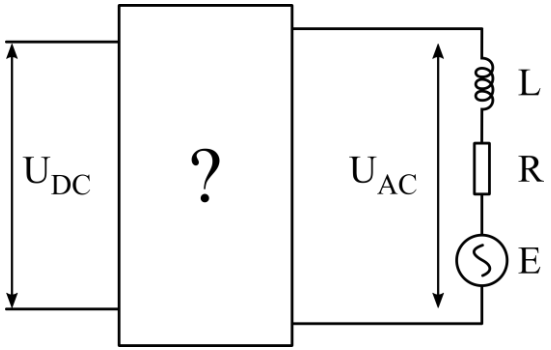
SINGLE-PHASE INVERTER

- What are inverters?
- Types of inverters.
- Elementary modulation techniques.
- Single-phase transistor inverter.

INVERTERS

What are inverters?



Inverters are devices that convert **DC** voltages/currents into **AC** voltages/currents.

Important note – there are voltage and current inverters.

What is a DC and what is an AC variable?

Types of inverters:

~~Uncontrolled~~ vs Controlled

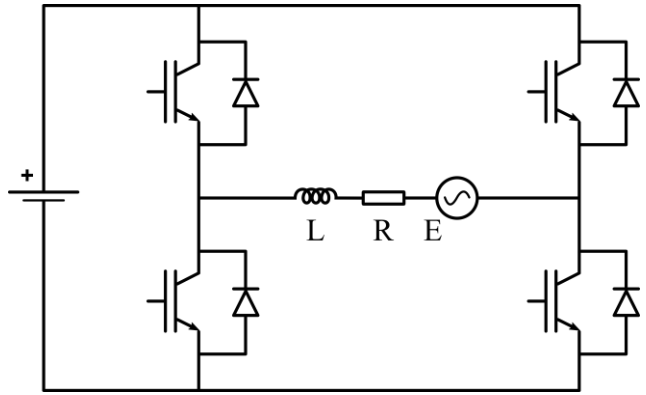
Single-phase vs Three-phase (vs Multi-phase)

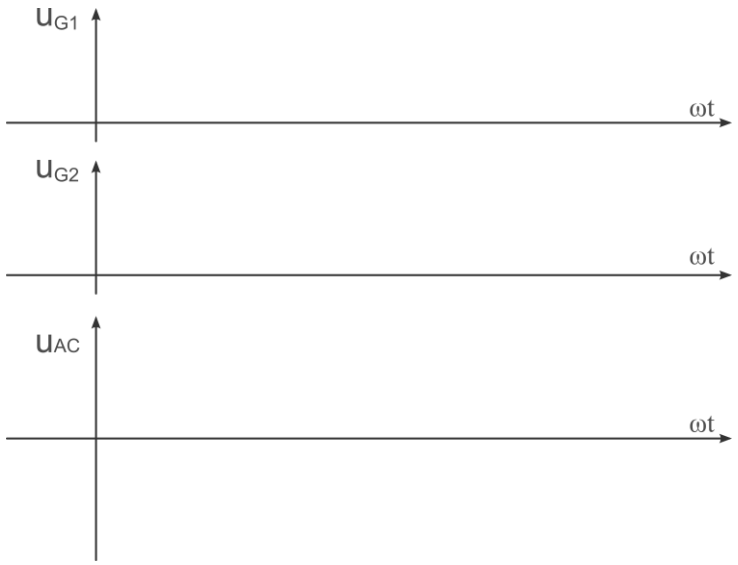
Two-level (vs Three-level vs Multi-level)

