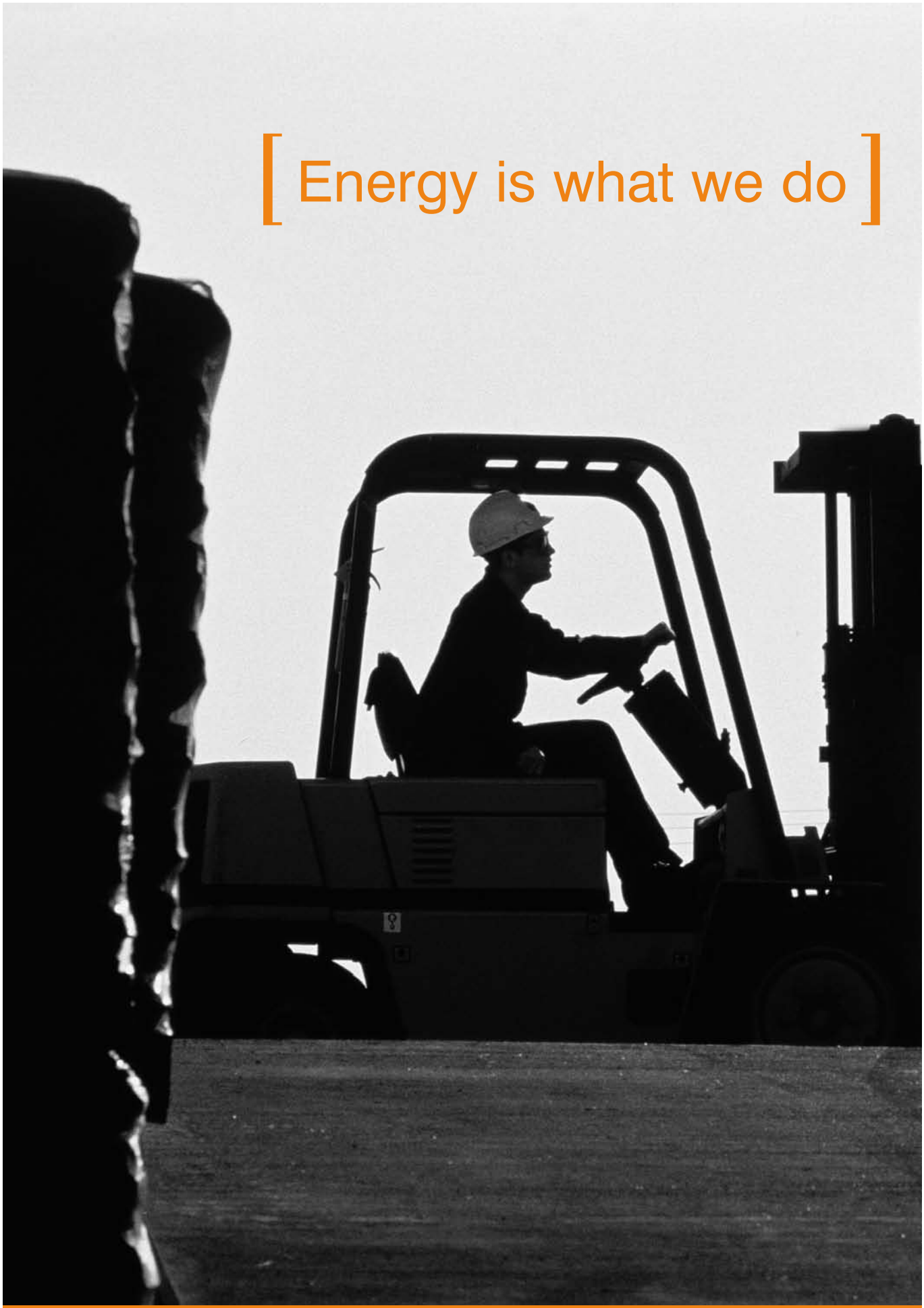
MOTIVE POWER batteries

SUNLIGHT
creating energy

[Energy is what we do]



MOTIVE POWER batteries introduction

SUNLIGHT "KINISIS" traction batteries provide a high level of power and reliability for all industrial truck applications. The extended range of both DIN and BS cells covers all types of applications, from low capacity up to heavy duty multi shift operations.

