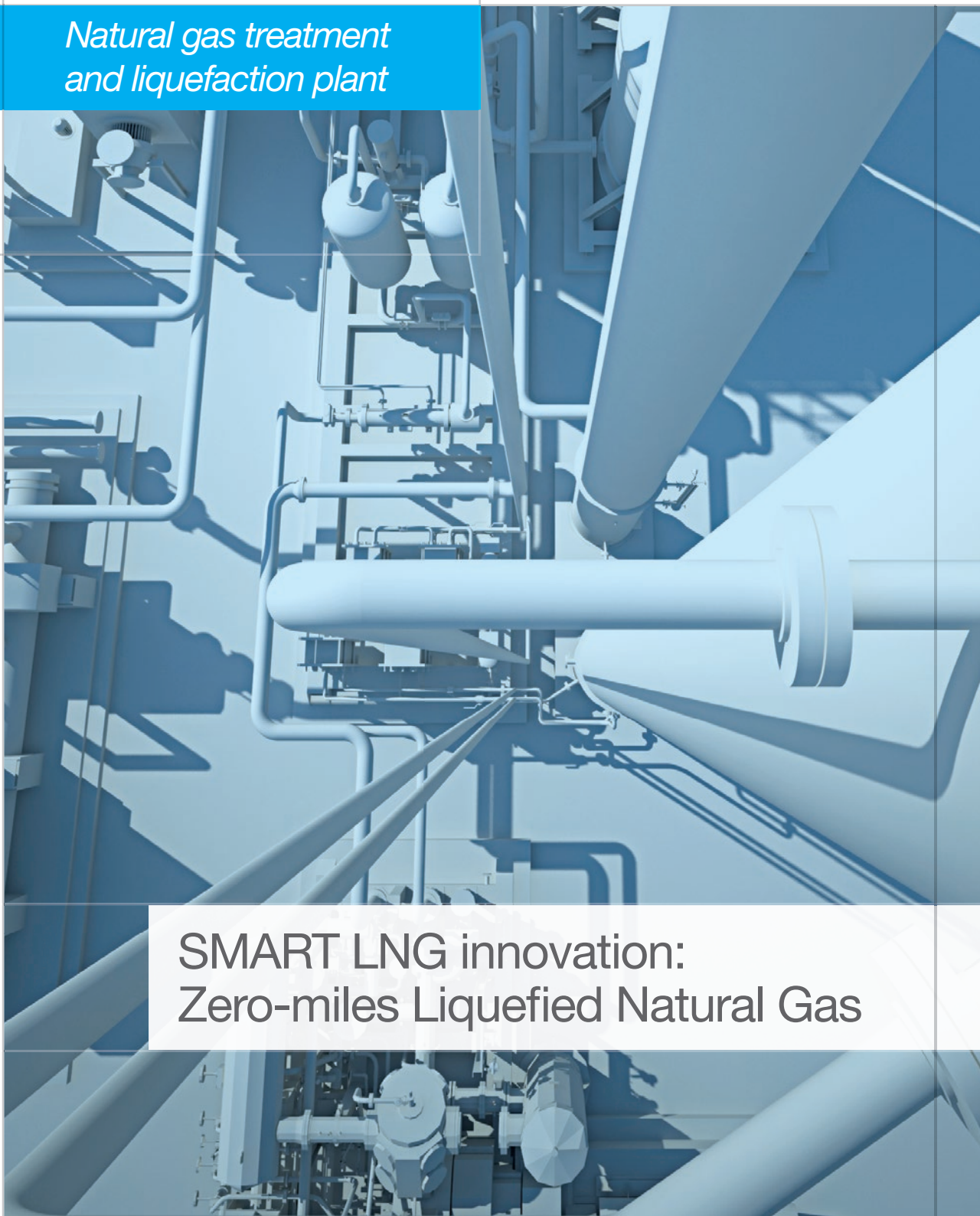


*Natural gas treatment
and liquefaction plant*

SMART LNG innovation:
Zero-miles Liquefied Natural Gas



Natural Gas Liquefaction. New developments in the cryogenic SIAD technology

Thanks to its extensive experience and competency in gas treatment and cryogenic liquefaction, SIAD Macchine Impianti has developed a line of SMART LNG systems for the production of Liquefied Natural Gas (LNG).