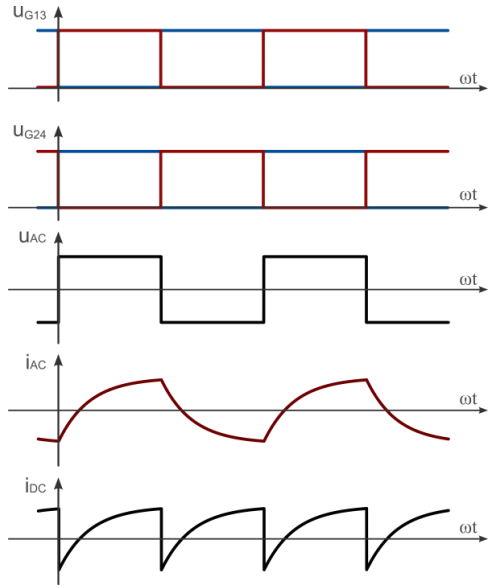
INVERTERS

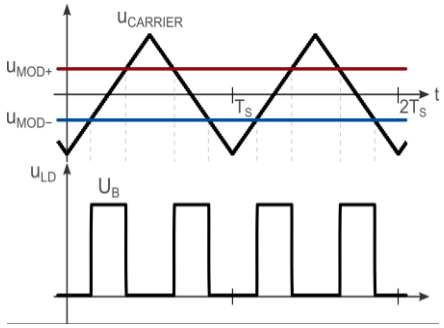
Single-phase (transistor) inverter

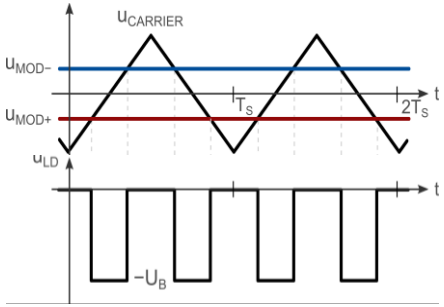
How can we produce AC voltages with H-bridge?







