

Centro Federal de Educação Tecnológica de Santa Catarina
Departamento Acadêmico de Eletrônica
Conversores Estáticos



Introdução aos Conversores CA-CC

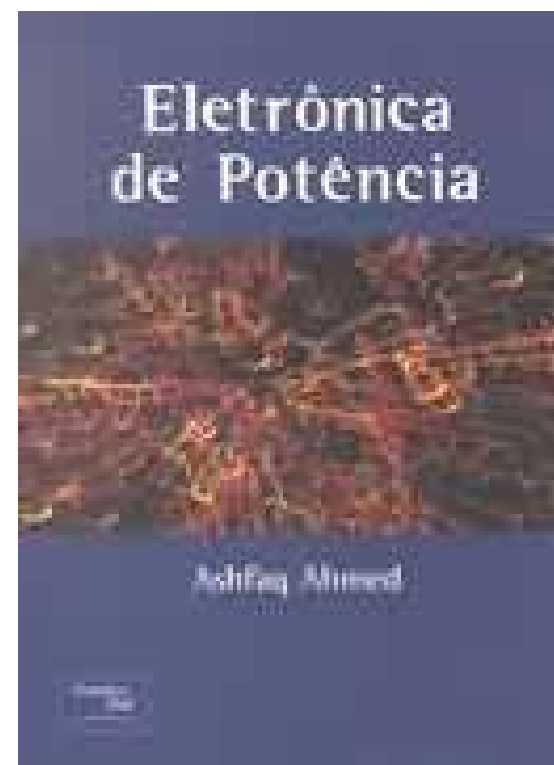
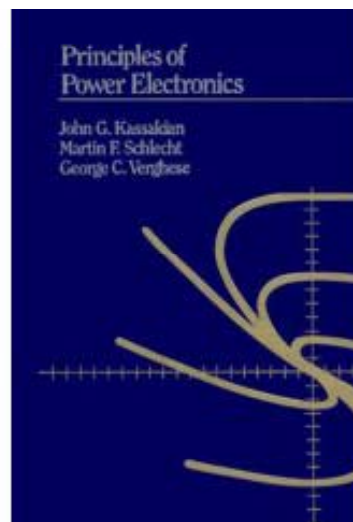
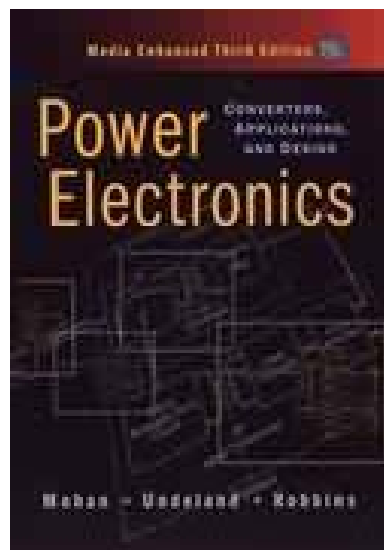
Prof. Clóvis Antônio Petry.

Florianópolis, fevereiro de 2008.

Bibliografia para esta aula

Capítulo 5: Retificadores monofásicos não-controlados

1. Introdução.



www.cefetsc.edu.br/~petry

Nesta aula

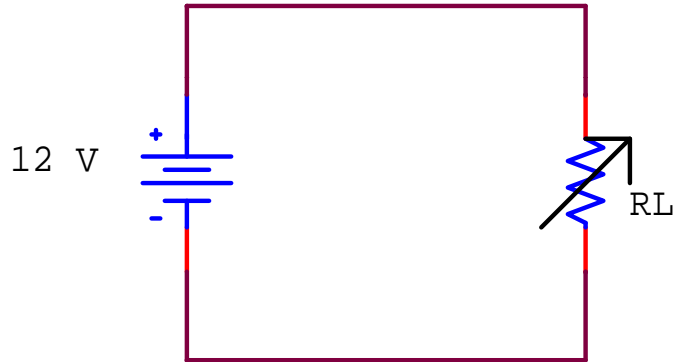
Conversores CA-CC:

1. Características gerais e aplicações.

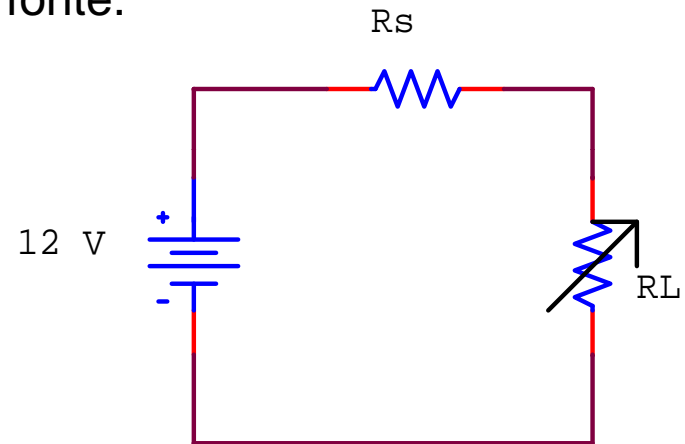
Revisão sobre fontes

Fonte de tensão:

Uma fonte de tensão ideal fornece na sua saída uma tensão que independe da carga, ou seja, da corrente solicitada da fonte.



Fonte de tensão ideal

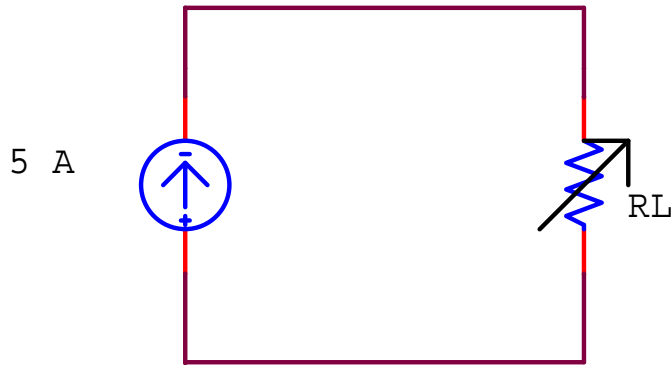


Fonte de tensão real

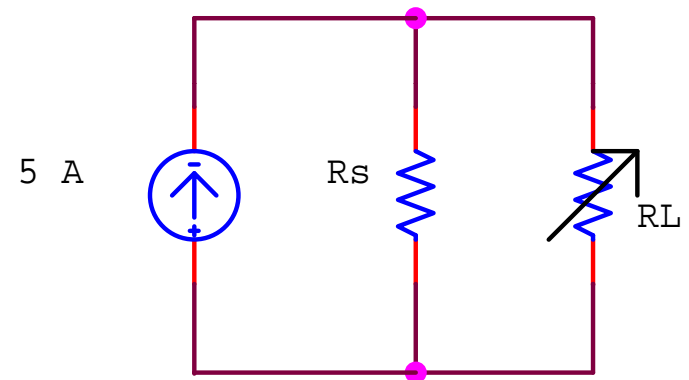
Revisão sobre fontes

Fonte de corrente:

Uma fonte de corrente ideal fornece na sua saída uma corrente que independe da tensão nos seus terminais e da carga na saída da mesma.