SMART LNG:
small and medium size
natural gas liquefaction
plant.

Since the '50s, SIAD Macchine Impianti has been a key international player in the liquefaction sector, boasting hundreds of systems for cryogenic liquefaction of technical gases. Our technical and engineering know-how has enabled us to develop a range of system solutions for Bio-LNG, making us one of the prime innovators in this field.

Technical characteristics

Three different types of SMART LNG Liquefaction plant, for small and medium scale operations, from gas purification to the final storage in liquid form (see table below).

Purpose

Bio-LNG production is designed to full local demand ("Zero-km"): vehicle fueling stations or micro distribution networks (for heating or industrial combustion).



"SMART LNG" system range	LNG production		
	Nm ³ /h	TPD	kg/h
SMART LIN-LNG	up to 1 400	up to 25	up to 1 040
SMART TB-LNG	up to 56 000	up to 1 000	up to 41 666
SMART INT-LNG	up to 56 000 + LIN	up to 1 000 + LIN	up to 41 666 + LIN

Zero-miles Natural Gas Liquefaction plant

Liquefaction process

At ambient pressure, natural gas liquefies at -162°C , a temperature easily reached with cryogenic technology, a well established technology for SIAD Macchine Impianti.

The SMART LNG range includes two systems that exploit nitrogen cooling factors:

- one obtains liquefaction through the evaporation of liquid nitrogen;
- the other achieves liquefaction through an integrated heat exchanger with a nitrogen closed-cycle single expansion turbine and booster.

The liquefied natural gas supply chain

Natural gas can be supplied to the liquefaction plant in three different ways:

- drawing from the gas network;
- boil-off gas from the natural evaporation of large LNG stocks;
- production of Biogas from the anaerobic digestion of organic substances.

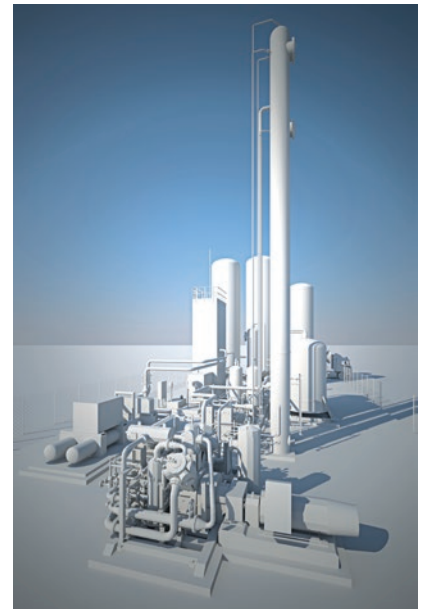
Technology and advantages

- Consolidated technology enhanced by the considerable cryogenic expertise of SIAD Macchine Impianti.
- Highly reliable and efficient machines for the treatment of nitrogen (compressors and turbines).
- Simple plant management process and control system in all stages of operation.
- Maximum productivity and efficiency.

