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).

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: small and medium size natural gas liquefaction plant.

<table>
<thead>
<tr>
<th>“SMART LNG” system range</th>
<th>LNG production</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Nm³/h</td>
</tr>
<tr>
<td>SMART LIN-LNG</td>
<td>up to 1 400</td>
</tr>
<tr>
<td>SMART TB-LNG</td>
<td>up to 33 600</td>
</tr>
<tr>
<td>SMART INT-LNG</td>
<td>up to 33 600 + LIN</td>
</tr>
</tbody>
</table>

siadmi.com
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

Production of biogas from the anaerobic digestion of organic substances*

ALTERNATIVELY

Biogas upgrading or purification of network gas

ALTERNATIVELY

Natural gas liquefaction with cryogenic technology

-162°C (-260°F)

Liquefied natural gas storage

Local use: as fuel for service stations or micro-distribution systems

Boil-off gas

The SMART LNG range

- **SMART LIN-LNG**
  Small size plant involving the use of liquid nitrogen as cooling factor.

- **SMART TB-LNG**
  Nitrogen recycling plant with expansion turbines and boosters.

- **SMART INT-LNG**
  Integrated plant with combined production of liquefied natural gas (LNG) and liquid nitrogen (LIN).

Field of application
- Transport
- Industrial combustion
- Heating
- Energy storage.

For information:
siadmi_asu@siad.eu

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

**LNG plant 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 LNG plant 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

Technical gases
SIAD S.p.A.
Via San Bernardino, 92
I-24128 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-5102 ST. PANTALEON
Tel. +43 (6277) 7447-0 - Fax +43 (6277) 7401
www.siad.at - siad@siad.at
GPS: N 48 01.37 - E 12 51.36

BULGARIA
SIAD Bulgaria EOOD
4, Amsterdam str. P. O. Box 28
BG-1202 MARSEILLE
Tel. +359 (0) 2 875636 - Fax +359 (0) 2 879879
www.siad.bg - siad@siad.bg
GPS: N 42 39.15 - E 23 24.43

CZECH REPUBLIC
SIAD Czech spol. s r.o.
ul. Kokotek 66
CZ-831 04 BRATISLAVA
Tel. +421 (2) 44460347 - Fax +421 (2) 44460348
GPS: N 45 40.35 - E 9 36.25

ENGAGEMENT
LPG and Natural Gas

Engineering
SIAD Macchine Impianti S.p.A.
Via Monte Pasubio, 137
I-36010 ZANE
Tel. +39 044 804444 - Fax +39 0445 804400
www.arroweld.com - arroweld@arroweld.com
GPS: N 46 43.18 - E 11 26.21

Bielfie Saldatura S.r.l.
Via Canovia, 81
I-12020 MADONNA DELL’OLMO
Tel. +39 0171 414711 - Fax +39 0171 414700
www.bielfiesaldatura.com - info@bielfiesaldatura.com
GPS: N 46 40.57 - E 9 39.44

Technoservizi Ambientali S.r.l.
Via San Bernardino, 92
I-24128 BERGAMO
Tel. +39 035 328111 - Fax +39 035 328393
www.technoserviziambientali.it - info@tsa.it
GPS: N 45 40.57 - E 9 39.44

SIAD Healthcare S.p.A.
Via Edison, 6
I-1-20000 ASSAGO
Tel. +39 02 4868111 - Fax +39 02 48861550
www.siadhealthcare.com - info@siadhealthcare.com
GPS: N 45 24.17 - E 9 45.24

Istraben Plini Group
SLOVENIA
ISTRABENZ PLINI d.o.o.
Sernin B/d
SLO-6000 KOPER
Tel. +39 56 563499 - Fax +39 56 563499
www.istrabenzplini.si - info@istrabenzplini.si
GPS: N 45 33.10 - E 13 45.53