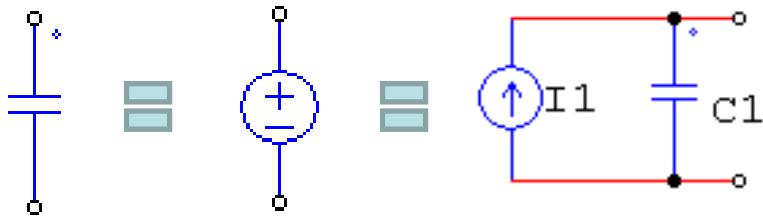
Fonte de corrente ideal



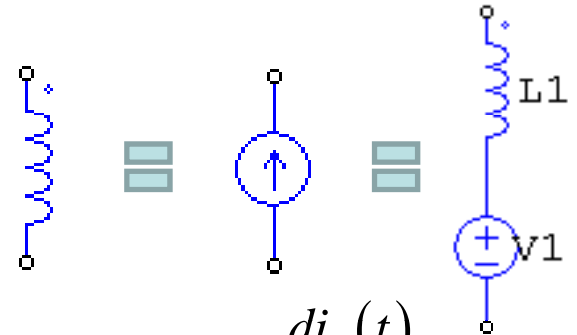
Fonte de corrente real

Revisão sobre fontes

Lembrando que:

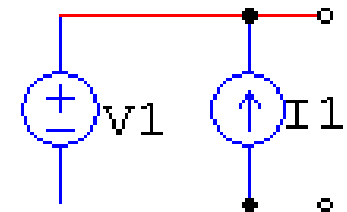
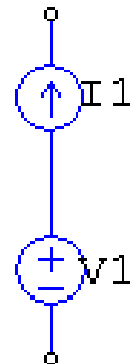
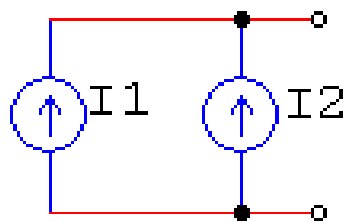
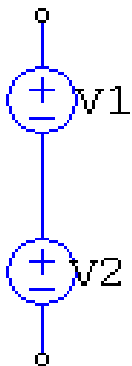


$$i_c(t) = C \frac{dv_c(t)}{dt}$$



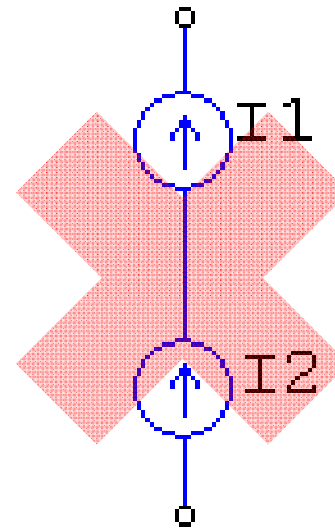
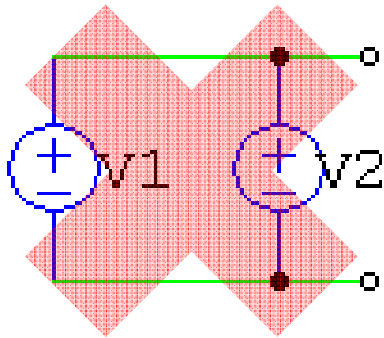
$$v_L(t) = L \frac{di_L(t)}{dt}$$

O que é permitido:



Revisão sobre fontes

O que é não é permitido:

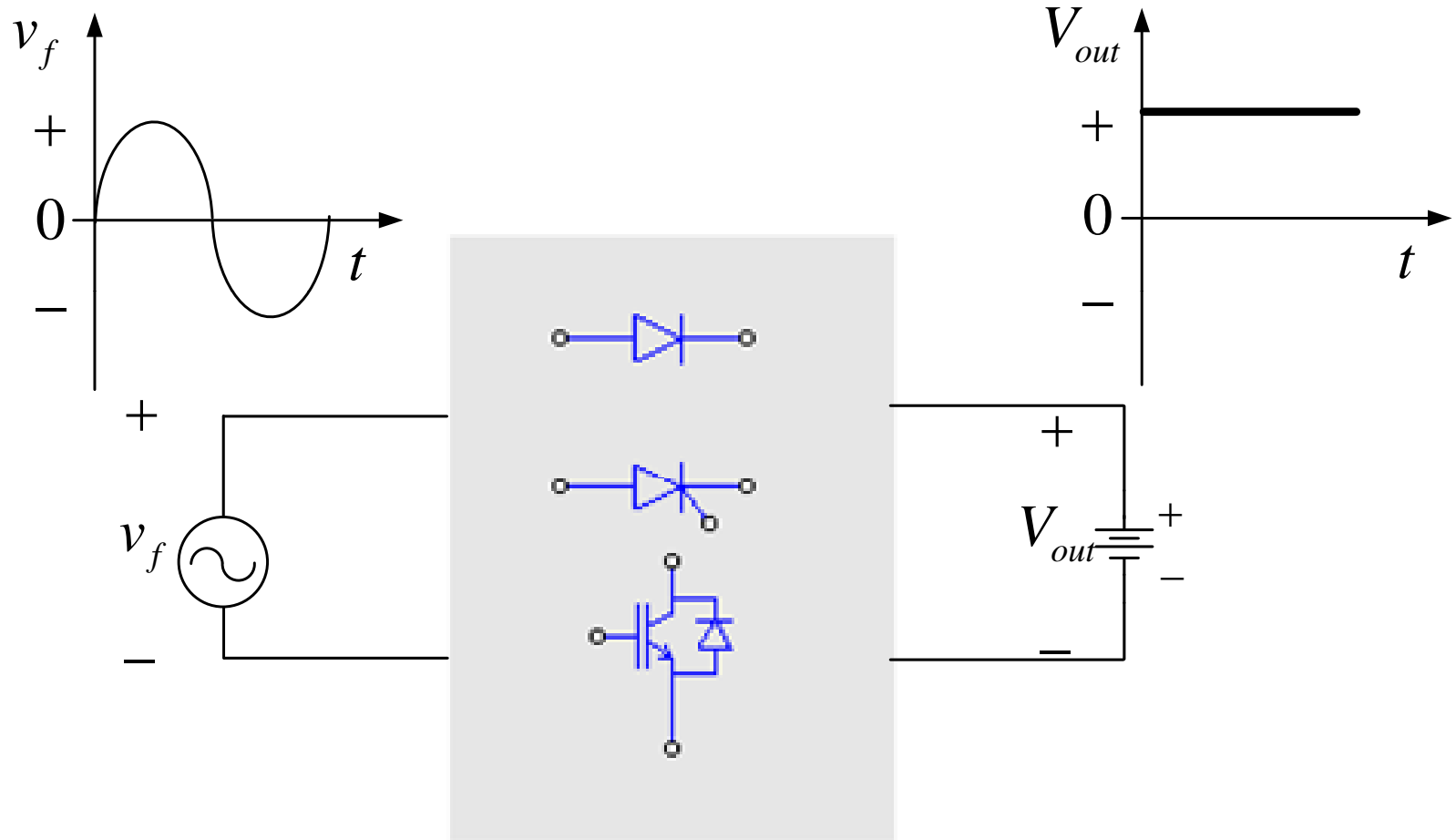


Conversores CA-CC

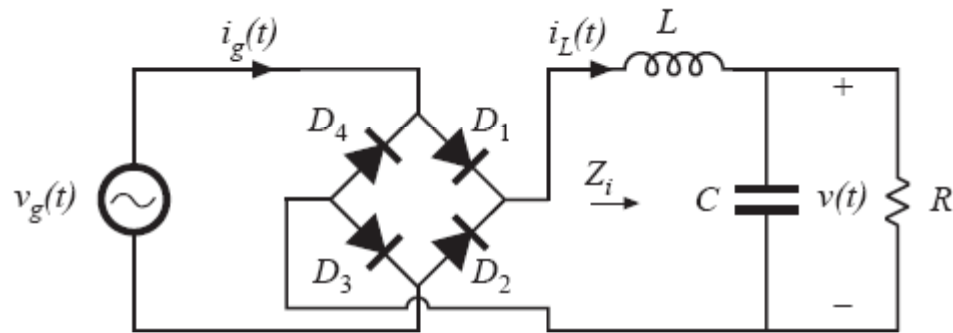
Conversores CA-CC:

- Denominados de retificadores: convertem a tensão alternada da rede de energia elétrica em uma tensão contínua;
- Podem ser monofásicos, trifásicos ou n-fásicos;
- Unidirecionais ou bidirecionais;
- Controlados ou não-controlados;
- Com ou sem correção de fator de potência;
- Podem ser isolados ou não-isolados;
- Um pulso ou múltiplos pulsos.