SUNLIGHT “KINISIS” traction batteries provide a high efficiency during the discharge period of the battery, an efficiency which is achieved by the use of advanced components in the manufacturing process of the plates. The design of the positive and negative plates has been optimized to gain more energy in the cells. All these technical improvements have enabled high capacities in the given external dimensions of the cells.

Benefits

- Available in both DIN and BS ranges
- Optimized design to achieve high capacities
- Long service life
- Fast battery availability
- Low maintenance requirements

Applications

- Light-duty applications
  Single shift operation with light usage of the battery and discharge lower than 60% of C_5. Electrolyte about 30ºC.
- Normal-duty applications
  Single shift operation with discharge up to 80% of C_5. Electrolyte 30ºC.
- Heavy-duty applications
  Single shift operation with discharges of 80% of C_5 and high discharge currents. Boost charging to increase the availability of the battery. Multi shift operation with or without battery charges in intervals, in between operation.
  High ambient temperature.

MOTIVE POWER batteries construction

Plates

Positive tubular plates are constructed with lead-antimony alloy so as to optimize cycle life with the lowest water consumption possible. Negative grid plates are designed with pasted lead grid so as to provide a high spongy level and reduce capacity loss. Microporous separators are designed to have a high porosity grade so as to ensure better ionic circulation and low internal resistance. Boxes and lids are impact resistant and made of polypropylene (PP) and are thermowelded to prevent electrolyte leakage.

Terminals

Terminals are designed to prevent electrolyte leakage and the subsequent damage to the copper connectors. Bolt-on type terminals allow cells to be replaced or moved without excessive labor.

Plugs

- Flip top plugs with electrolyte basket level marking are fitted on the cells. These plugs allow the escape of gases during the charging process of the battery, and also provide a safe anti-surge baffle for the electrolyte during operation.

- The automatic filling system vent plug automatically ensures the optimum filling level of the cells, minimizing the required maintenance time for the battery thus the required excessive labor cost.