MADGALI LIFE S.r.l.
Via Case Rosse, 19/a
I-84131 SALERNO
Tel. +39 089 383804 - Fax +39 089 385637
www.madgalilife.it - info@madgalilife.it
GPS: N 40 38.42 - E 14 15.52

SIAD Healthcare S.p.A.
Via Edison, 6
I-1-20000 ASSAGO
Tel. +39 02 47921 - Fax +39 02 48843380
www.siadhealthcare.com - info@siadhealthcare.com
GPS: N 45 24.18 - E 9 07.22

Arroweld Italia S.p.A.
Via Monte Pasubio, 137
I-36010 ZANE
Tel. +39 044 804444 - Fax +39 0445 804400
www.arroweld.com - arroweld@arroweld.com
GPS: N 46 43.18 - E 11 26.21

SIAD Macchine Impianti S.p.A.
Via Canovia, 81
I-12020 MADONNA DELL’OLMO
Tel. +39 0171 414711 - Fax +39 0171 414700
www.bielfiesaldatura.com - info@bielfiesaldatura.com
GPS: N 46 40.57 - E 9 39.44

SIAD Macchine Impianti Trading (Shanghai) Co. Ltd.
Rm.412, No. 999 Ningxia Rd
Pudong Jingqiao EPZ
Tel. +86 (0)21 50550066 - Fax +86 (0)21 50318959
www.siadmi.cn/sh - siadmi_sh@siad.eu
GPS: N 31 15.19 - E 121 37.4

SIAD Macchine Impianti Middle East F.Z.C.
M1-PO, Box 1248
Ali Al Sayegh Free Zone - UAE
Tel./Fax +971 (0)6 7427339

SIAD Macchine Impianti S.p.A.
Via Canovia, 81
I-12020 MADONNA DELL’OLMO
Tel. +39 0171 414711 - Fax +39 0171 414700
www.bielfiesaldatura.com - info@bielfiesaldatura.com
GPS: N 46 40.57 - E 9 39.44

SIAD Healthcare S.p.A.
Via Edison, 6
I-1-20000 ASSAGO
Tel. +39 02 47921 - Fax +39 02 48843380
www.siadhealthcare.com - info@siadhealthcare.com
GPS: N 45 24.18 - E 9 07.22

Istraben Plini Group
SLOVENIA
ISTRABENZ PLINI d.o.o.
Sernin B/d
SLO-6000 KOPER
Tel. +39 56 563499 - Fax +39 56 563499
www.istrabenzplini.si - info@istrabenzplini.si
GPS: N 45 33.10 - E 13 45.53

PLINARMA MARBOR d.o.o.
Plinariška ulica 9
SLO-3003 MARBOR
Tel. +386 2 2284300 - Fax +386 2 2522272
plinarna-marbor.si - info@plinarna-marbor.si
GPS: N 48 50.92 - E 15.65, 71

BOSSIA AND HERZEQOVINA
ISTRABENZ PLINI d.o.o.
Potvarja bb
BIH-71370 BIREZ
Tel. +387 32 793900 - Fax +387 32 793902
www.istrabenzplini.ba - istrabenzplini@istrabenzplini.hr
GPS: N 44 00.17 - E 18 15.1

CROATIA
ISTRABENZ PLINI d.o.o.
Pristarića Poduđ 3
HR-51222 BAKAR
Tel. +385 51 215300 - 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.
Dispotova Stana 12
SRB-BEograd
Tel. +381 11 3340949 - Fax +381 11 3341199
GPS: N 44 48.59 - E 20 27.47

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SIAD Macchine Impianti S.p.A.
Società unipersonale soggetta all’attività di direzione e coordinamento di SIAD S.p.A.
24126 Bergamo, Italy - Via Canovine, 2/4
Share Capital 25,000,000 paid up
VAT and Fiscal Ncr: (IT) 00228420162
R.E.A. BG-72619 - Export: BG 006107

Telephone +39 035 327611
Fax +39 035 316131

siadmi.com - siadmi@siad.eu

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