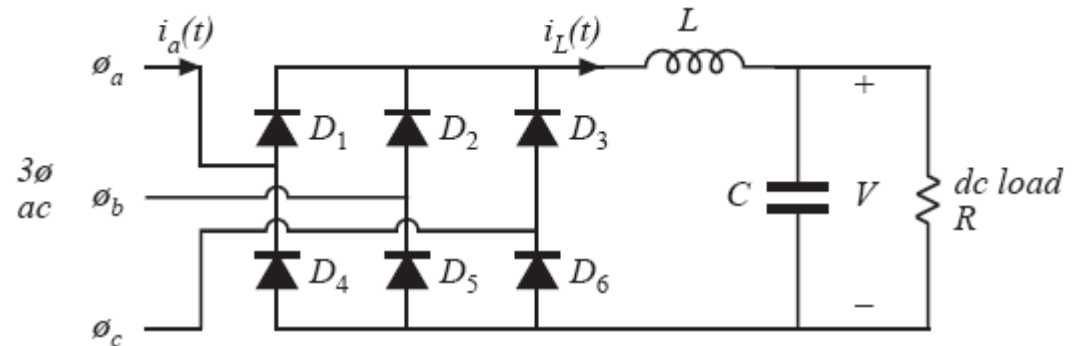
Conversores CA-CC – Princípio geral



Conversores CA-CC – Número de fases

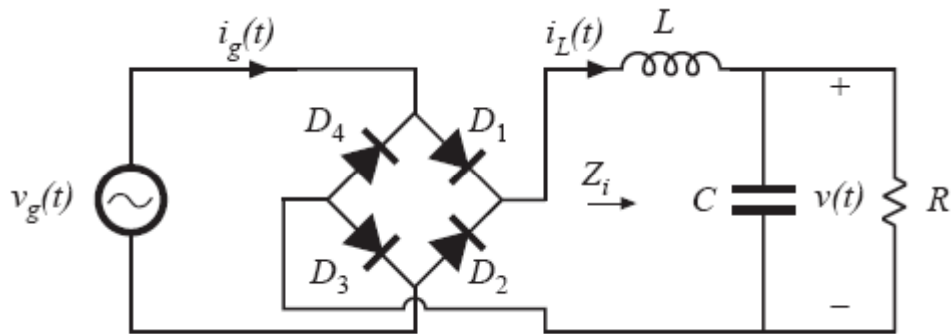


Monofásico



Trifásico

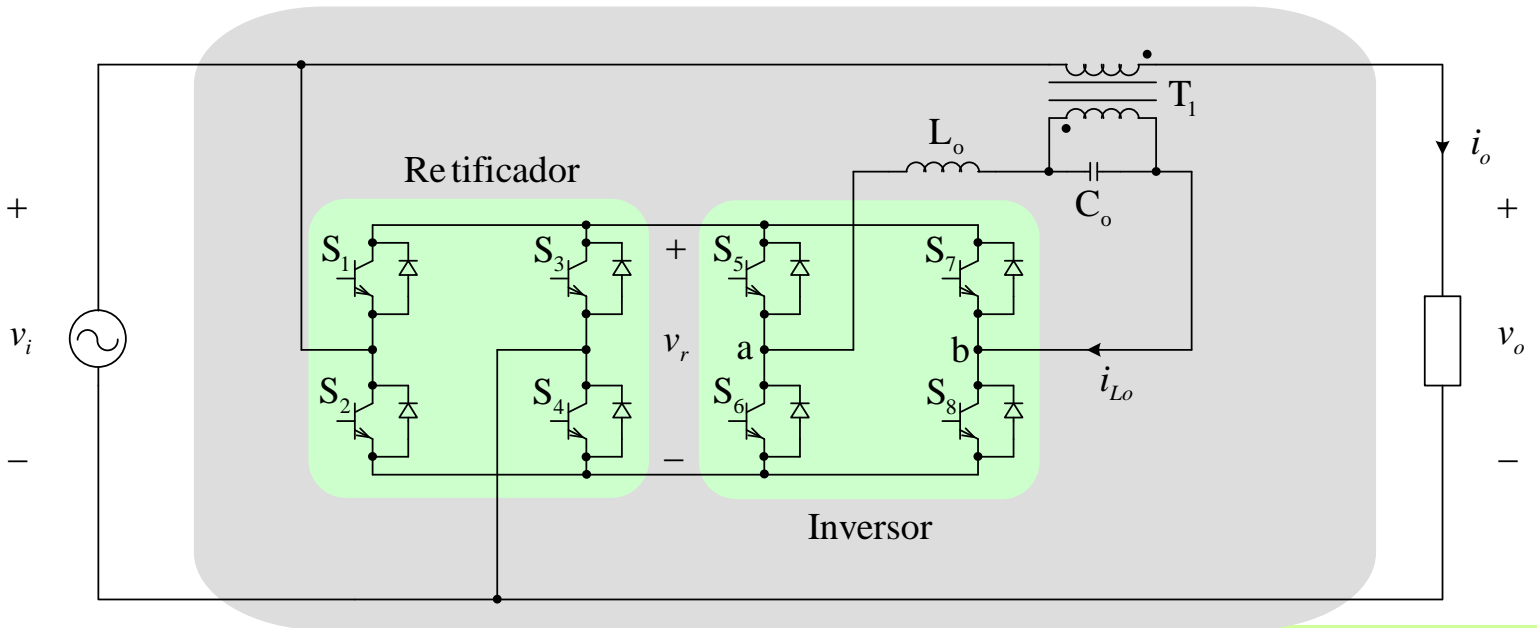
Conversores CA-CC – Direcionalidade



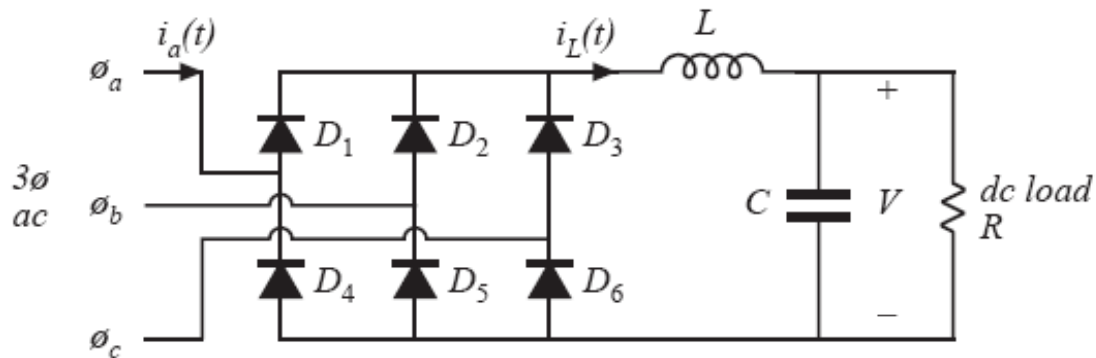
Unidirecional

Bidirecional

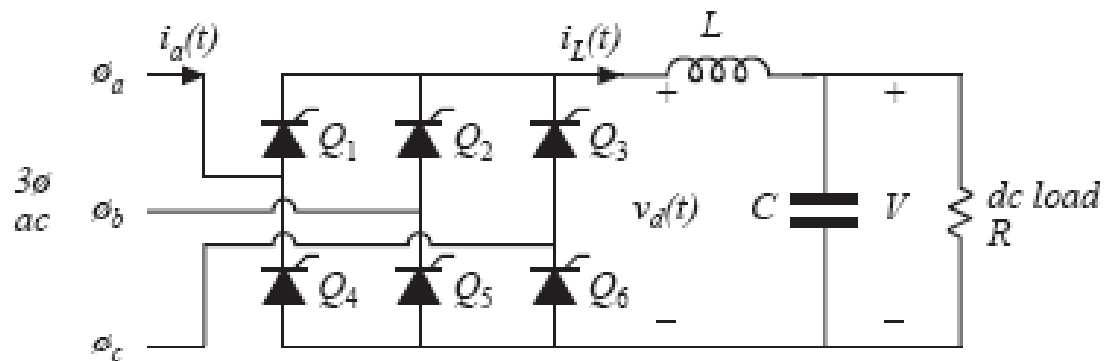
- v_{ds} +



Conversores CA-CC – Controle



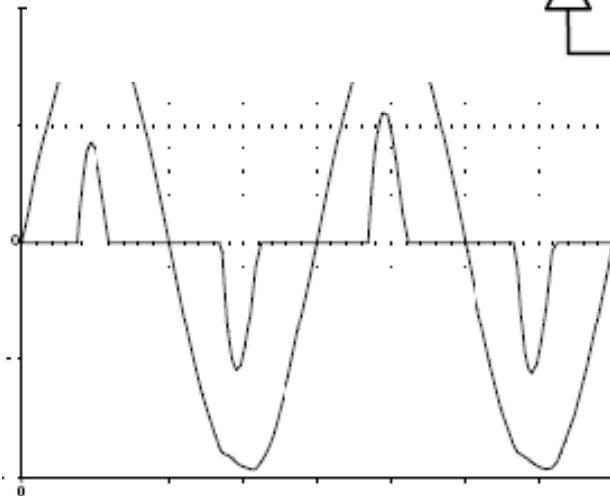
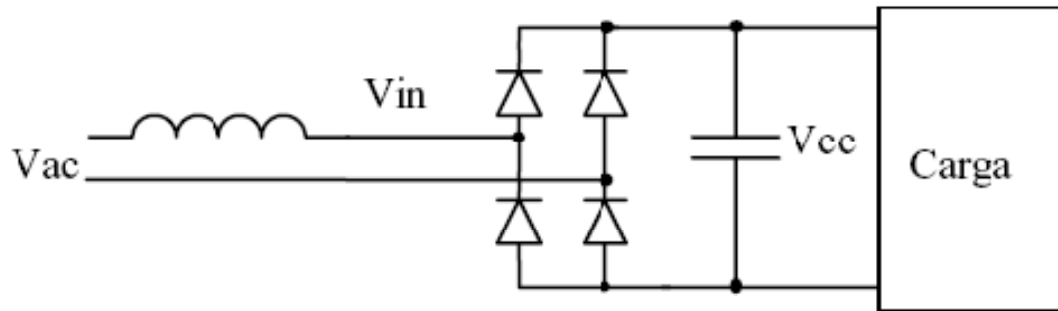
Não-controlado



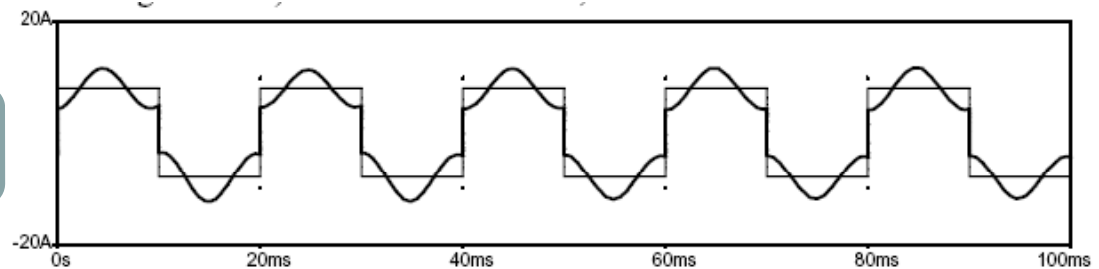
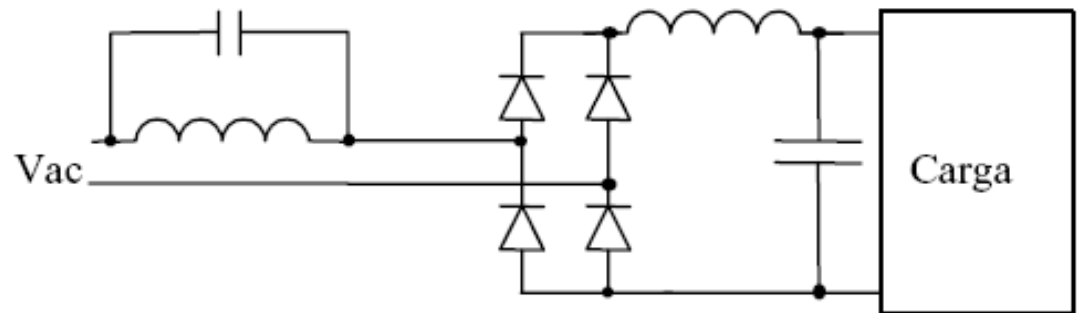
Controlado