Safety and low environmental impact

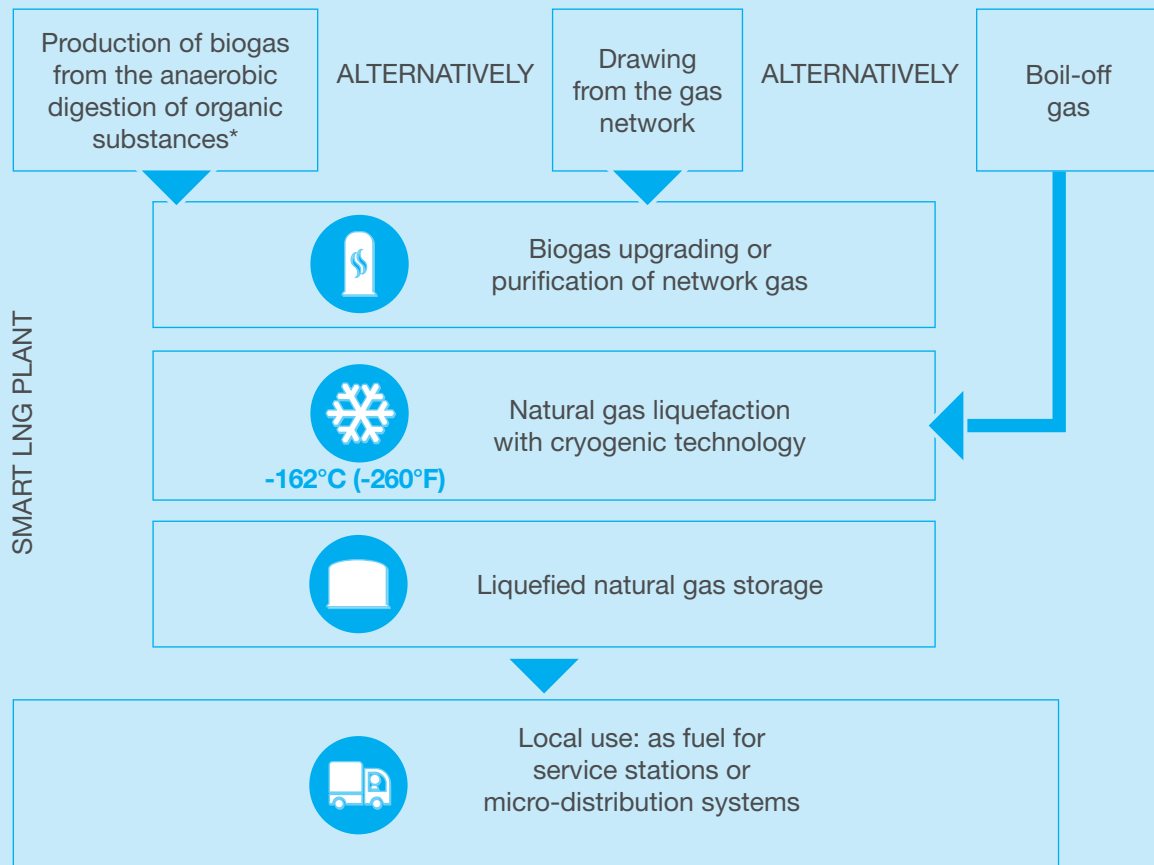
SMART LNG plant are:

- *safe*: they use nitrogen, an inert gas, as cooling fluid;
- *environmentally friendly*: natural gas can be obtained from biomethane, an upgrading of biogas, which exploits the fermentation of OFMSW (Organic Fraction of Municipal Solid Waste), or agricultural and livestock waste and silage;
- *zero-miles*: liquid methane is produced near to its final point of use, with no significant transport costs.



A safe and environmentally sound solution for your business.

The Liquefied Natural Gas supply chain



* Sludge from sewage treatment plant, livestock waste, food waste and OFMSW.

