3 PHASE THYRISTOR

<https://prom-electric.ru/media/thyristor-rectifier.pdf>

Applications of thyristor three-phase bridges

Thyristor three-phase bridges are used to supply dc power to the excitation circuit of synchronous generators used in **large power plan**ts, such as synchronous generators in hydropower electric plants (see Figure 108). In this application, each thyristor bridge operates as a rectifier to supply dc power to the excitation circuit of a synchronous generator. The amount of excitation is set to the exact value required by adjusting the firing angle of the thyristor bridge. This is achieved via closed-loop control. Thyristor three-phase bridges are also used **in high-voltage, direct-current (HVDC) power transmission lines**. Before transmission over the line, power is converted from ac to dc by thyristor three-phase bridges set to operate as rectifiers. At the other end of the HVDC power transmission line, dc power is converted back to ac power by thyristor three-phase bridges set to operate as inverters. HVDC power transmission lines permit the interconnection of electric power grids or networks with different frequency or voltage, so that power can be exchanged between them.

* Fully controlled
* Ripple is low
* Input current thd low
* Inverter mode available
* 6 thyristors (much)

SINGLE PHASE THYRISTOR

Controlled rectifiers have a wide range of applications, from small rectifiers to large high voltage direct current (HVDC) transmission systems. They are used for electrochemical processes, many kinds of motor drives, traction equipment, controlled power supplies, and many other applications

-fully controlled

- input current is problem

-inverter mode is available

- 4 thyristor (less than 3phase)

- ripple is high

DIODE RECTIFIER + BUCK CONVERTER

* No thyristor
* One gate signal for buck diode
* No inverter mode