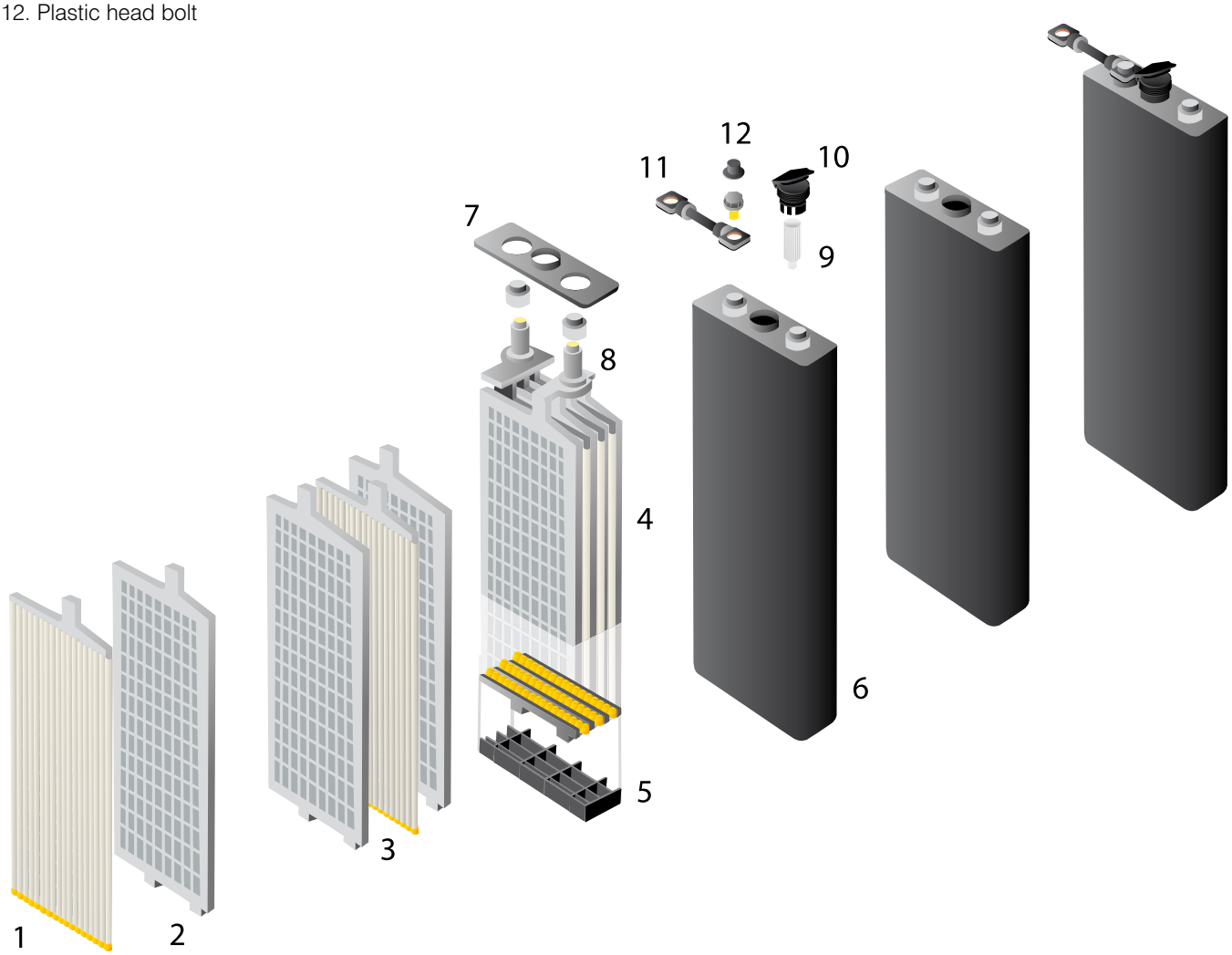
Connectors

The cells inside a SUNLIGHT “KINISIS” battery are connected with the use of fully insulated flexible copper connectors. The use of the bolt-on connector design allows the user of the battery to replace or move the cells easily without excessive labor thus extra cost.

Flexible Intercell Connectors	Flip Top Plug	Automatic Refilling Plug
		

Mechanical Construction

1. Positive plate
2. Negative plate
3. Plate set
4. Plate set assembly with terminal bridge and screw terminal (M10)
5. Sediment spacer
6. Cell container
7. Cell lid
8. Pole with threaded insert (M10) and sealing ring
9. Anti-surge baffle
10. Topping up vent plug
11. Flexible cell connector
12. Plastic head bolt



MOTIVE POWER batteries optional equipment

Electrolyte Circulation System (Airlift System)

The Electrolyte Circulation System has been developed to extend the autonomy of the electrical vehicles (forklifts etc.) used in installations. Each battery cell can be equipped with an Airlift System.

The principle behind it, is that a pump is used to circulate low-level compressed air into the cells and create a homogenous electrolyte mixture throughout them.

Benefits of the Airlift System:

- Low level temperature
- Electrolyte stratification is prevented
- Battery charging is optimized

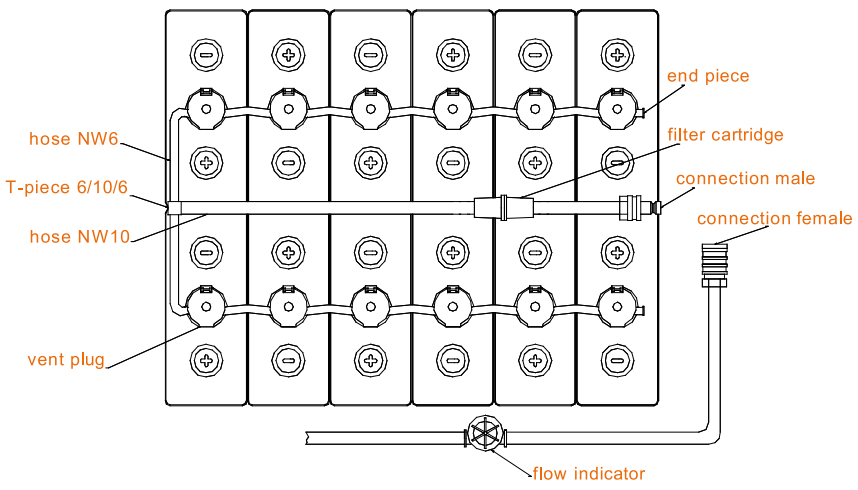
In more detail:

- The battery can be fully charged in 5 ½ hour's time, without any significant increase of the cell's temperature.
- The stratification of the electrolyte is prevented during the charging process of the battery. A homogeneous density and temperature is achieved throughout the cells, due to the circulation of the electrolyte.
- It is possible to "partially" charge the battery in order to prolong the autonomy of the electrical vehicles.
- The overcharge coefficient is 70% lower.
- The water consumption is reduced by 70%. This extends the battery's maintenance period.
- During the charging process energy consumption is reduced up to 20%.
- A longer cell life cycle is achieved due to the uniform decay of the plates.