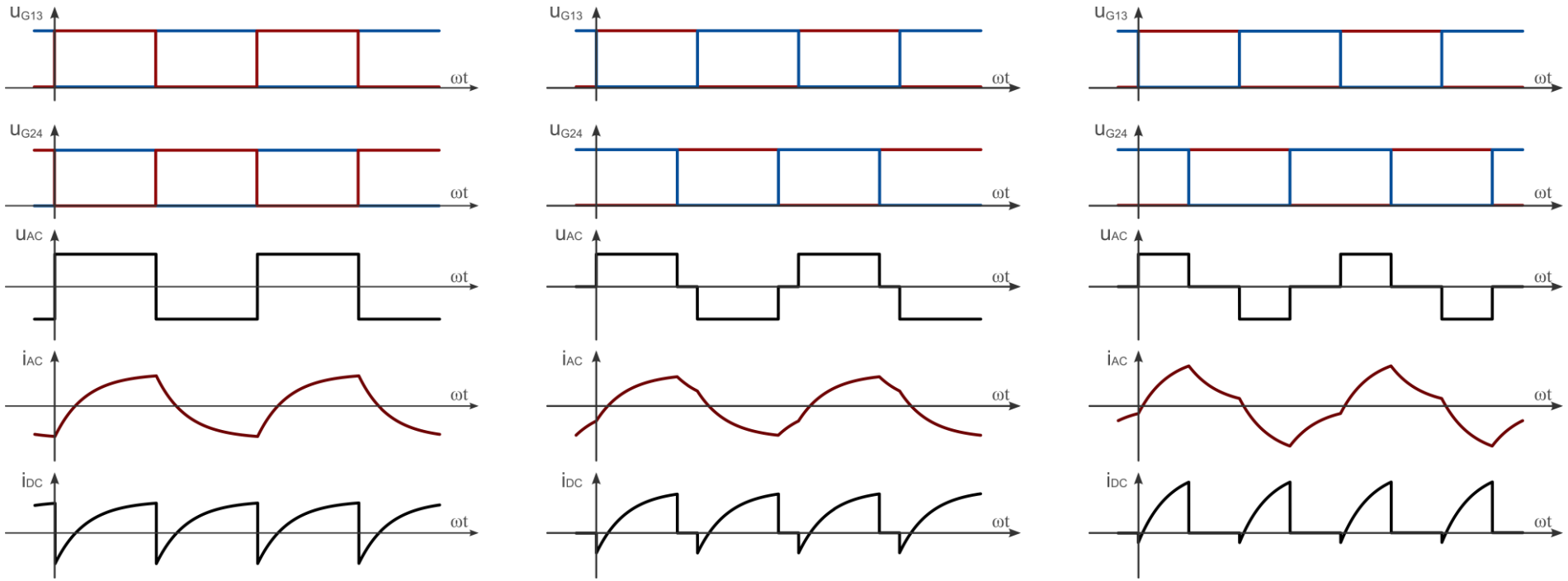


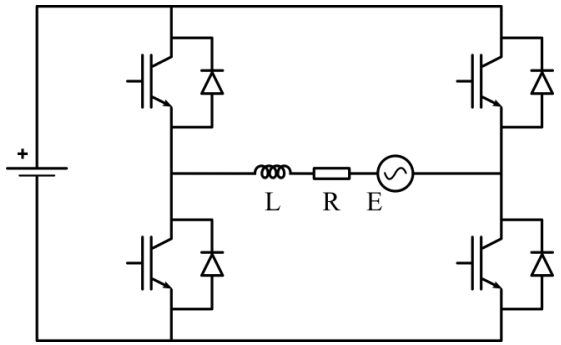


INVERTERS

Single-phase inverter

Square-wave and Quasi-square wave modulation

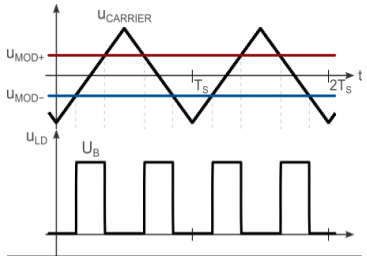


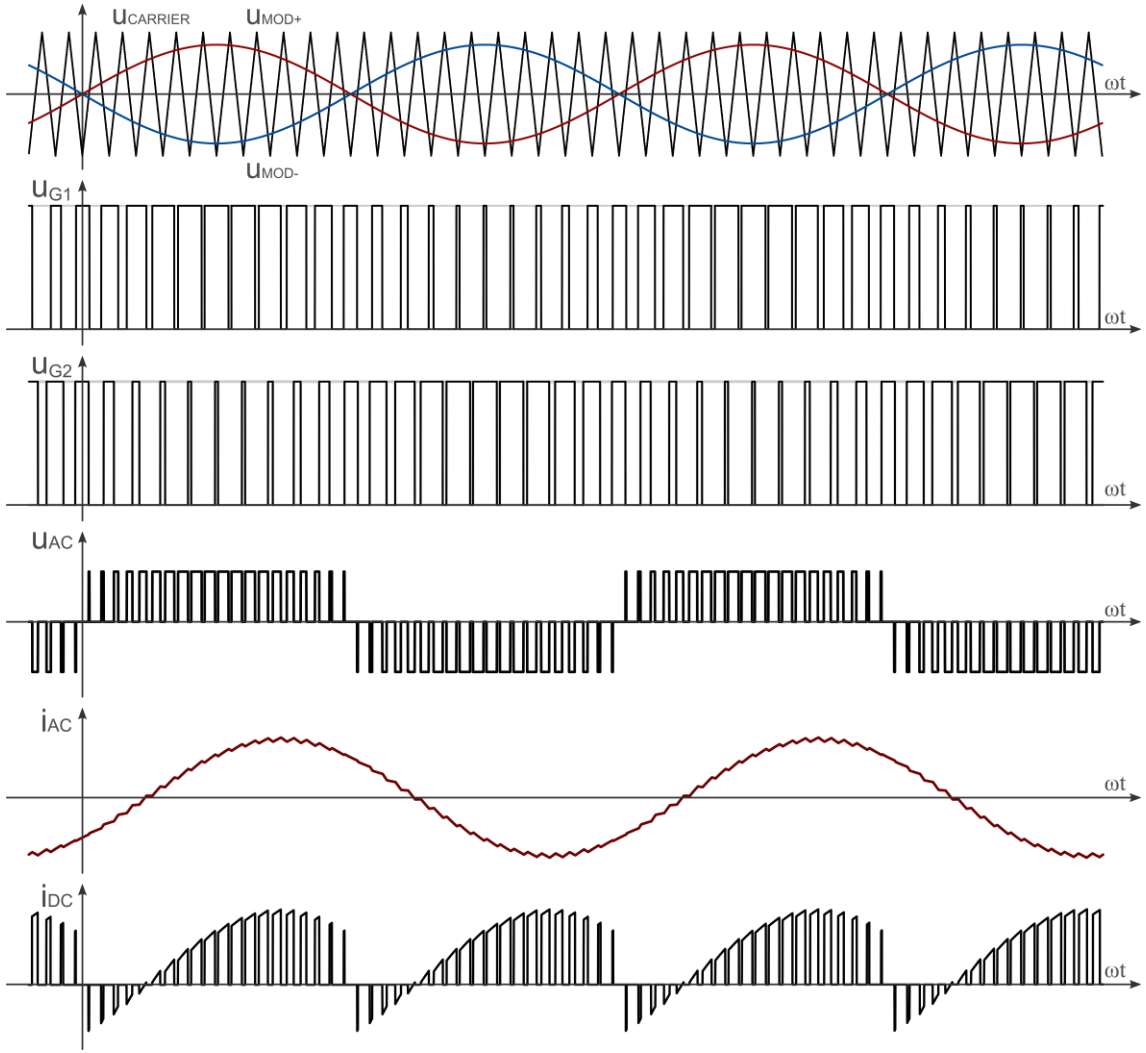


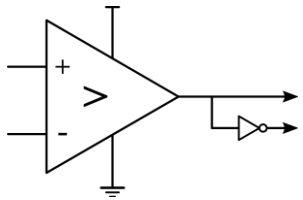
INVERTERS

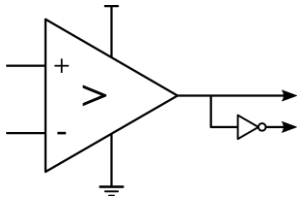
