

Motor Starter



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Square D
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MOTOR STARTER

Starting Motor secara Elektromekanik

Starting Motor secara Elektronik



Starting secara Elektromekanik

Metode yang umum digunakan:

- Direct-on line
- Star delta
- Auto-transformer

Pemilihan starting motor secara elektromekanik tergantung dari aplikasi dan besar motor yang digunakan

DOL

Direct On Line Starter

Karakteristik Umum

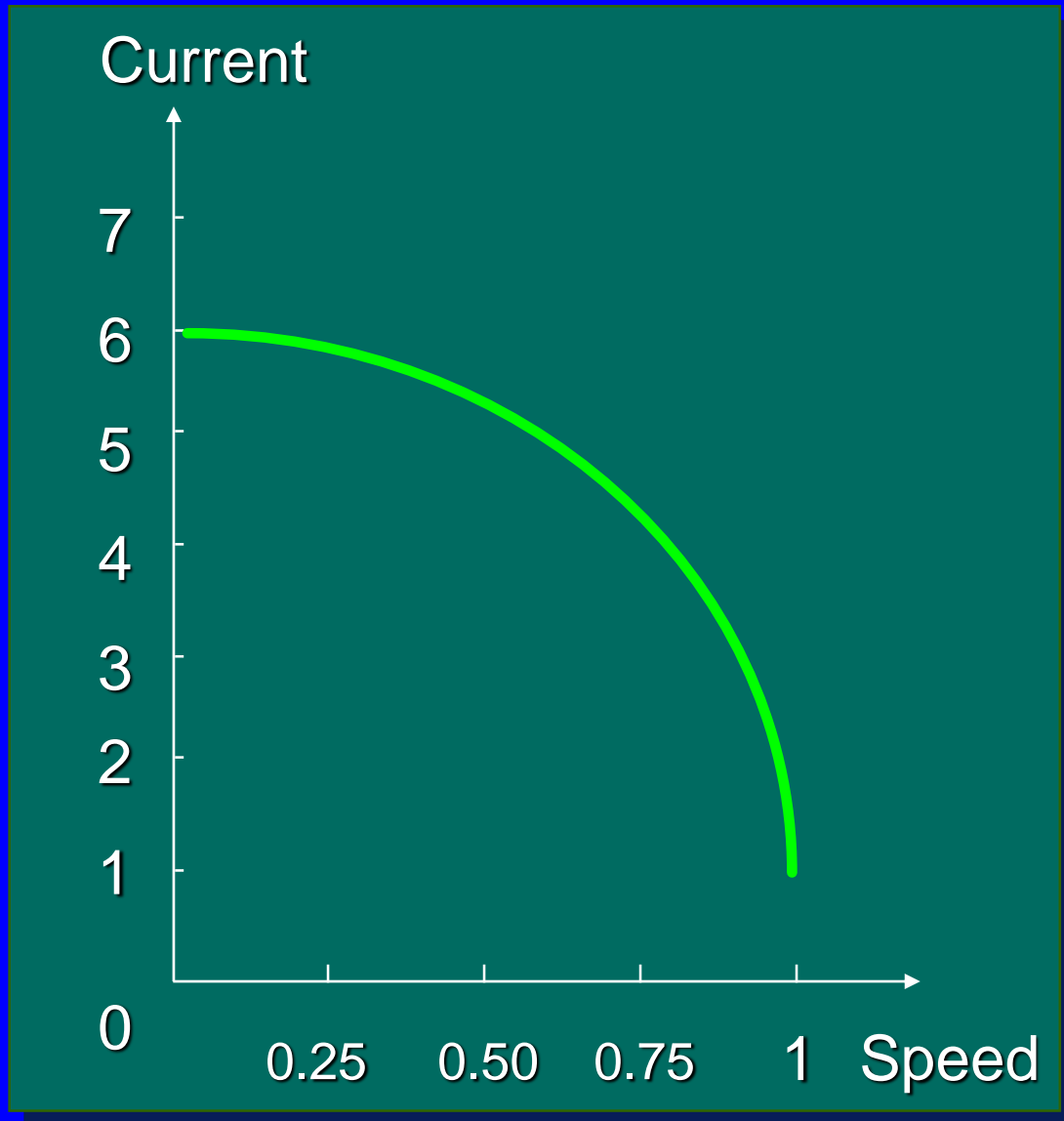
- **Current Start:**
 - 4 - 8 kali rated current
- **Starting torque:**
 - 0.5 - 1.5 kali rated torque
- **Utilisation criteria:**
 - 3-terminal motor
 - simple equipment
- **No parameter adjustment**