Conversores CA-CC – Fator de potência

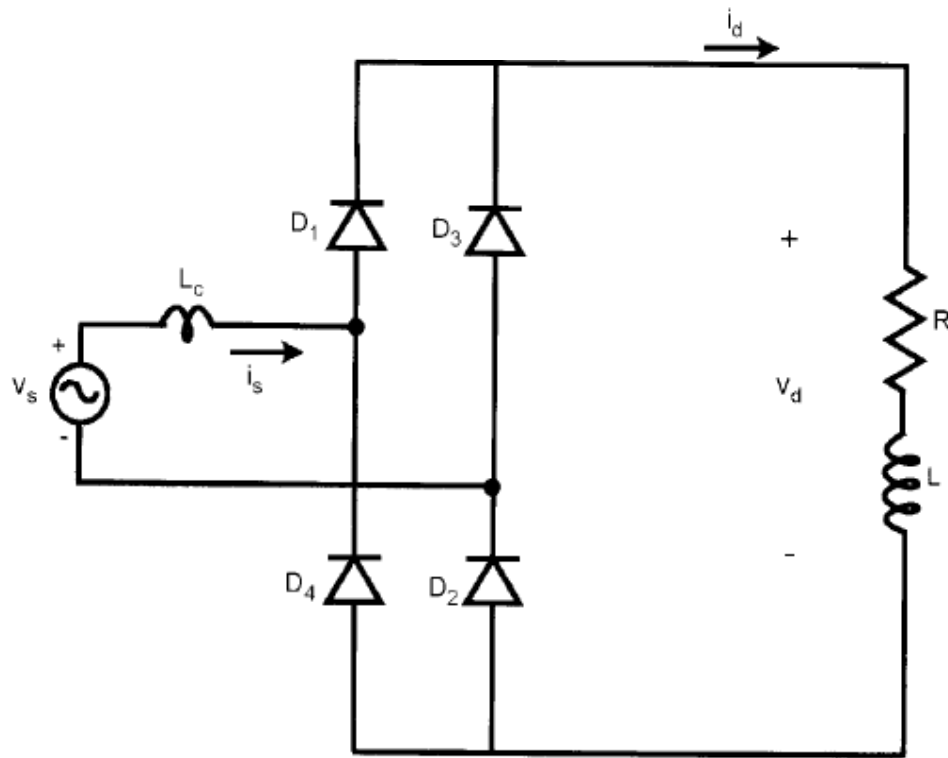
Sem correção



Com correção

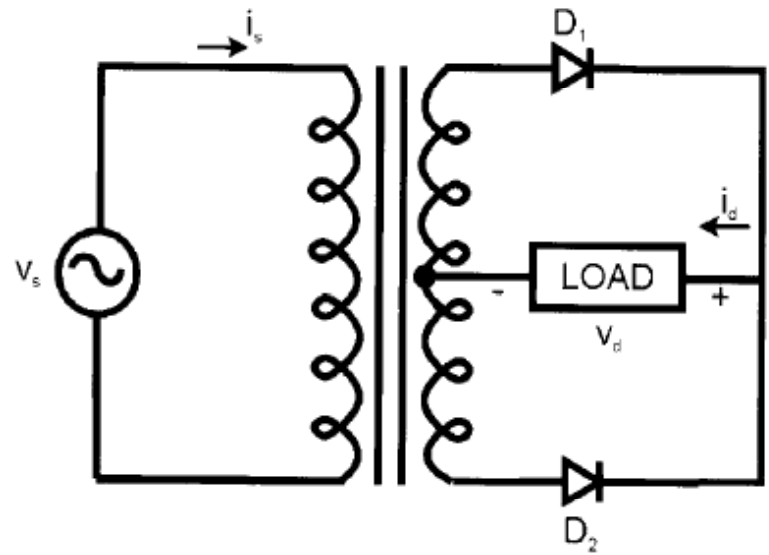


Conversores CA-CC – Isolamento

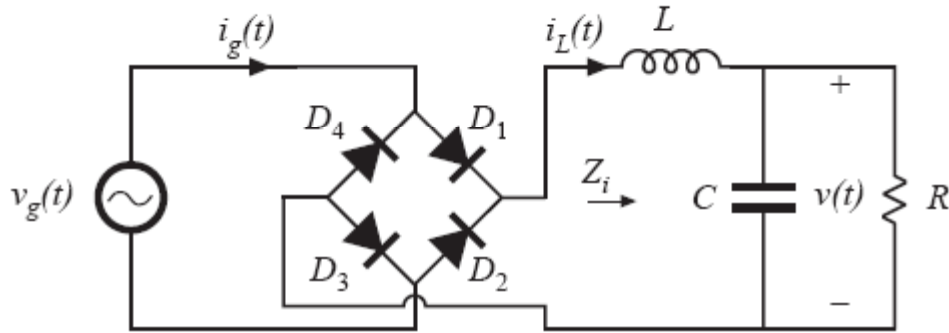


Não-isolado

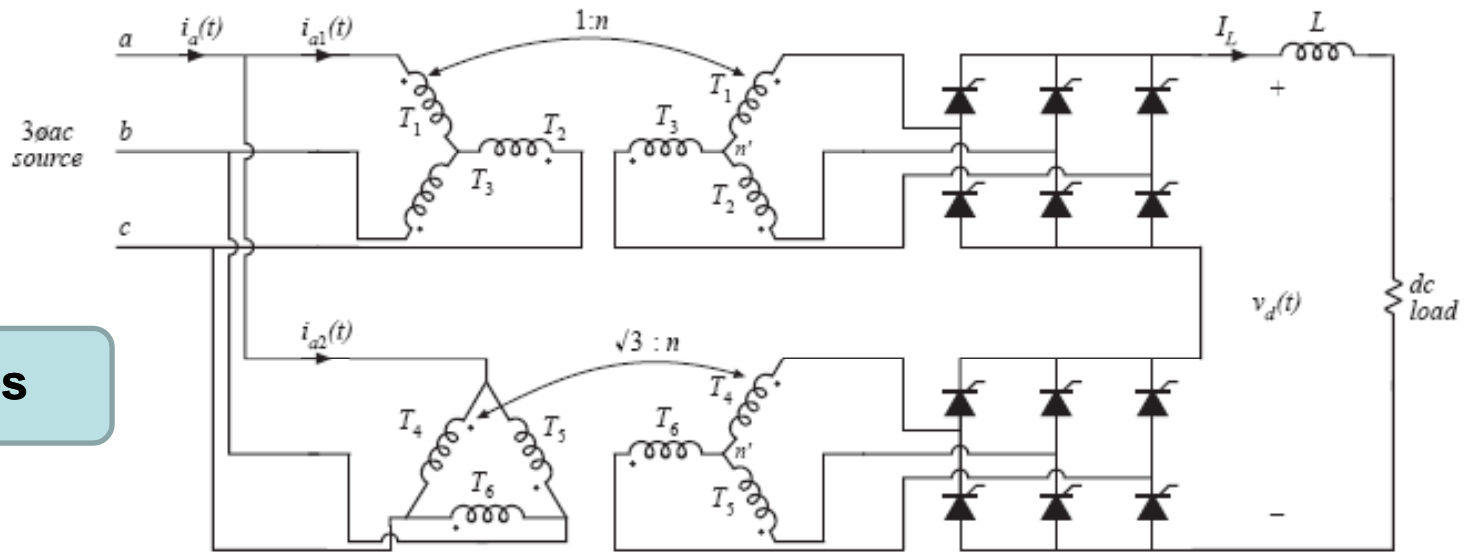
Isolado



Conversores CA-CC – Número de pulsos



2 pulsos

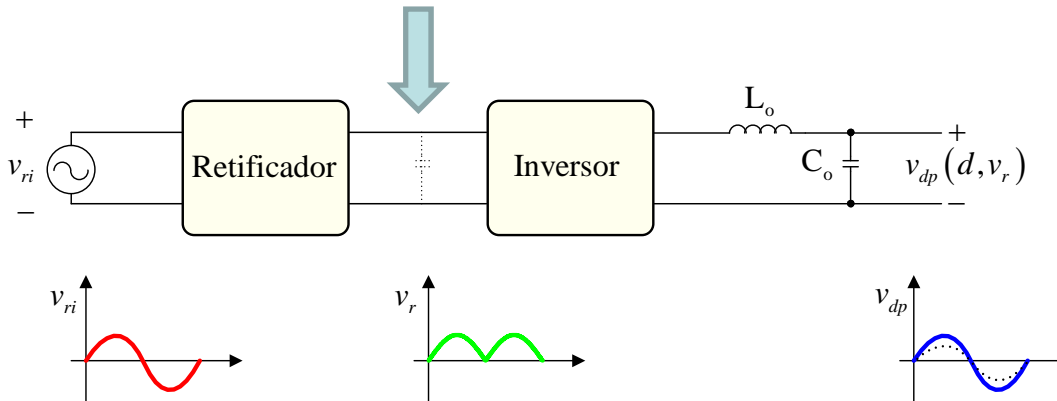


12 pulsos

Aplicações dos retificadores

Algumas aplicações:

- Processos eletroquímicos, tais como: anodização, produção de gases, refinamento de metais, eletrodeposição, etc.;
- Soldagem elétrica;
- Acionamentos a velocidade ajustável;
- Sistemas HVDC;
- Fontes de uso geral e ininterruptas;
- Interfaceamento de sistemas de energia alternativa com a rede de energia elétrica;
- Reatores eletrônicos e todos os outros circuitos que utilizam processamento indireto de energia.



Simuladores para eletrônica de potência

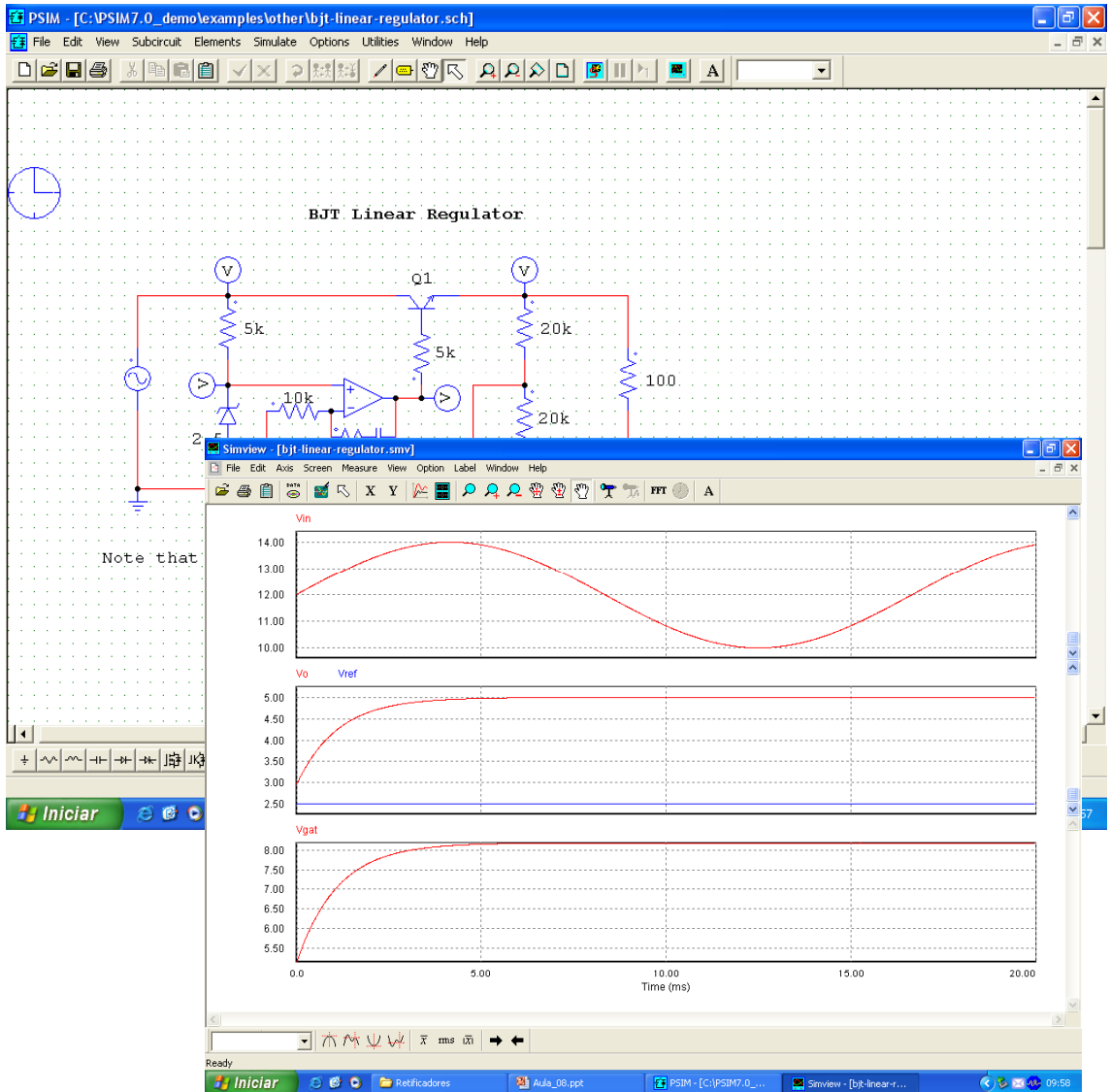
Psim:



www.powersimtech.com

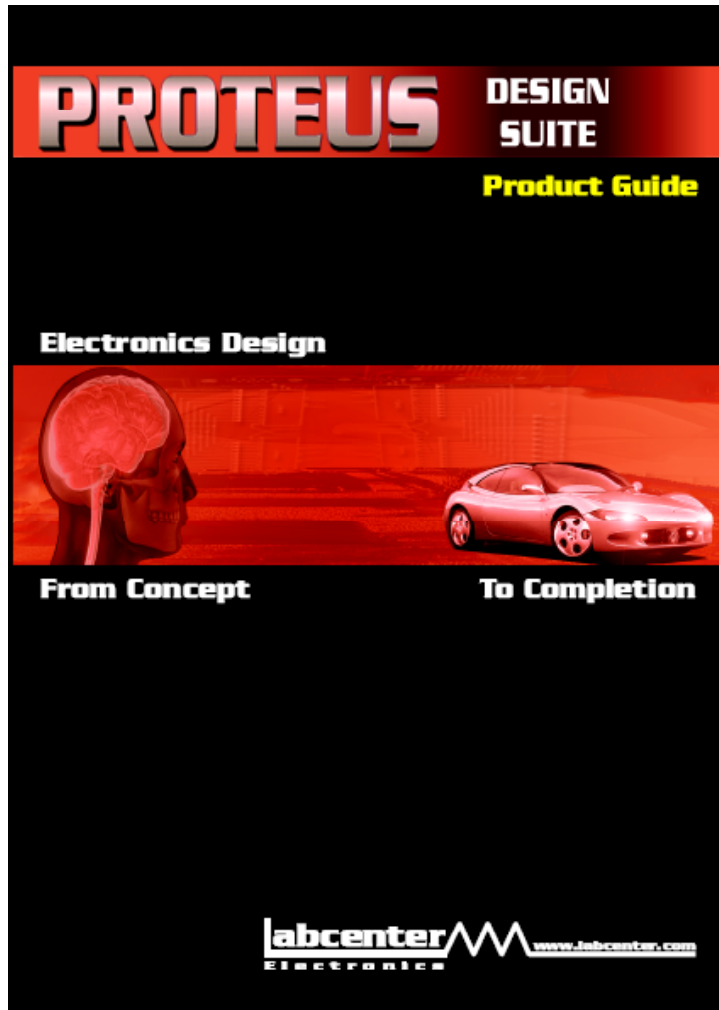


Baixar versão Demo



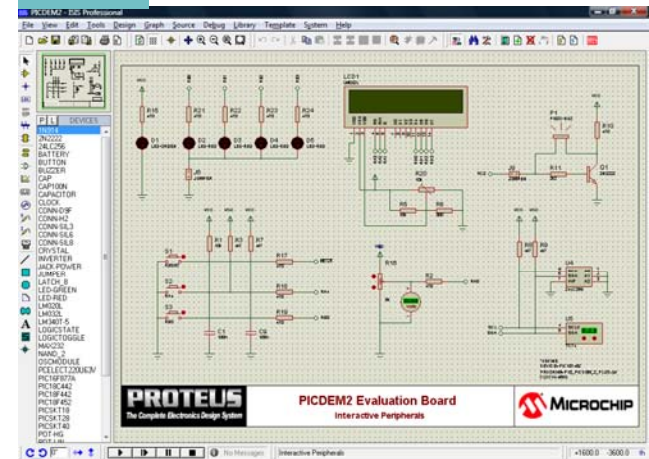
Simuladores para eletrônica de potência

Proteus:

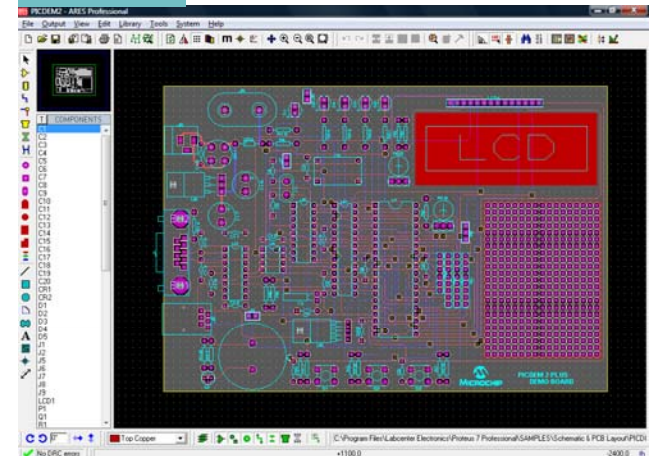


<http://www.labcenter.co.uk/>

ISIS

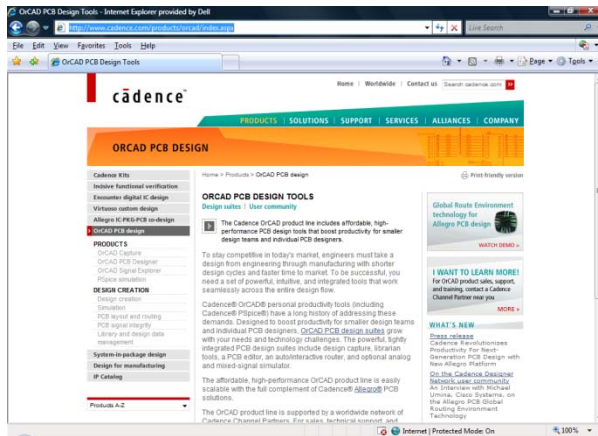


ARES

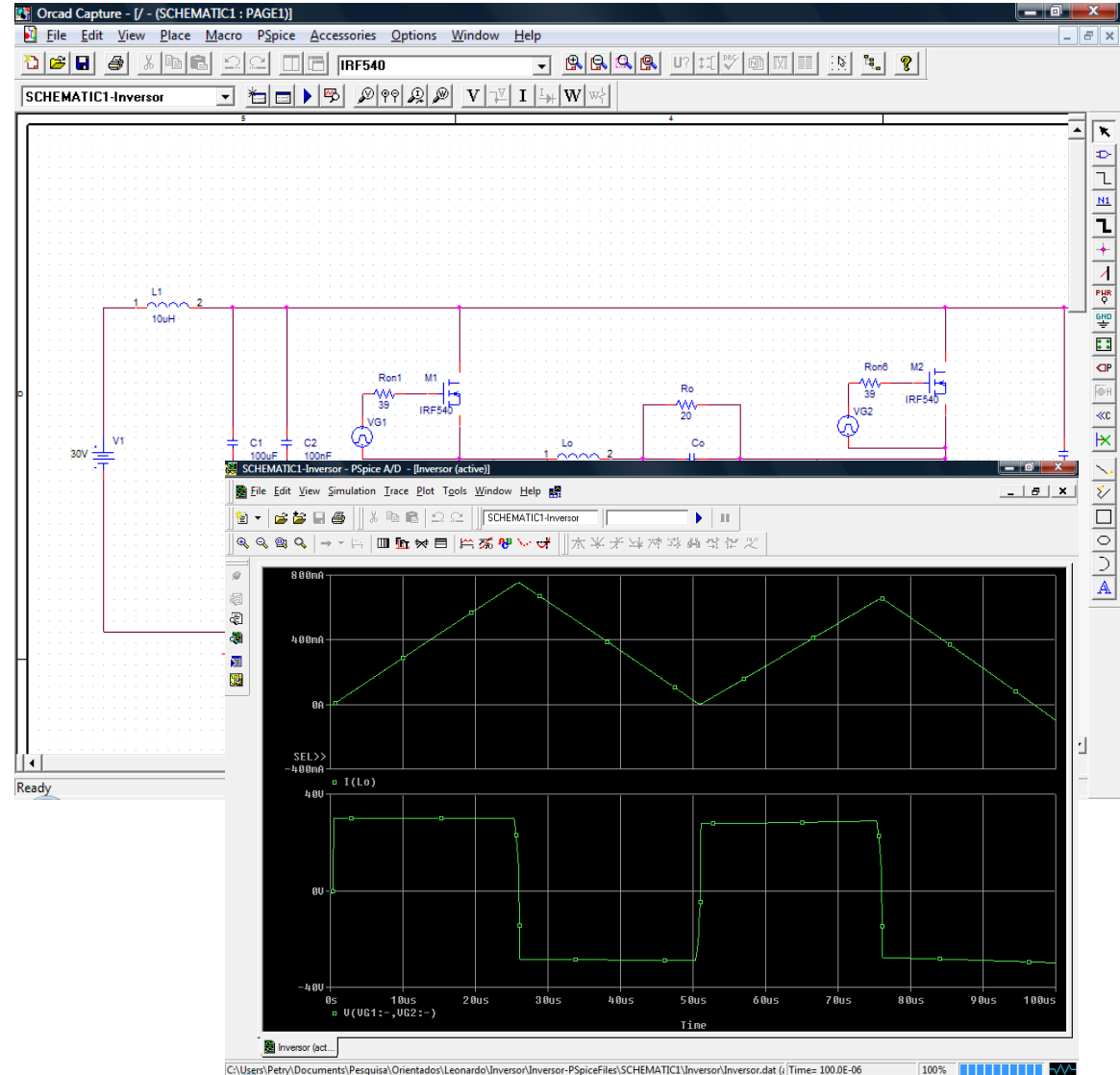


Simuladores para eletrônica de potência

Orcad (pspice):

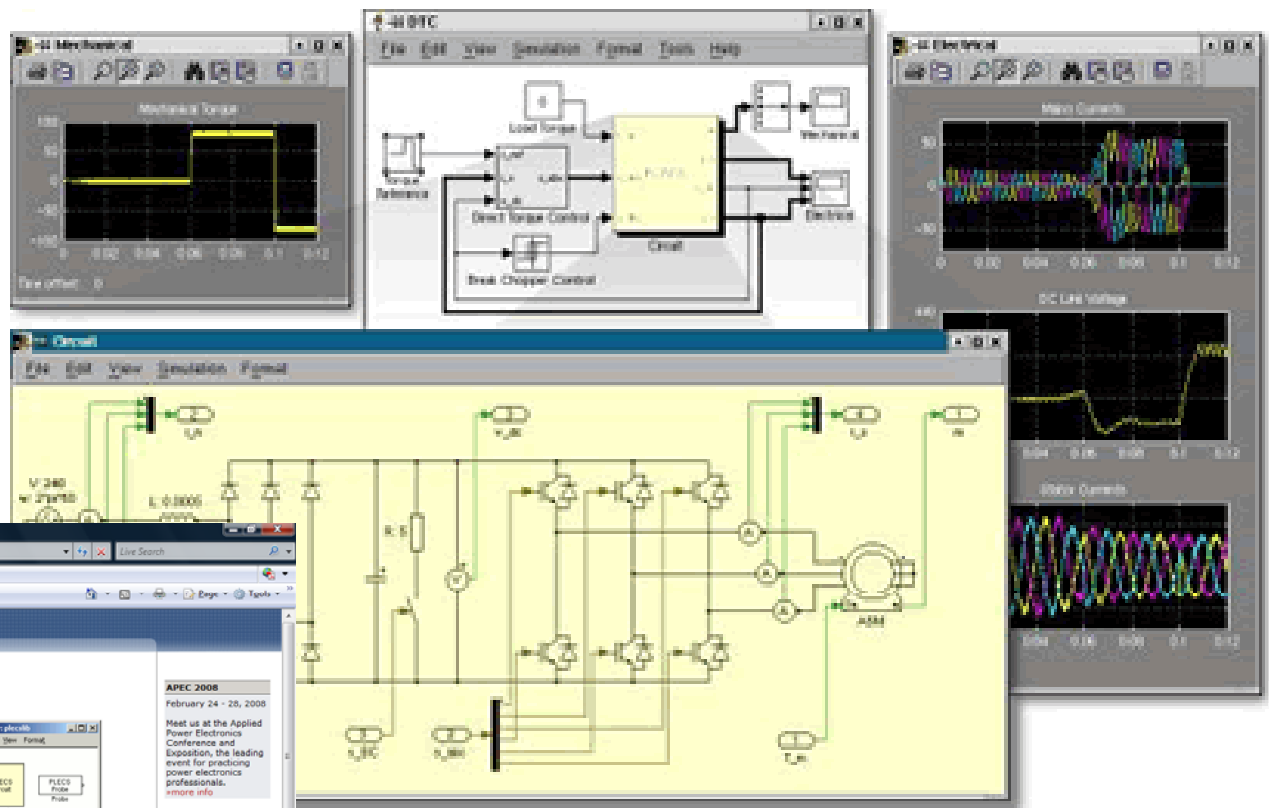


<http://www.cadence.com>



Simuladores para eletrônica de potência

Plexim:



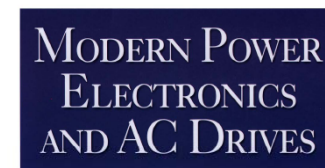
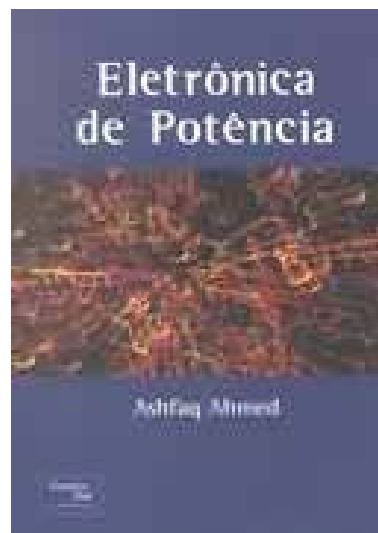
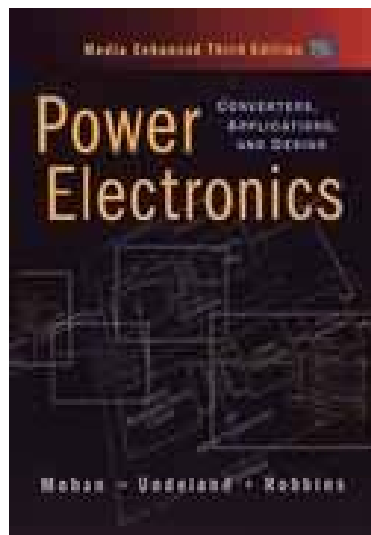
The screenshot shows the PLEX website in an Internet Explorer browser window. The address bar shows 'http://www.plexim.com/'. The website content includes a navigation menu on the left with items like Home, Product, Store, Downloads, Company, References, Events, Contact, and Support. The main content area features the heading 'Electrical systems and power electronics in Simulink' and 'New: Simulation software PLECS version 1.6'. Below this, there are sections for 'Analysis Tools', 'Access to State-Space Matrices', and 'New Behavioral Semiconductor Models'. A small window titled 'Library: plexlib' is also visible, showing 'PLECS Circuit' and 'PLECS Profile' buttons. The browser status bar at the bottom indicates 'Done' and 'Internet | Protected Mode On'.

<http://www.plexim.com>

Próxima aula

Conversores CA-CC:

1. Semicondutores aplicados a conversores CA-CC (diodos).



www.cefetsc.edu.br/~petry

