



## Application brief

# Portable generator

### Highly efficient and cost-effective solutions

The use of energy globally is forecasted to increase by more than 70 percent by 2040. Rising demand for electricity puts an increasing strain on the grid. Where the grid is unavailable or inaccessible portable generators can be a backup or emergency power supply for residential, commercial, and industrial applications.

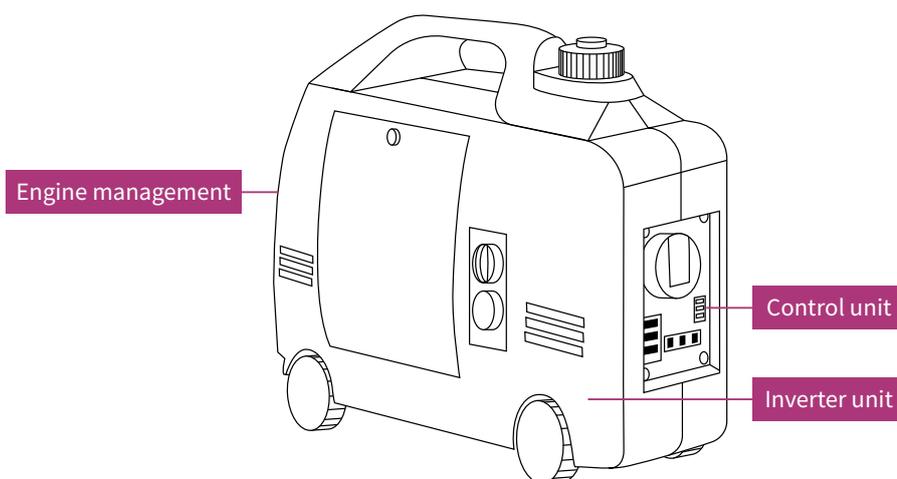
A portable generator is assembled from alternator, inverter, control panel, fuel system, and battery charger. It can also have a muffler attached to its engine to reduce its operational noise.

#### Infineon's key enabling products are:

- > Low voltage power MOSFETs – OptiMOS™ and StrongIRFET™
- > High voltage power MOSFETs – CoolMOS™
- > Gate driver ICs – EiceDRIVER™
- > SiC Schottky diodes – CoolSiC™
- > Microcontrollers – XMC™

#### Benefits of Infineon components

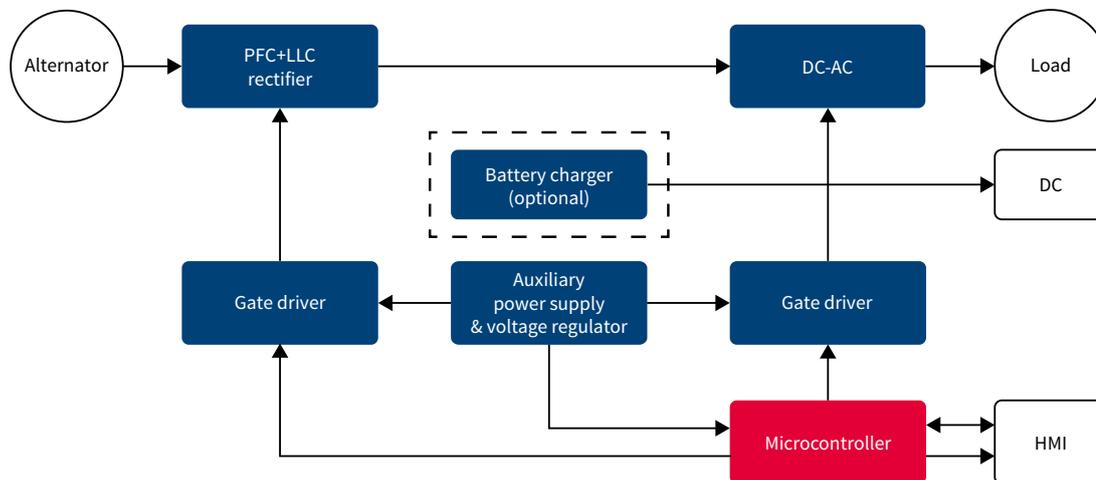
- > High power density semiconductors allowing for the miniaturization of the inverter unit resulting in smaller and lighter portable generators
- > Leading semiconductor technology to meet efficiency and emission requirements/regulations
- > Highly efficient, innovative, and cost-attractive semiconductor solutions leading to overall BOM cost reduction
- > Reliable products optimized for use in target application



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## System block diagram



## Solution tree for portable generators

|   |                                   |   |                            |                            |
|---|-----------------------------------|---|----------------------------|----------------------------|
| <b>Engine management</b>                |                                   |   | <b>Control unit</b>        |                            |
| <b>Microcontroller</b>                  | <b>Small engine management IC</b> |   | <b>Microcontrollers</b>    | <b>Voltage regulator</b>   |
| > XMC1000 family                        | > TLE8080EM                       |   | > XMC1000 family           | > Linear voltage regulator |
| <b>Inverter unit</b>                    |                                   |   | <b>Battery management*</b> |                            |
| <b>DC-AC</b>                            |                                   |   | <b>Low voltage MOSFETs</b> | <b>Gate driver ICs</b>     |
| <b>High voltage MOSFET</b>              | <b>Gate driver ICs</b>            | <b>IGBT discretes</b>                     | > OptiMOS™ 3 20 V-300 V    | > EiceDRIVER™ - 1EDN/2EDN  |
| > CoolMOS™ CFD7                         | > EiceDRIVER™ - 1EDN/2EDN         | > 600 V-1600 V TRENCHSHOP™ 5 / Highspeed3 | > OptiMOS™ 5 25 V-80 V     |                            |
|   |                                   |   | > StrongIRFET™ 20 V-200 V  |                            |
| <b>PFC/LLC, Rectifier</b>               |                                   |   |                            |                            |
| <b>PFC/LLC</b>                          |                                   |   | <b>Rectifier</b>           |                            |
| <b>SiC Schottky diode</b>               | <b>Gate driver ICs</b>            | <b>High voltage MOSFETs</b>               | <b>Low voltage MOSFETs</b> |                            |
| > CoolSiC™ Schottky diode 650V G5 or G6 | > EiceDRIVER™ - 1EDN/2EDN         | > CoolMOS™ P7                             | > OptiMOS™ 3 20 V-300 V    |                            |
| > CoolSiC™ Schottky diode 1200V         |                                   | > CoolMOS™ C7                             | > OptiMOS™ 5 25 V-80 V     |                            |
|   |                                   | > CoolMOS™ CFD7                           | > StrongIRFET™ 20 V-200 V  |                            |

\*Optional

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