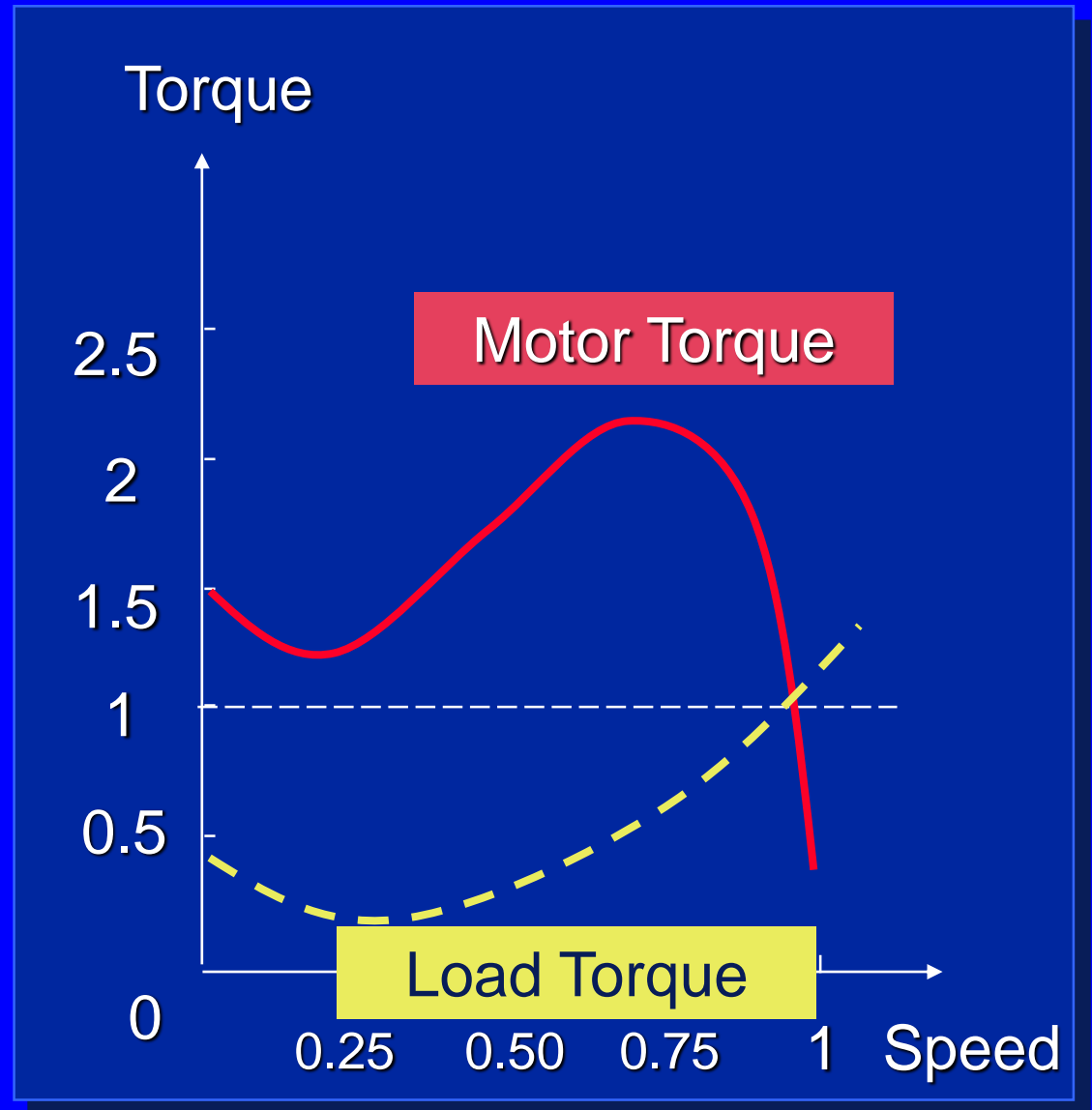
DOL

Direct On Line Starting

Current/Speed Curve



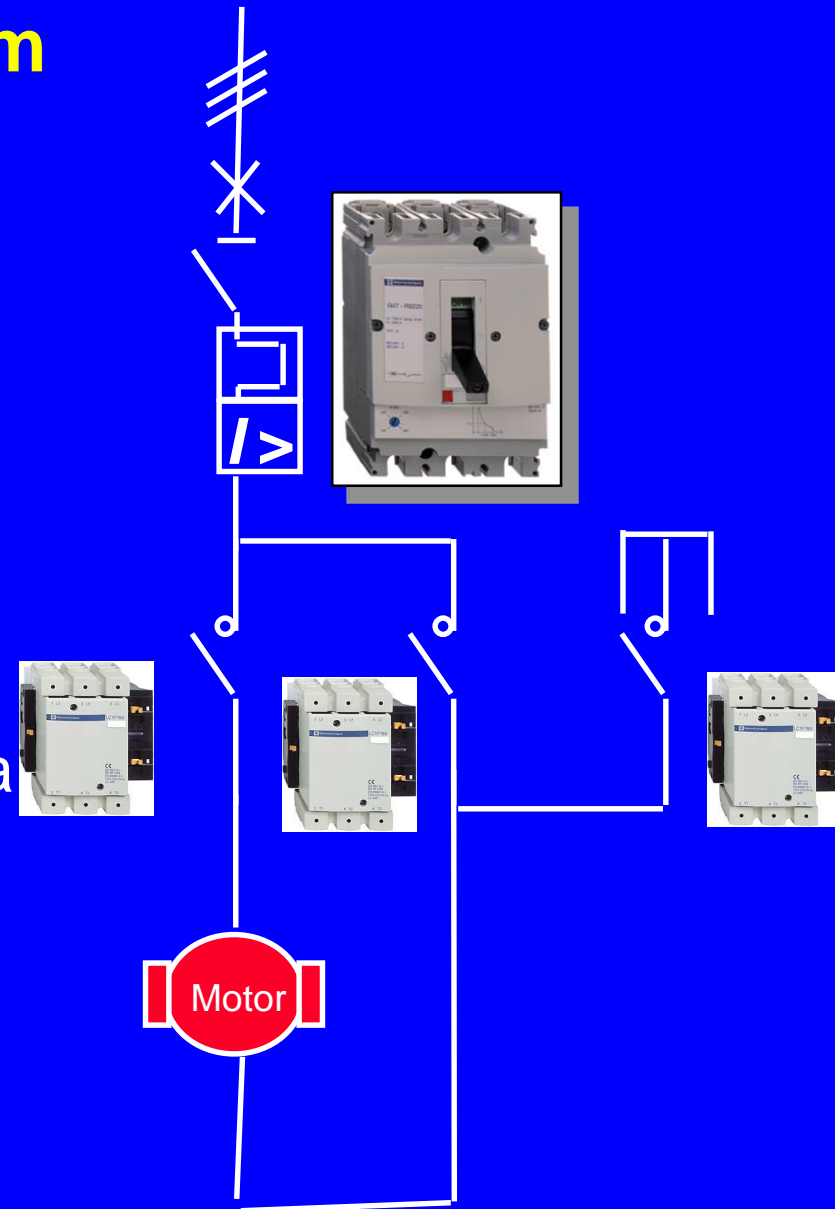
Torque/Speed Curve



Star Delta Starter

Karakteristik Umum

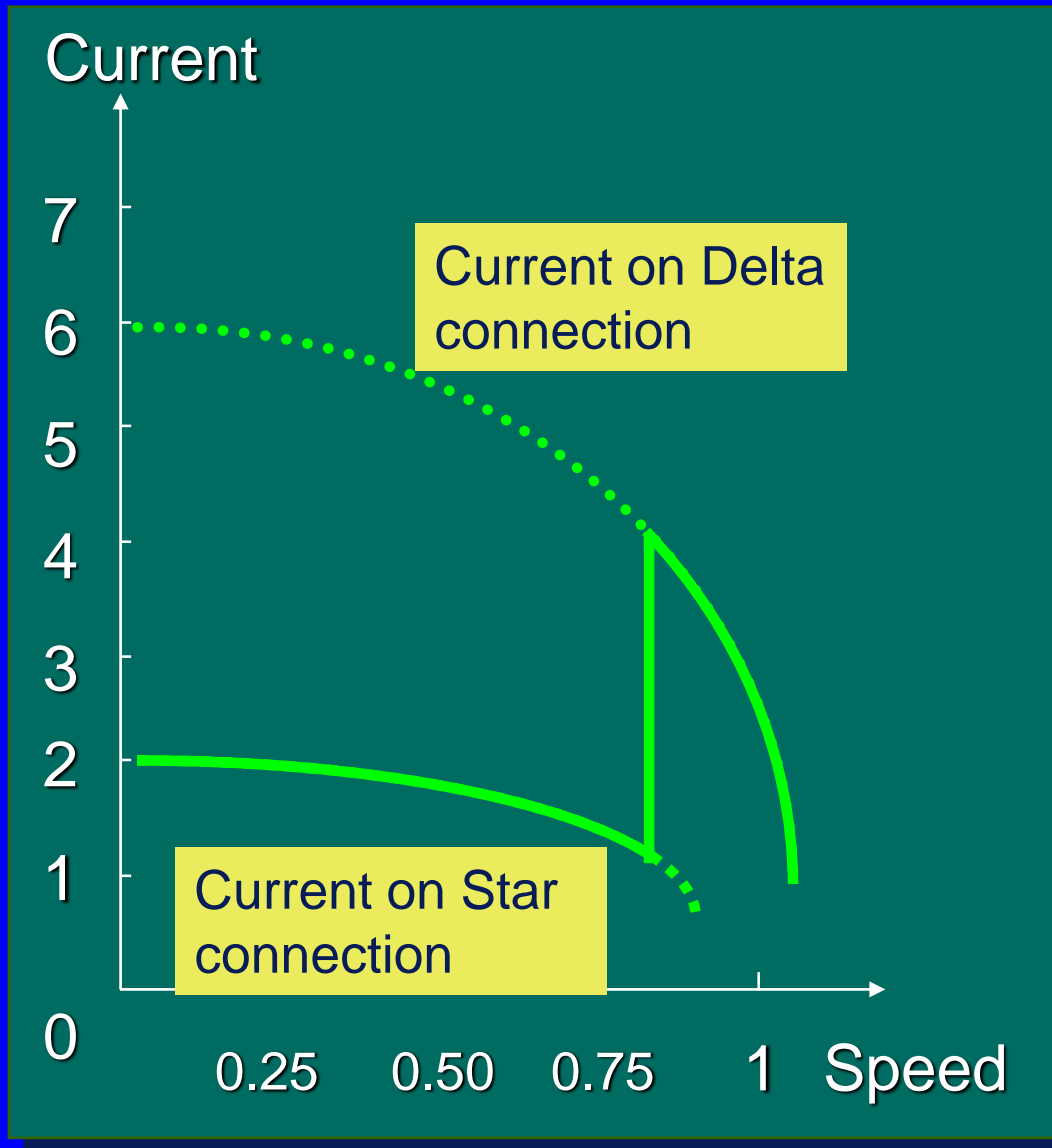
- **Starting current**
 - 1.8 - 2.6 kali rated current
- **Starting torque:**
 - 0.5 kali rated torque
- **Utilisation criteria:**
 - 6 terminal motor
 - torque peak on change from star to delta
- **No parameter adjustment**