Automatic Filling System:

The Automatic Filling System (A.F.S.) allows the user the possibility to top up the cells of the battery from one central point through an integrated piping system, installed on the battery. The automatic filling plugs ensure the optimum filling level of the cells, minimizing the required maintenance time for the battery.

Typical layout drawing of an Automatic Filling System for a 24V battery



Chargers for Motive Power Batteries

The SUNLIGHT battery chargers are designed to recharge low, medium and high capacity "KINISIS" traction batteries, depending on the application. The product range includes single and three phase chargers of thyristor and switch-mode technology.

A wide variety of battery chargers will provide the best solution to any battery recharge need.

Features & Benefits:

- Programmable/Automatic charging profile (depending on the model).
- Available multiple charging profiles for different battery technologies.
- Conformity to EN 61000-6-3: Electromagnetic Compatibility (EMC).
  Generic Standards.
  Emission standard for residential, commercial and light-Industrial Environments.
- Conformity to EN 61000-6-2: Electromagnetic Compatibility (EMC).
  Generic Immunity Standards for Industrial Environments.
- Automatic/Manual Equalization charging.
  This ensures battery availability at all times, having the battery always charged and ready for use.
- Fully Automatic Operation: Automatic reset and start-up.
- Charge start delay: Ensures safe connection of the battery.
- LED display: Shows state of charge and fault conditions, with option for remote indication.
- Ease of installation: Plug and appliance socket fitted on all types.
- Fault Protection: from damage due to battery, charger, or operator errors.
- Compact design.
- High Power factor and efficiency.
- Optimal charging factor based on the depth of discharge.
- Memory on last charges (available on specific models)

A wide range of SUNLIGHT Traction battery chargers ensures the correct operation and longer service life of the battery.

- Single phase chargers **CEMB 30 Series** (Wa)
  V DC: 12V, 24V, 36V, 48V
  A DC: from 20A up to 80A
- Single phase chargers **ECO Series** (Wa)
  V DC: 24V, 36V, 48V, 72V, 80V
  A DC: from 60A up to 120A
- Single phase chargers **COMPACT 30 Series** (Wa)
  V DC: 24V, 36V, 48V, 72V, 80V
  A DC: from 40A up to 140A
- Three phase chargers **COMPACT 30 Series** (Wa)
  V DC: 24V, 36V, 48V, 72V, 80V, 96V
  A DC: from 60A up to 180A
- Three phase chargers **DIGIT 3001 AIRLIFT Series** (Wo-Wa)
  V DC: 24V, 36V, 48V, 72V, 80V, 96V
  A DC: from 50A up to 300A
- Three phase chargers **SIRIUS Series** (Wo-Wa)
  V DC: 24V, 36V, 48V, 72V, 80V, 96V
  A DC: from 60A up to 240A
- Three phase chargers **Eagle High Frequency Series**
  V DC: 24V, 36V, 48V, 72V, 80V
  A DC: from 50A up to 120A
- Three phase chargers **Sirius Chopper High Frequency Series**
  V DC: 24V, 48V, 80V
  A DC: from 200A up to 500A

www.sunlight.gr

Distributor Area

SUNLIGHT MANUFACTURING PLANT

The SUNLIGHT Manufacturing Plant is headquartered in Northern Greece. Since 1991, there has been a systematic investment in the development of one of the most modern industrial units of Europe in accordance with the strictest international standards.

In a total area of 142,000 m^2, with indoor areas of more than 55,000 m^2, the SUNLIGHT Manufacturing Plant has five high-end production units that are recognized for their high specialization.

