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How to choose Inverters

Powerpoint Presentation

Learning Centre

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Inverters

- Convert the Direct Current (DC) electricity from solar panels and batteries to Alternating current (AC) electricity
- Enable operation of standard AC loads – 120/230 Vac
- Types of Inverters
  - Grid-Tied / Utility Interactive
  - Stand-Alone
  - Grid-Tied with Battery back-up
- Off-grid Systems – Stand alone Inverters
- Types of Stand-Alone Inverters
  - Pure Sine-wave
  - Modified Sine-wave

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Inverters (Continued)

Modified Sinewave:

- Output AC voltage waveform in Fig. 1
- Can operate wide variety of loads - motors, lights, standard electronic equipment like televisions
- Sensitive electronic equipment may pick up noise
- Not suitable for clocks, microwaves – devices that use digital time-keepers
- Not suitable to power battery chargers for cordless tools

Pure Sinewave:

- High quality waveform in Fig. 2
- Waveform similar to grid/utility power
- Can operate most loads including sensitive electronic equipment

Fig. 1

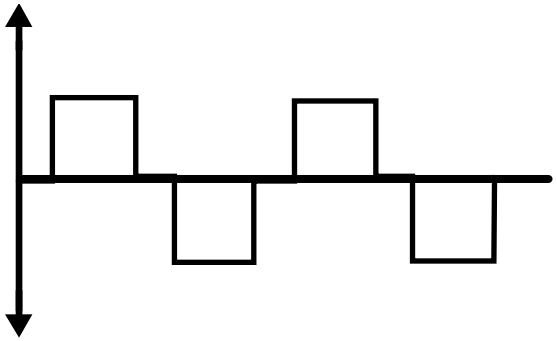
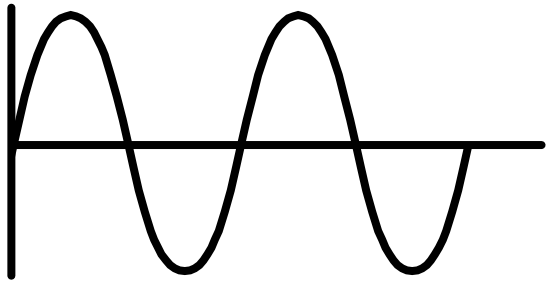


Fig. 2



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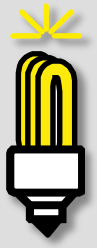
Inverter –Specification & Sizing

Stand-alone inverters are specified by:

- AC Output Power (Watts)
- DC input / battery system voltage
- AC output voltage and frequency
- e.g. 120 Vac, 60 Hz or 230 Vac, 50 Hz
- AC output Surge capacity (Watts)
- Waveform Type – Pure / Modified Sinewave



For computers, printers and other loads that may have in-built non-power factor corrected power supplies, size the inverter three times the running power of such loads

Inverter Sizing:

- AC output Power (watts) = Sum total of power consumption of all individual loads connected to the Inverter
- Surge capacity & duration of individual loads must be matched with the surge capacity and duration of the Inverters
- Watts divided by AC volts is equal to approximate current or Amperes

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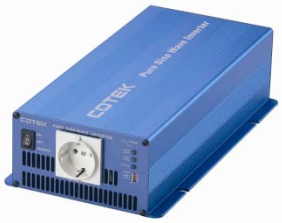
Recommendations

- **Pure Sine Wave Inverters-Light Duty Commercial**
  True sine wave voltage inverters provide clean, stable power for computers, radio equipment, home theatre, stereo, marine equipment and other applications that are sensitive to AC voltage irregularity.
- **Pure Sine Wave Inverters-Heavy Duty Industrial**
  "S" Series true sine wave inverters are designed for heavy duty commercial and industrial applications. Cotek "S" series pure sine wave inverters are microprocessor controlled and UL listed to Canadian and USA standards, as well as CE and FCC compliant
- **Pure Sine Wave Inverters-Heavy Duty-High Surge**
  "SK" Series true sine wave inverters are designed for heavy duty commercial and industrial applications. Cotek "SK" series pure sine wave inverters are microprocessor controlled and meet UL standards, but are not fully listed - they are FCC compliant. "SK" series has a high surge rating.
- **Pure Sine Wave Inverters-c/w Transfer Switch**
  "ST" Series pure sine wave inverters are microprocessor controlled inverters with a built-in transfer switch. These Cotek pure sine wave inverters are capable of driving highly reactive & capacitive loads at start-up. Synchronized operation allows the transfer to be almost instantaneous.



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Recommendations

- **Pure Sine Wave Inverter-Chargers**
  "INVERCHARGE" Series pure sine wave inverter-chargers have high current 3-stage smart battery charging & fast transfer times.
- **Pure Sine Wave Inverter Chargers - c/w Solar Chargers**
  "TN" Series pure sine wave inverter chargers have an in-built solar battery charger and UPS functionality.
- **Soleil Grid Connected PV Inverters**
  "Soleil" Series - the best price/performance ratio Grid-tied PV inverters on the market for simpler & more cost effective grid-connected photovoltaic installations. The Soleil Series Grid Tie PV inverters come with the latest DSP power conversion technology for MPPT operation, high power factor, low distortion, and high efficiency.
- **Modified Sine Wave Inverter**
  Modified sine wave AC-DC power inverters are ideal for powering **office equipment, television, power tools and lighting systems** from your car, truck, boat, RV, solar system, or battery.