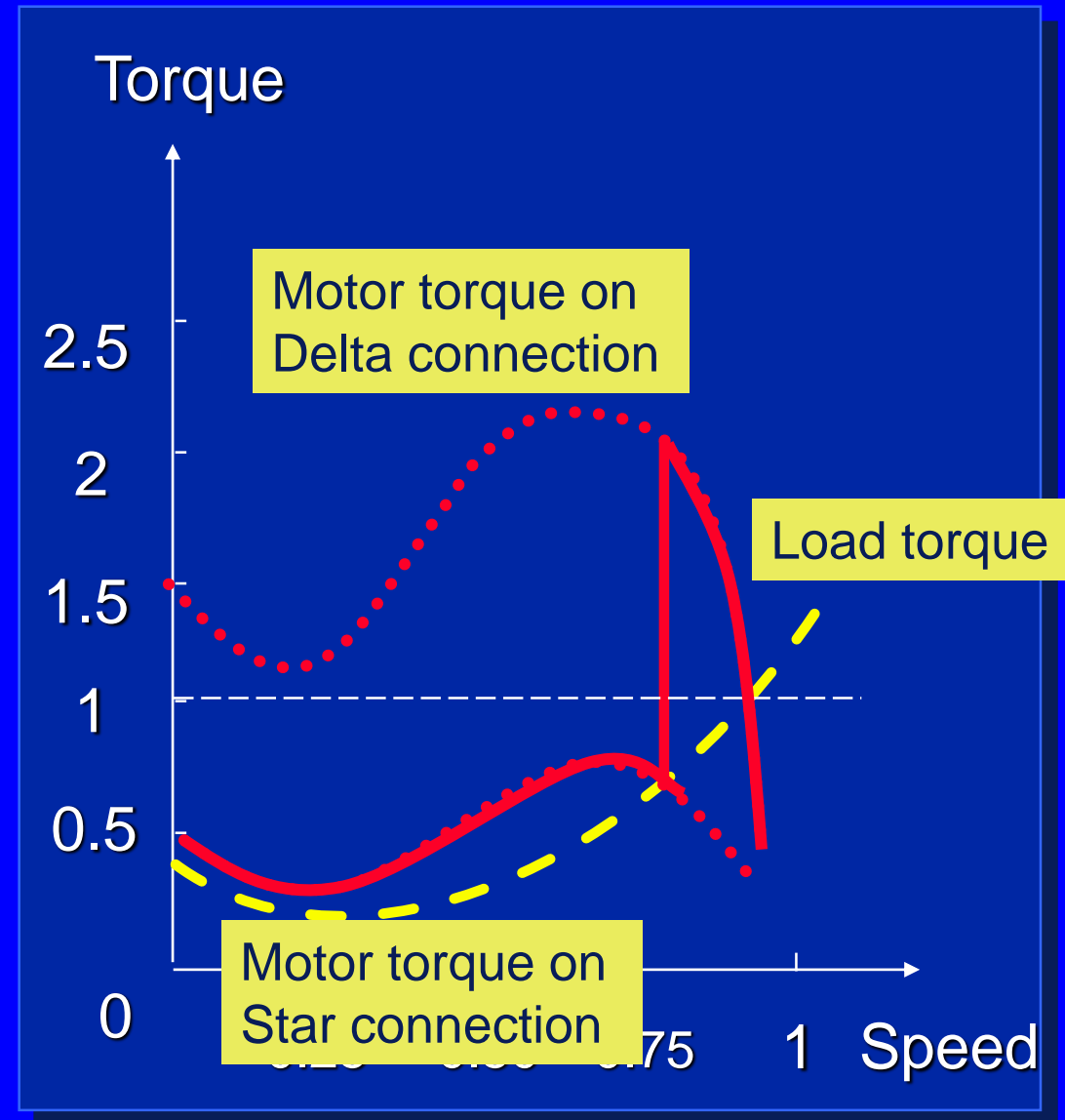


Star Delta Starting

Current/Speed Curve



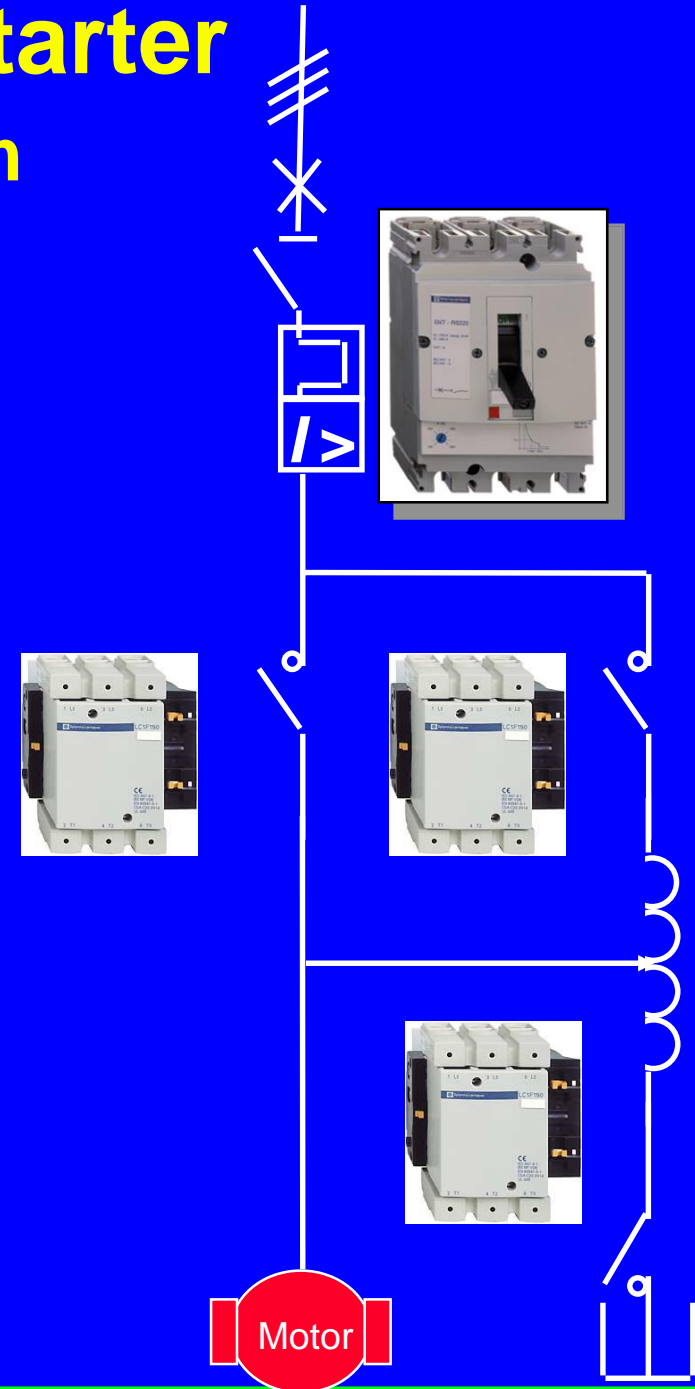
Torque/Speed Curve



Autotransformer Starter

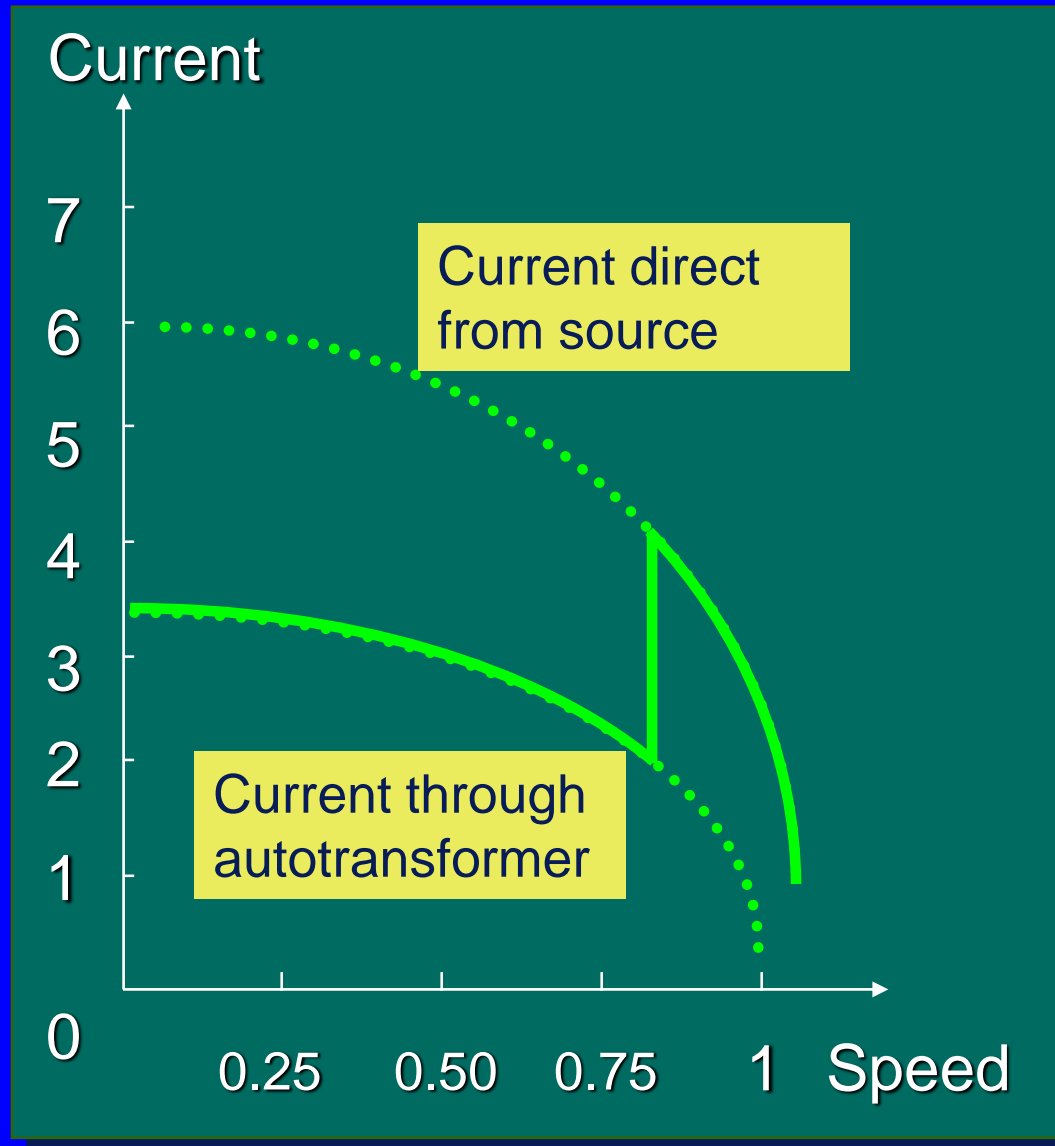
Karakteristik Umum

- **Starting current**
 - 1.7 - 4 kali rated current
- **Starting torque:**
 - 0.4 - 0.85 kali rated torque
- **Utilisation criteria:**
 - 3 terminal motor
- **No parameter adjustment**