Aiming at the production of high added value and quality products, the production and assembly lines of the SUNLIGHT Industrial Unit are used for:

- Cylindrical Zinc-Chloride cells such as R6HD (AA) R14HD (C) and R20HD (D) sizes
- Advanced Lead-Acid batteries for submarine propulsion
- Silver-Zinc batteries for combat and exercise torpedoes
- Stationary and traction Lead-Acid batteries (vented type)
- Sealed Lead-Acid batteries (VRLA)
- Photovoltaic Power Supply Systems
- Battery packs for military and commercial applications
- Assembly of Power Supply Systems for telecommunication applications
- Assembly of Uninterruptible Power Systems (UPS)
- Assembly of Industrial Rectifiers
- Assembly of Generating Sets ranging from 7 to 3,300 kVA

MANAGEMENT SYSTEMS for QUALITY, ENVIRONMENTAL CONTROL, OCCUPATIONAL HEALTH & SAFETY

The SUNLIGHT Manufacturing Plant has established and maintains management systems for Quality (ISO 9001), Environmental control (ISO 14001) and Occupational Health and Safety (OHSAS 18001).

This document was printed with vegetable inks on unchlorinated, non wood recycled paper.

SUNLIGHT
creating energy

- **SYSTEMS SUNLIGHT S.A. Headquarters**
  23rd Km. N.R. Athens - Lamia, 145 65 Ag. Stefanos - Attica, Greece
  Tel.: +30 210 62 45 400, Fax: +30 210 62 45 409
- **SYSTEMS SUNLIGHT S.A. Manufacturing Plant**
  Neo Olvio 67 200 Xanthi, Greece
  Tel.: +30 25410 48100, Fax: +30 25410 95446
- **SUNLIGHT INDUSTRIAL S.R.L. (Romania)**
  2-4, Brânduselor Street, Vitan Business Center, 6th Floor, District 3, 031256 Bucharest - Romania
  Tel.: +40 21 351 77 77, Fax: +40 21 351 66 67
- **SUNLIGHT INDUSTRIAL EOOD (Bulgaria)**
  Business Park, Sofia Str., Bldg.11A - Floor 4 Bulgaria
  Tel.: +359 2 8079 190, Fax: +359 2 8079 188
- **SUNLIGHT POLSKA Sp.zo.o**
  Szyszkowa 34 str., 02-285 Warsaw, Poland
  Tel.: +48 22 5758227, Fax: +48 22 5758258
- **SUNLIGHT UKRAINE S.R.L.**
  18/14 Hvoiki Str., block 25, office 401, Kiev- 04655 - Ukraine
  Tel.: +380 44 463 5735, Fax: +380 44 463 5735
- **SUNLIGHT INDUSTRIAL doo (Serbia)**
  Brace Krsmanovica 11 - 11000 Belgrade - Serbia
  Tel.: +381 11 3282 232, Fax: +381 11 2187 228
- **SUNLIGHT SYSTEMS FRANCE S.R.L.**
  Hyde Park - Le Westminster, 12 Allée Rosa Luxembourg
  95610 Eragny Sur Oise, France
  Tel.: +33 1 344 01634, Fax: +33 1 344 01639
- **SUNLIGHT Batterien GmbH (Germany)**
  Hauptstrasse 13-15, 90537, Feucht, Germany
  Tel: +49 (0)912873916-20, Fax: +49 (0)912873916-10
- **SUNLIGHT'S AGENT FOR GERMANY**
  Elbestrasse 10 (TechnoMarl), D-45768 Marl, Germany,
  Tel: +49 2365 91 51 75, Fax: +49 2365 20 59 10
- **SUNLIGHT'S AGENT FOR SPAIN**
  IBC-La Florida, Calle Gobelas 17, Planta Baja, 28023 Madrid - Spain
  Tel: +34 911 517100 Fax: +34 911 517120
- **SUNLIGHT'S AGENT FOR MIDDLE EAST - AFRICA**
  15 El - Hassan Str. Dokki Giza, Egypt
  Tel.: +20 2 33 800 59, Fax: +20 2 33 652 93
- **SUNLIGHT ITALY S.R.L.**
  Via Martiri delle Foibe, 1, 36045- Lonigo (VI), Italy
  Tel.: +39 0444 729790, Fax: +39 0444 430731
- **Celectric B.V.**
  Nobelstraat 34, 3846 CG Harderwijk
  Postbus 226, 3840 AE Harderwijk
  Tel.: +31 341 467700, Fax: +31 341 467710

SAP Code 0127960/ JANUARY 2010