The SMART LNG range

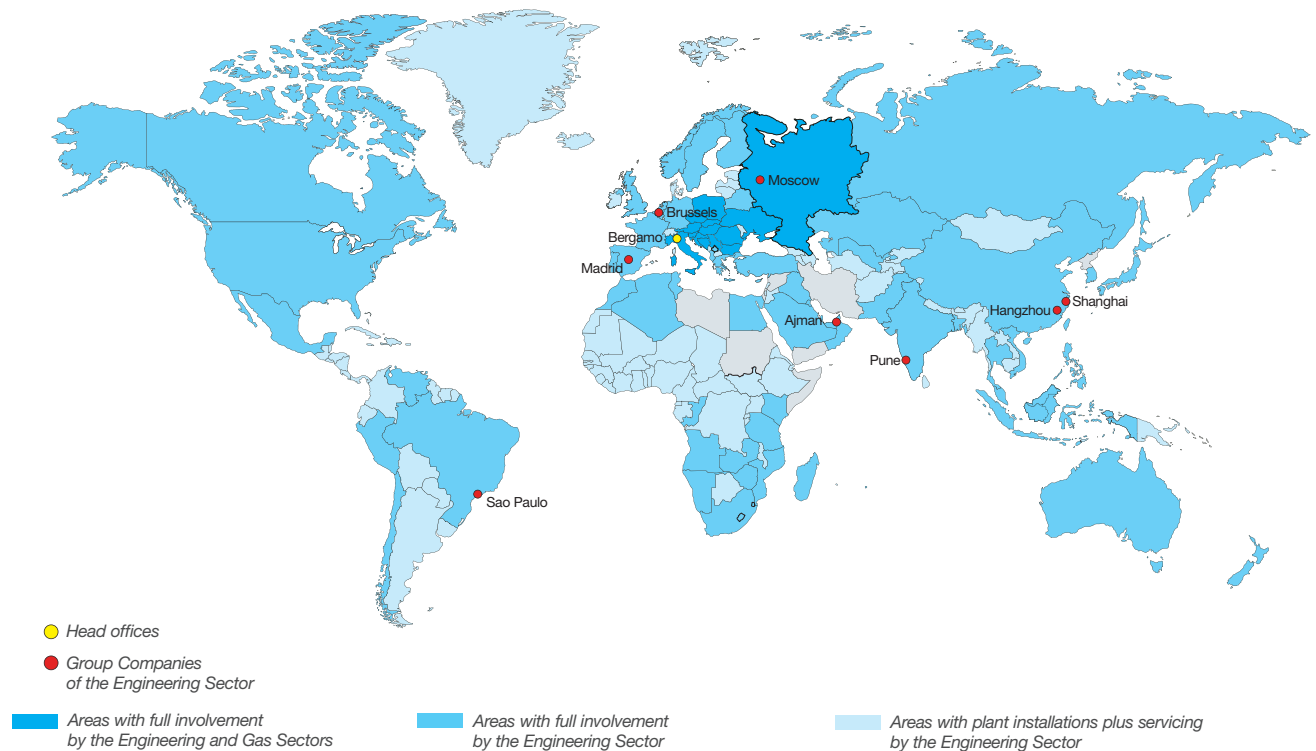
- **SMART LIN-LNG**
Small size plant involving the use of liquid nitrogen as cooling factor.
- **SMART INT-LNG**
Integrated plant with combined production of liquefied natural gas (LNG) and liquid nitrogen (LIN).
- **SMART TB-LNG**
Nitrogen recycling plant with expansion turbines and boosters.

Field of application

- Transport
- Industrial combustion
- Heating
- Energy storage.

For information:
siadmi_asu@siad.eu

Engineering: commercial and assistance network and activities areas



Global Service Division: a complete range of services

To reduce operating costs and to maintain the high efficiency of its Air Separation Units, SIAD Macchine Impianti offers its customers a complete range of services, together with a network of Certified Service Centres in five continents, utilizing skilled technicians.

ASU maintenance and supply of spare parts:

- supply of spare parts;
- maintenance work;
- preventive and predictive maintenance.

On-site support:

- commissioning and start up supervision;
- support for unit stop, restart up and tuning.

Remote assistance for ASU management:

- remote monitoring/parameter checks.

Training courses:

- on-site theoretical and practical courses;
- theoretical and practical courses at the SIAD Macchine Impianti factory.

Technical assistance
internationally appreciated
for top quality.

For assistance:
siadmi_support@siad.eu

The SIAD Group

Engineering

Technical gases



LPG and Natural Gas

Technical gases

SIAD S.p.A.

Via San Bernardino, 92
I-24126 BERGAMO
Tel. +39 035 328111 - Fax +39 035 315486
www.siad.com - siad@siad.eu
GPS: N 45 40.57 - E 9 39.44

AUSTRIA

SIAD Austria GmbH
Bergwerkstrasse 5
A-5120 ST. PANTALEON
Tel. +43 (6277) 7447-0 - Fax +43 (6277) 7401
www.siad.at - siad@siad.at
GPS: N 48 01.34 - E 12 51.36

BULGARIA

SIAD Bulgaria EOOD
4, Amsterdam str. P. O. Box 28
BG-1528 SOFIA
Tel. +359 (2) 9785636 - Fax +359 (2) 9789787
www.siad.bg - siad@siad.bg
GPS: N 42 39.15 - E 23 24.43

CZECH REPUBLIC

SIAD Czech spol. s r.o.
Prague Office Park II - K Hájem 2606/2b
CZ-155 00 PRAGUE 5
Tel. +420 235097520 - Fax +420 235097525
www.siad.cz - siad@siad.cz
GPS: N 50 03.21 - E 14 19.32