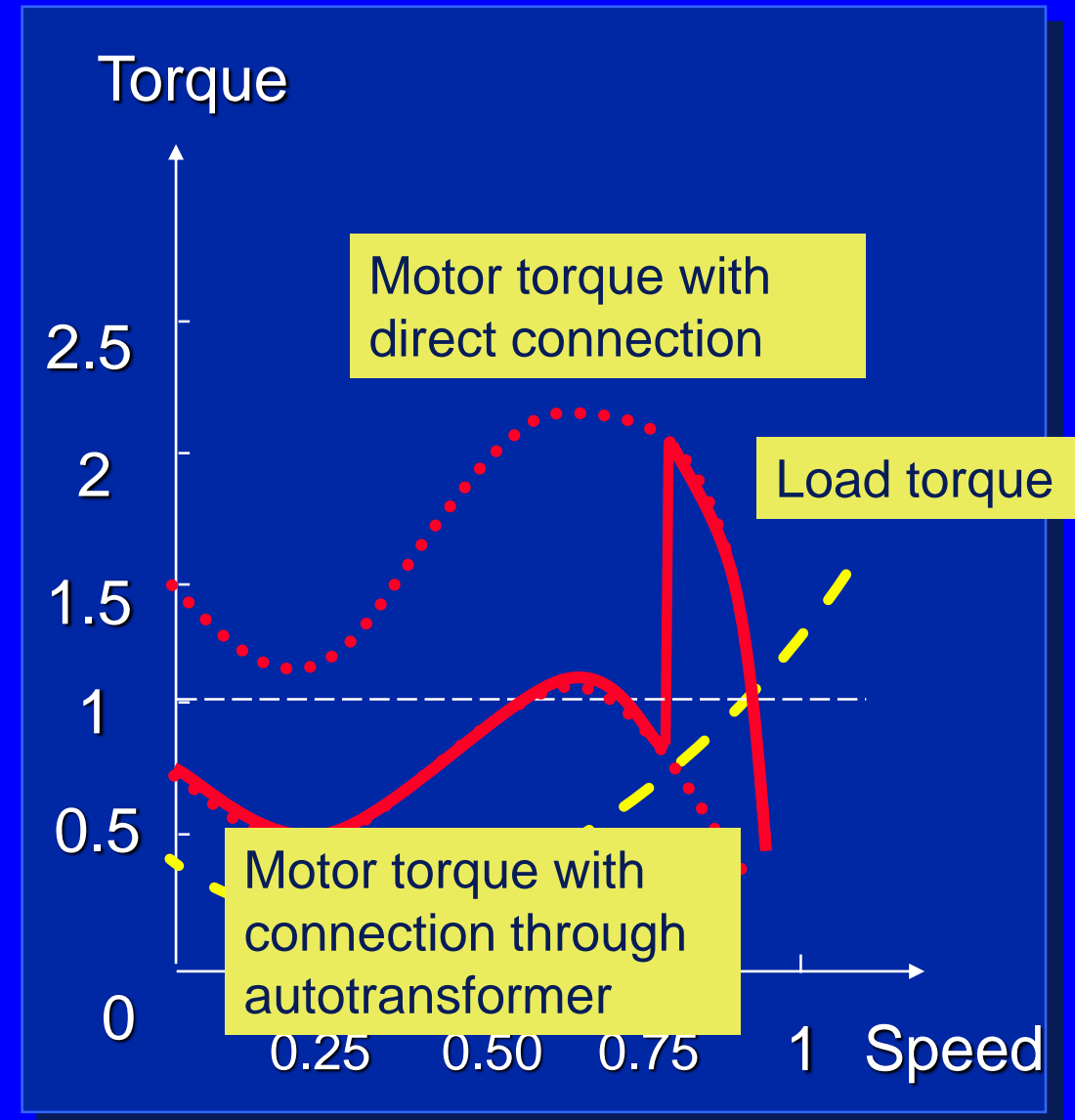


Autotransformer Starting

Current/Speed Curve



Torque/Speed Curve



DOL

Starter Motor Menggunakan DOL (Direct OnLine Starter)

Diskoneksi

Switching

Proteksi Short Circuit

Power Control

Proteksi Overload

DOL

DOL Starter 3 Komponenten - Konvensional



Circuit
Breaker

Contactor

TOR



Disconnection

Switching

Short Circuit Protection

Power Control

Overload Protection

DOL

Solusi GV

GV
Motor
Circuit
Breaker



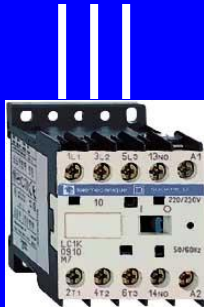
Disconnection

Switching

Short Circuit Protection

Overload Protection

LC1
Contactor



Power Control



...DOL starter dengan 2 Komponen

... built-in thermal overload protection disesuaikan untuk aplikasi motor

Solusi GV

- Dengan hanya menggunakan 2 komponen, sudah tercakup 5 fungsi dari DOL starter s/d 110kW
- Untuk Direct on line starter s/d 7.5 kW ...
