiatura

☺ Monitoraggio dell'andamento dei parametri più significativi per sezioni di impianto

☺ Consumi energetici considerati nei piani di produzione

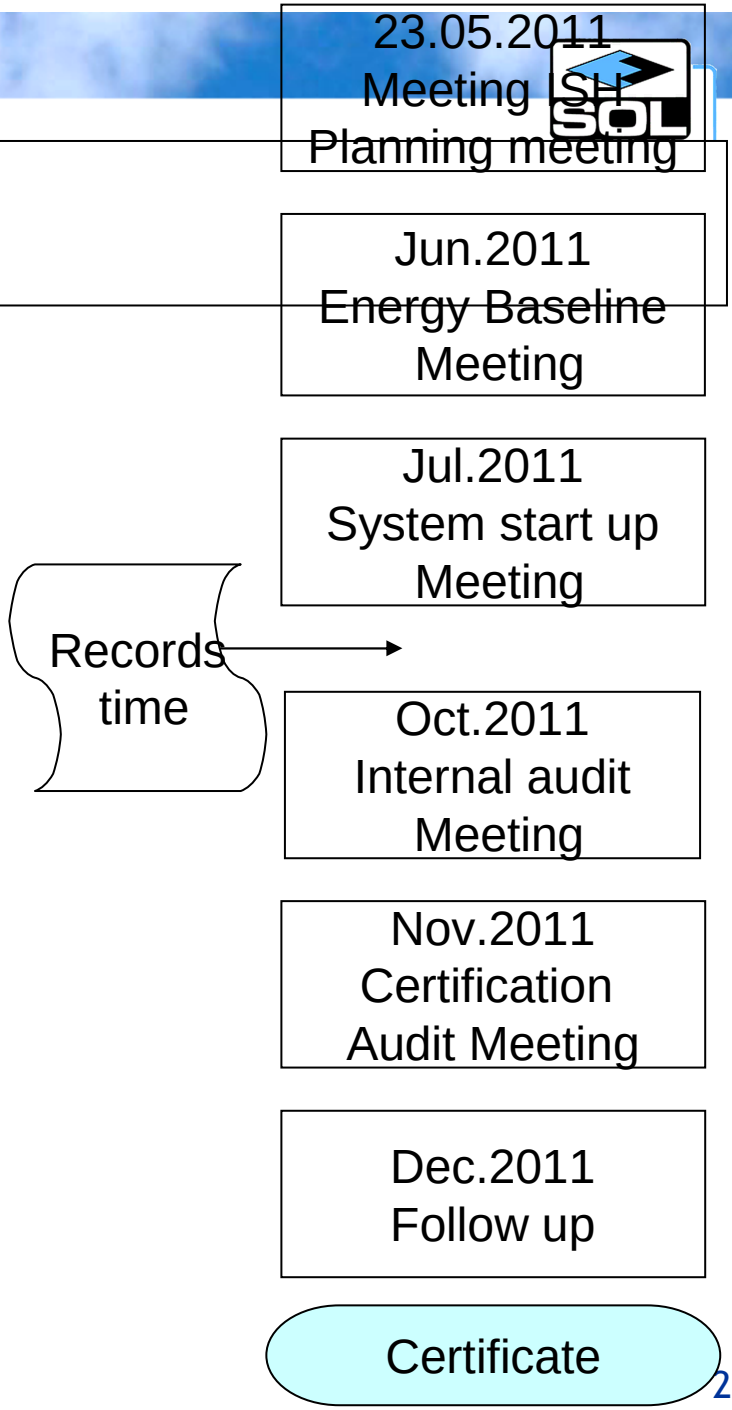
☺ Formalizzazione dell'energy team

☺ Definizione di NC energetica



Project deadlines … at a first planning

- Planning and baseline
- Management review done
- Records available
- Internal audit done
- Date on Certificate < 31.12.2011
  - External audit done
  - Time to solve major NCs (if any)



Project outcome

- Accreditation of the Body date: 08.11.2011
- Certification Audit: 10-11 November
- Results: 6 recommendations
- Certificate date: 17.11.2011

PER UNA MIGLIORE QUALITÀ DELLA VITA

CERTIQUALITY

ISTITUTO DI CERTIFICAZIONE DELLA QUALITÀ

CERTIFICATO / *CERTIFICATE*

N. 17473

SI CERTIFICA CHE L'ORGANIZZAZIONE / *THIS IS TO CERTIFY THAT THE ORGANIZATION*

SOL S.p.A. Deutschland,
Zweigniederlassung der SOL S.p.A.
Hafenstrasse 63 47809 Krefeld

NEI SEGUENTI SITI / *IN THE FOLLOWING SITES*

DE - 65926 FRANKFURT AM MAIN - Industriepark Frankfurt-Höchst, Gebäude G248

HA ATTUATO E MANTIENE UN SISTEMA DI GESTIONE DELL'ENERGIA CONFORME ALLA NORMA
HAS IMPLEMENTED AND MAINTAINS AN ENERGY MANAGEMENT SYSTEM WHICH COMPLIES WITH THE FOLLOWING STANDARD

ISO 50001:2011

PER LE SEGUENTI ATTIVITÀ / *FOR THE FOLLOWING ACTIVITIES*

Produktion von flüssigem Sauerstoff und Stickstoff im Verflüssiger.

Production of liquid Oxygen and Nitrogen from liquefaction unit.

IL PRESENTE CERTIFICATO È SOGGETTO AL RISPETTO DEL REGOLAMENTO PER LA CERTIFICAZIONE DEI SISTEMI DI GESTIONE
THE USE AND THE VALIDITY OF THE CERTIFICATE SHALL SATISFY THE REQUIREMENTS OF THE RULES FOR THE CERTIFICATION OF MANAGEMENT SYSTEMS
LA VALIDITÀ DEL PRESENTE CERTIFICATO È SUBORDINATA A SORVEGLIANZA PERIODICA ANNUALE ED AL RIESAME COMPLETO DEL SISTEMA DI CONTROLLO CON PERIODICITÀ TRIENNALE
THE VALIDITY OF THIS CERTIFICATE DEPENDS ON ANNUAL AUDIT AND ON A COMPLETE REVIEW EVERY THREE YEARS OF THE CONTROL SYSTEM

PRIMA EMISSIONE 17/11/2011
FIRST ISSUE
EMISSIONE CORRENTE 17/11/2011
CURRENT ISSUE
DATA SCADENZA 16/11/2014
EXPIRY DATE

CERTIQUALITY S.r.l.

ACCREDIA

C 50001 ED 01 251111

CERTIQUALITY S.r.l. ISTITUTO DI CERTIFICAZIONE DELLA QUALITÀ
Via Gaetano Giardino 4 - 20123 Milano - tel. 02 8069171 - fax 02 86465295 - certiquality@certiquality.it - www.certiquality.it

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Grazie per l'attenzione
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