Single-phase inverter

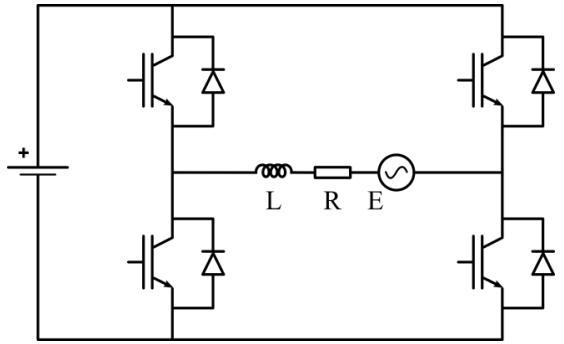
Pulse-width modulation







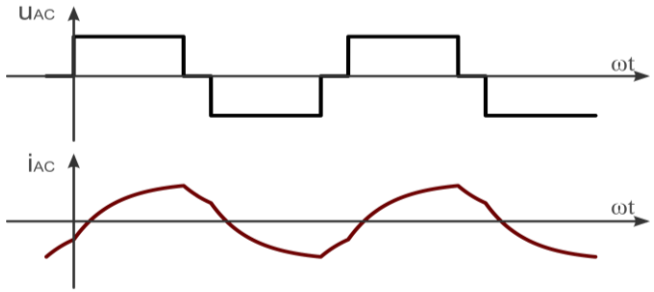


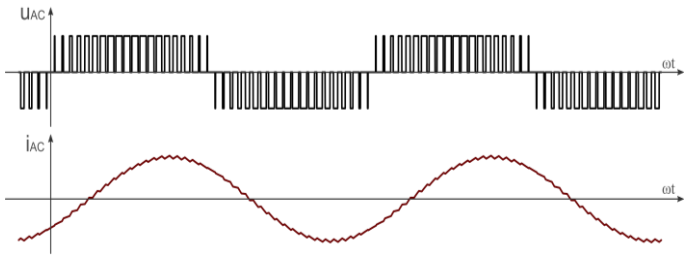


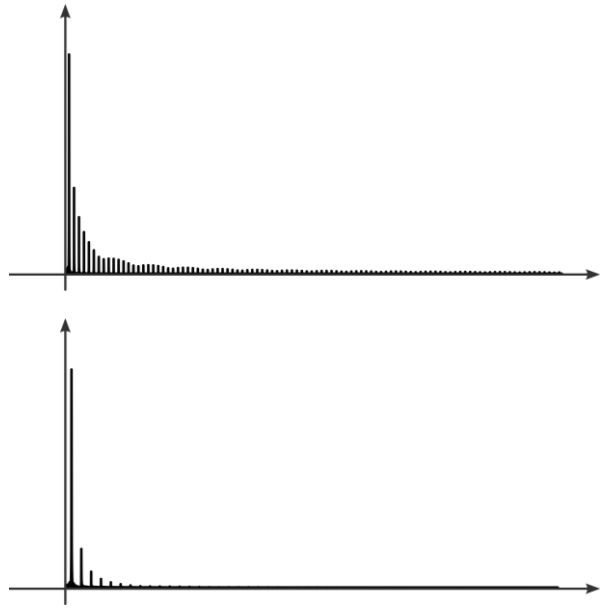
INVERTERS

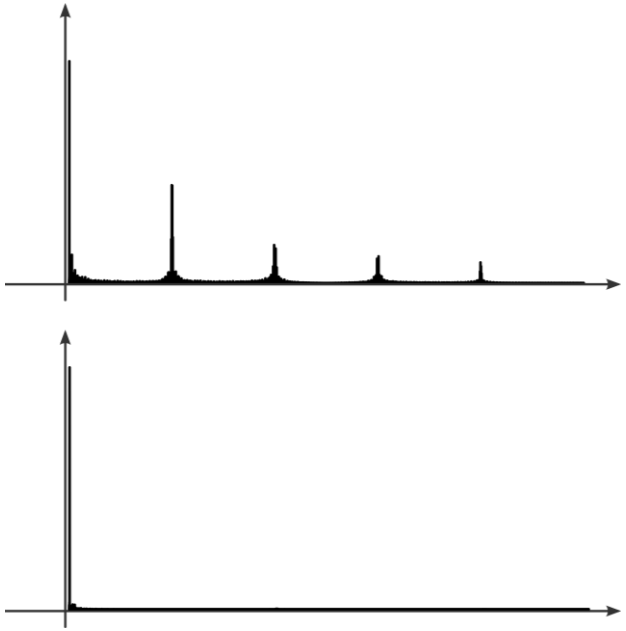
Single-phase inverter