 - GV2 dan kontaktor dihubungkan dengan combi-block
 - Easy mounting – hanya butuh 1 din rail
 - Easy selection - one part number per motor kW rating
 - starter kualitas tinggi yang ekonomis

Range GV

Amp

0.1 to 32

GV2



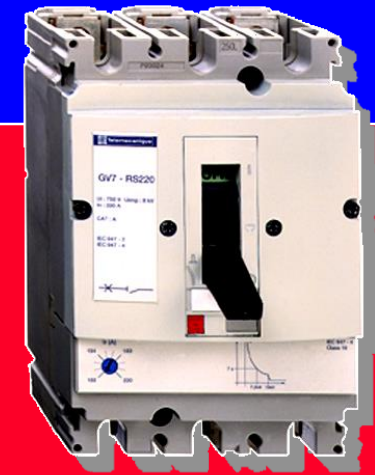
1 to 80

GV3



25 to 220

GV7



Aksesori GV

63 A busbar

Instantaneous
auxiliary contact

Undervoltage
trip unit

Short-circuit
signaling contact



Shunt trip

Fault
signaling contact

Padlockable
rotary handle

Range Kontaktor

AC3
Amp



6 to 9

K



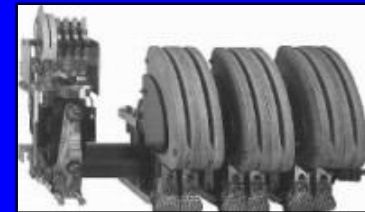
9 to 150

D



185
to
800

F



750
to
1800

B



80
to
1800

CV

Aksesori Kontaktor

**Instantaneous
auxiliary contact**

**Cabling
Accessories**

**Time delay
auxiliary contact**



Coil suppressor

**Mechanical
Interlock**



Starting secara Elektronik

Metode yang digunakan:

- Soft Starter
- Variable Speed Drive

Pemilihan starting motor secara elektronik tergantung dari tujuan pemakaian

ATS

Soft Starter

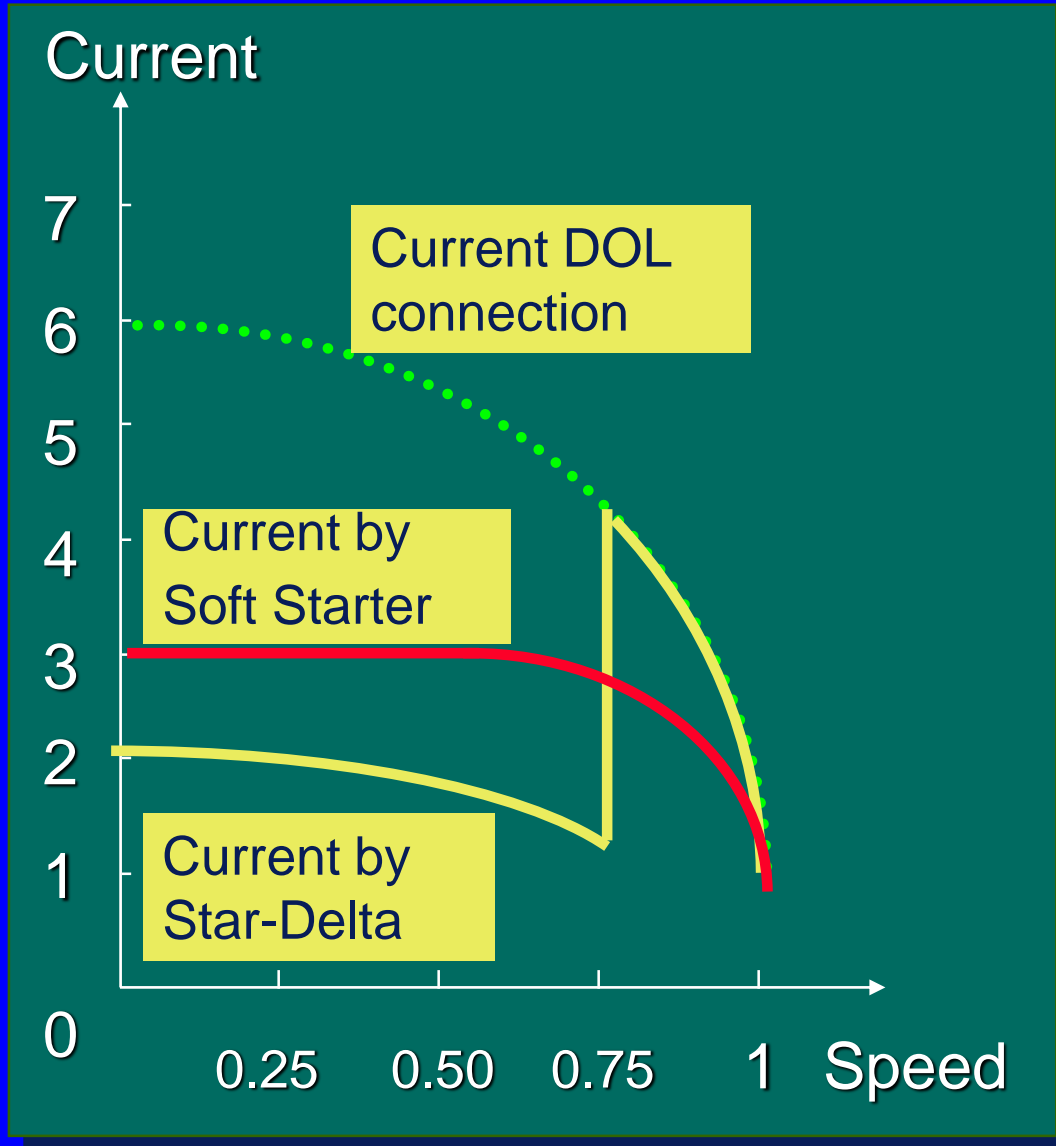
Karakteristik Umum

- **Starting current**
 - 2 - 5 kali rated current
- **Starting torque:**
 - 0.15 – 1 kali rated torque
- **Utilisation criteria:**
 - 3 terminal motor
- **Adjustable acc and dec**
- **dc injection braking**



Soft Starter

Current/Speed Curve



Torque/Speed Curve