HUNGARY

SIAD Hungary Kft.
Zsigmondy u. 38.
H-3527 MISKOLC
Tel. +36 (46) 501130 - Fax +36 (46) 501131
www.siad.hu - siad@siad.hu
GPS: N 48 07.25 - E 20 48.07

POLAND

SIAD Poland sp. z o.o.
ul. Kokotek 66
PL-41-700 RUDA ŚLĄSKA
Tel. +48 32 7711650 - Fax +48 32 7711667
www.siad.pl - siad@siad.pl
GPS: N 50 18.25 - E 18 51.55

ROMANIA

SIAD Romania s.r.l.
Drumul Osiei, 75-79, Sector 6
RO-062395 BUCURESTI
Tel. +40 (21) 3103658 - Fax +40 (21) 3149806
www.siad.ro - siad@siad.ro
GPS: N 44 26.26 - E 25 59.10

RUSSIA

LLC SIAD Rus
Bolshaya Dmitrovka street 12/1 - build 1, 3 floor
RU-107031 MOSCOW
Tel./Fax +7 (495) 7213026
www.siad.ru - siad@siad.ru
GPS: N 55 45.41 - E 37 36.53

SLOVAKIA

SIAD Slovakia spol. s r.o.
Rožňavská č. 17,
SK-831 04 BRATISLAVA
Tel. +421 (2) 44460347 - Fax +421 (2) 44460348
www.siad.sk - siad@siad.sk
GPS: N 48 10.29 - E 17 09.47

UKRAINE

LLC SIAD Ukraine
Konstantinovskaya street, 2A
UA-04071 KIEV
Tel. +7 495 9871217

LLC Remtekhhaz

Kolomoysyevskaya street, 28
UA-50106 KRIVOY ROG
Tel. +38 093 3978017
www.rtg.com.ua

Arroweld Italia S.p.A.

Via Monte Pasubio, 137
I-36010 ZANÈ
Tel. +39 0445 804444 - Fax +39 0445 804400
www.arroweld.com - arroweld@arroweld.com
GPS: N 45 43.18 - E 11 26.21

Bieffe Saldatura S.r.l.

Via Canubia, 9/1
I-12020 MADONNA DELL'OLMO
Tel. +39 0171 414711 - Fax +39 0171 414700
www.bieffesaldatura.com - info@bieffesaldatura.com
GPS: N 44 25.30 - E 7 33.36

Tecnoservizi Ambientali S.r.l.

Via San Bernardino, 92
I-24126 BERGAMO
Tel. +39 035 328111 - Fax +39 035 328393
www.tecnoserviziambientali.eu - info@tasrl.com
GPS: N 45 40.57 - E 9 39.44

Engineering

SIAD Macchine Impianti S.p.A.

Via Canovine, 2/4
I-24126 BERGAMO
Tel. +39 035 327611 - Fax +39 035 316131
www.siadmi.com - siadmi@siadmi.eu
GPS: N 45 40.53 - E 9 39.44

SIAD Engineering (Hangzhou) Co. Ltd.

21F, Weixing Bld., No. 252 Wensan Road Xihu District
Zhejiang Province
CN-310012 HANGZHOU
Tel. +86 (0)571 85880480 - Fax +86 (0)571 85880490
www.siadmi.cn/hz - siad_hz@siadmi.eu
GPS: N 30 16.46 - E 120 07.51

SIAD Macchine Impianti Trading (Shanghai) Co. Ltd.

Rm.412, No. 5 building, No. 999 Ningqiao Rd
Pudong Jingqiao EPZ
CN-201206 SHANGHAI
Tel. +86 (0)21 50550066 - Fax +86 (0)21 50318959
www.siadmi.cn/sh - siadmi_sh@siadmi.eu
GPS: N 31 15.19 - E 121 37.4

SIAD Macchine Impianti Sucursal de España

P.I. El Cascajal, Calle Urogallios 1-3
E-28320 PINTO
Tel. +34 673 789513
www.siadmi.com - siadmi_es@siadmi.eu
GPS: N 40 25.02 - E 3 71.31

SIAD Macchine Impianti Middle East F.Z.C.