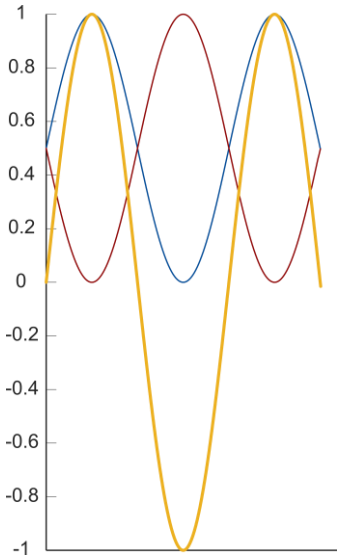
Harmonic analysis





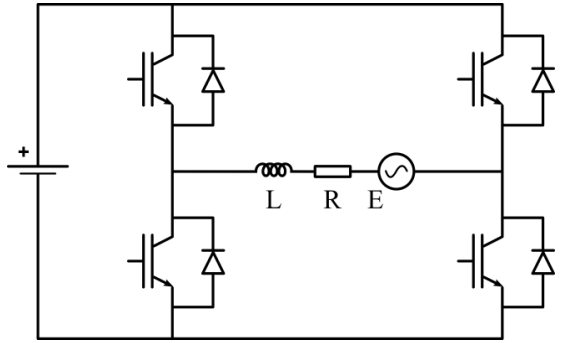






INVERTERS

Single-phase inverter - important notes



- Types of inverters,
- Inductive-resistive loads are driven,
- PWM and square-wave modulations,
- Harmonic spectrum quite different for different modulations,
- Losses optimization.