M1-03, P.O. Box 1248
Ajman Free Zone - UAE
Tel./Fax +971 (0)6 7427339
www.siadmi.com - siadmi_me@e.siadmi.eu
GPS: N 25 24.47 - E 55 27.12

ESA S.p.A.

Via Enrico Fermi, 40
I-24035 CURNO
Tel. +39 035 6227411 - Fax +39 035 6227499
www.esapyronics.com - esa@esacomustion.it
GPS: N 45 41.11 - E 9 37.19

ESA BELGIUM

Zoning Industriel, 4ème rue
B-6040 JUMET
Tel. +32 71 256970 - Fax +32 71 256979
www.esapyronics.com - marketing@pyronics.be
GPS: N 50 27.9 - E 4 27.14

ESA Manufacturing Pvt. Ltd.

Plot No. J - 244, MIDC, Bhosari
IN-411 026 PUNE
Tel. +91 9822601452
www.esapyronics.com - esaindia@esapyronics.com
GPS: N 18 38.41 - E 73 49.38

Roboteco S.p.A.

Via Carlinga, 43
I-24035 CURNO
Tel. +39 035 5780303
www.roboteco.it - roboteco@roboteco-italargon.it
GPS: N 45 40.35 - E 9 36.25

TPI Tecno Project Industriale S.r.l.

Via Enrico Fermi, 40
I-24035 CURNO
Tel. +39 035 4551811 - Fax +39 035 4551895
www.tecnoproject.com - tpi@tecnoproject.com
GPS: N 45 41.11 - E 9 37.19

TPI Tecno Project Industrial Ltda

Rua Pais de Gales, 161
Dist. Ind. Bandeirantes
SALTO - SP - CEP 13.326-195
Tel./Fax +55 11 40215654
www.tecnoproject.com.br - tpi@tecnoproject.com.br
GPS: S 23 11.32 - W 47 19.08

PENTATEC S.r.l.

Via Aldo Moro, 7
I-24035 CURNO
Tel. +39 035 461673
www.pentatecsrl.com - commerciale@pentatecsrl.com
GPS: N 45 41.06 - E 9 37.17

Healthcare

MEDIGAS ITALIA S.r.l.

Via Edison, 6
I-20090 ASSAGO
Tel. +39 02 4888111 - Fax +39 02 48881150
www.medigas.it - info@medigas.it
GPS: N 45 24.17 - E 9 45.24

MAGALDI LIFE S.r.l.

Via Case Rosse, 19/a
I-84131 SALERNO
Tel. +39 089 383004 - Fax +39 089 3856367
www.magaldilife.it - info@magaldilife.it
GPS: N 40 38.42 - E 14 51.52

SIAD Healthcare S.p.A.

Via Edison, 6
I-20090 ASSAGO
Tel. +39 02 457921 - Fax +39 02 48843380
www.siadhealthcare.com - info@siadhealthcare.com
GPS: N 45 24.18 - E 9 07.22

Istrabenz Plini Group

SLOVENIA

ISTRABENZ PLINI d.o.o.
Sermin 8/a
SLO-6000 KOPER
Tel. +386 (5) 6634600 - Fax +386 (5) 6634699
www.istrabenzplini.si - info@istrabenzplini.si
GPS: N 45 33.10 - E 13 45.53

BOSNIA AND HERZEGOVINA

ISTRABENZ PLINI d.o.o.
Potkraj bb
BIH-71370 BREZA
Tel. +387 32 789301 - Fax +387 32 789302
GPS: N 44 00.17 - E 18 15.1

CROATIA

ISTRABENZ PLINI d.o.o.
Pristanište Podbok 3
HR-51222 BAKAR
Tel. +385 (51) 455300 - Fax +385 (51) 761175
www.istrabenzplini.hr - istrabenzplini@istrabenzplini.hr
GPS: N 45 17.37 - E 14 33.54

SERBIA

ISTRABENZ PLINI d.o.o.
Despota Stefana, 12
SRB-BEOGRAD
Tel. +381 113340949 - Fax +381 113341199
GPS: N 44 48.59 - E 20 27.47

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Telephone +39 035 327611
Fax +39 035 316131

siadmi.com - siadmi@siadmi.eu

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IMPIANTI

