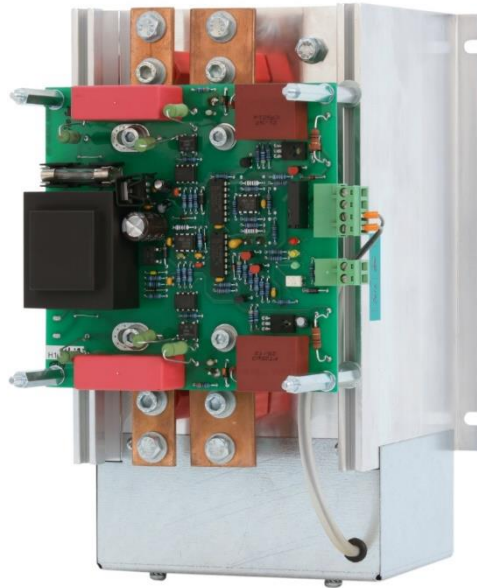


BLR-CM Controller+TS

BELUK



A fast switch needs a fast controller

BELUK CM controllers with transistor outputs have a real-time algorithm with approx. 1 ms reaction time after measurement.

All needed steps to reach the target cos phi are switched simultaneously.

After measuring one cycle of mains voltage, the control deviation is calculated and all necessary steps are switched in one operation. The time from end of measuring to generation of the switching pulse is less 150µsec.

Facts:

BELUK

- Thyristor switch for rapid switching of capacitors in dynamic compensation systems
- Switching without inrush current, smooth disconnecting
- High switching frequency
- Recovery time 20ms
- Permanent load

Features / Application:

BELUK

Advantages of Thyristor switches

- fast (next zero crossing)
- no wear and tear (unlike contactors)
- smooth (no transients)

Therefore typical uses are:

- dynamic changing loads (elevators, cranes, welding sets,...)
- rapid back and forth switching loads

switching characteristic

BELUK

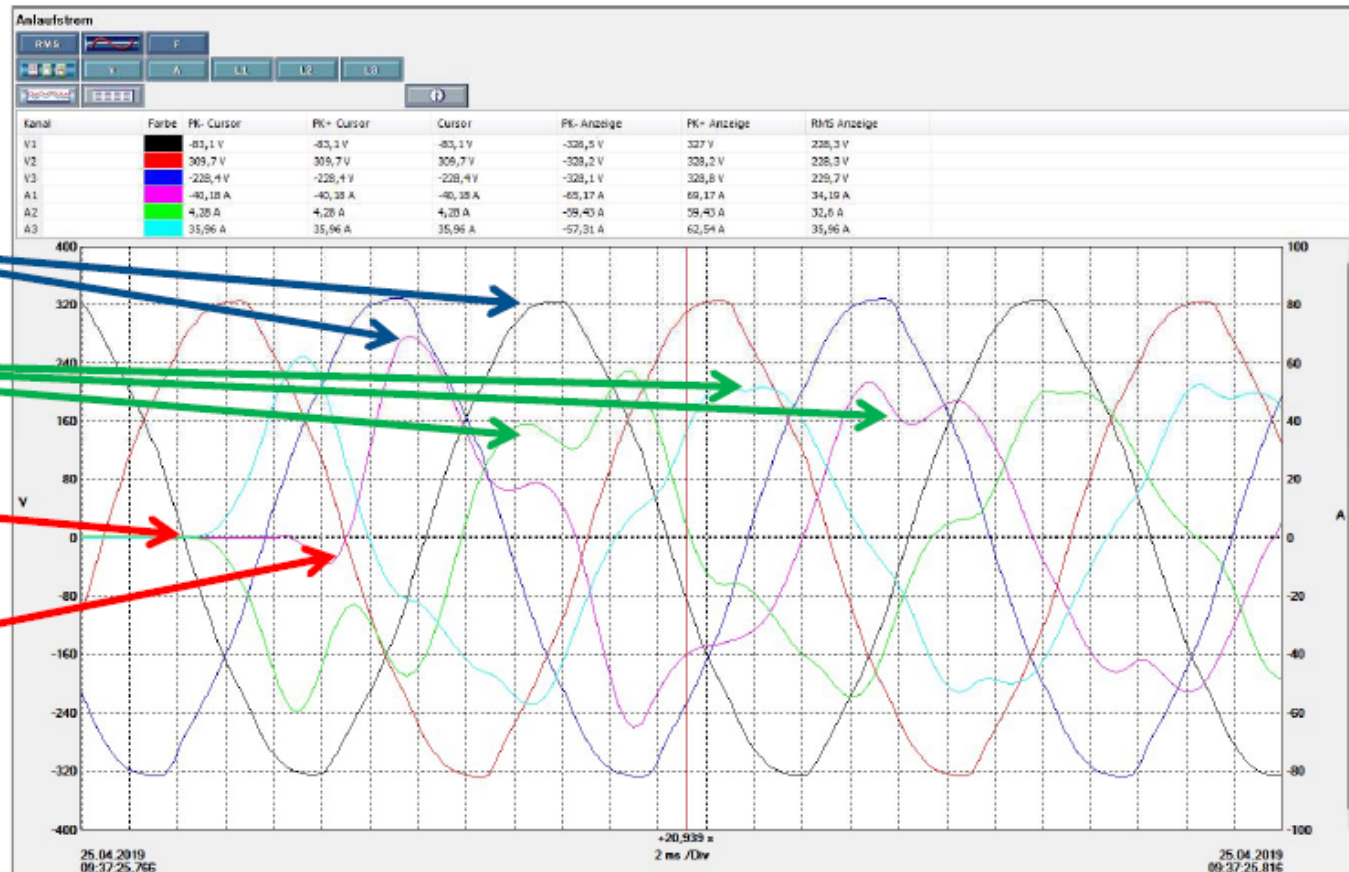
Switch-ON of a 25 kvar 3-phase capacitor
by an BEL-TS thyristor switch:

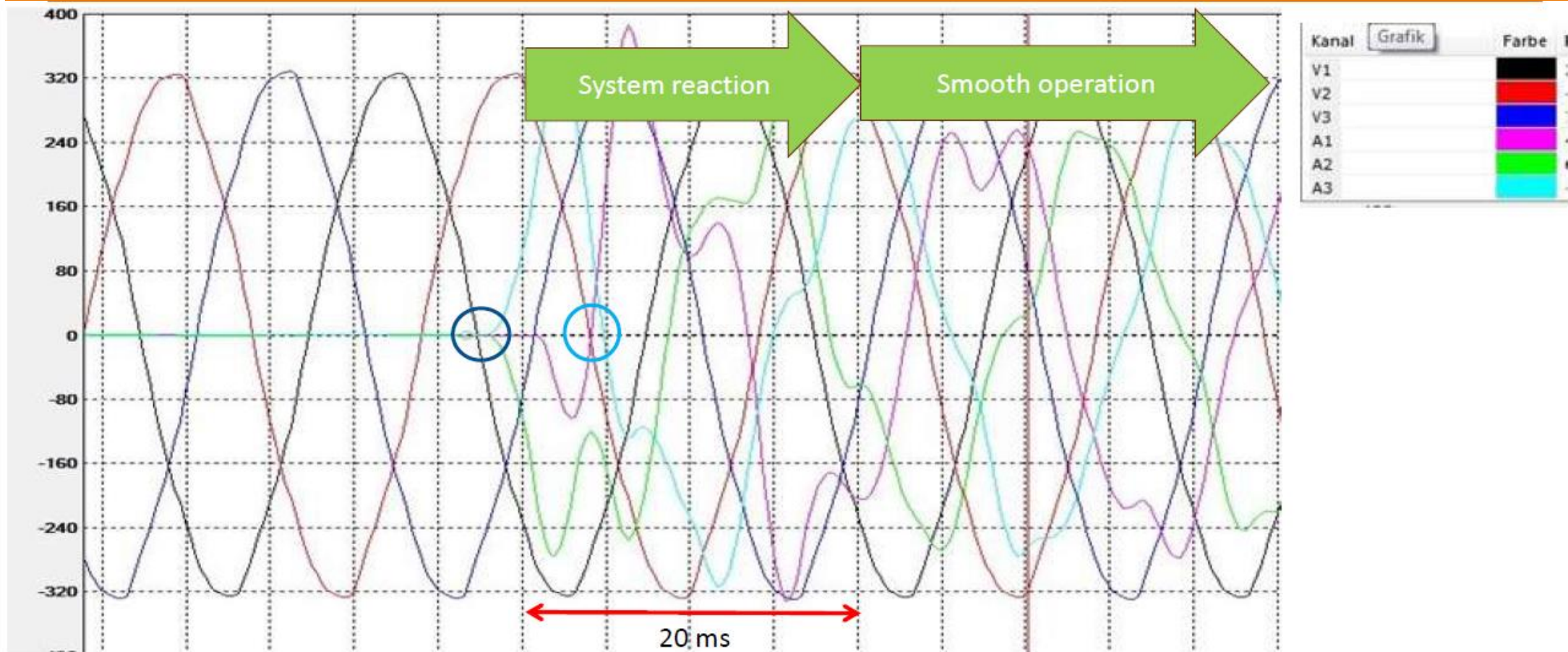
No Voltage or current spikes

Double peak due to Harmonics (3rd)

Switching on of A2, A3

Switching on of A1
(6,6 ms later)





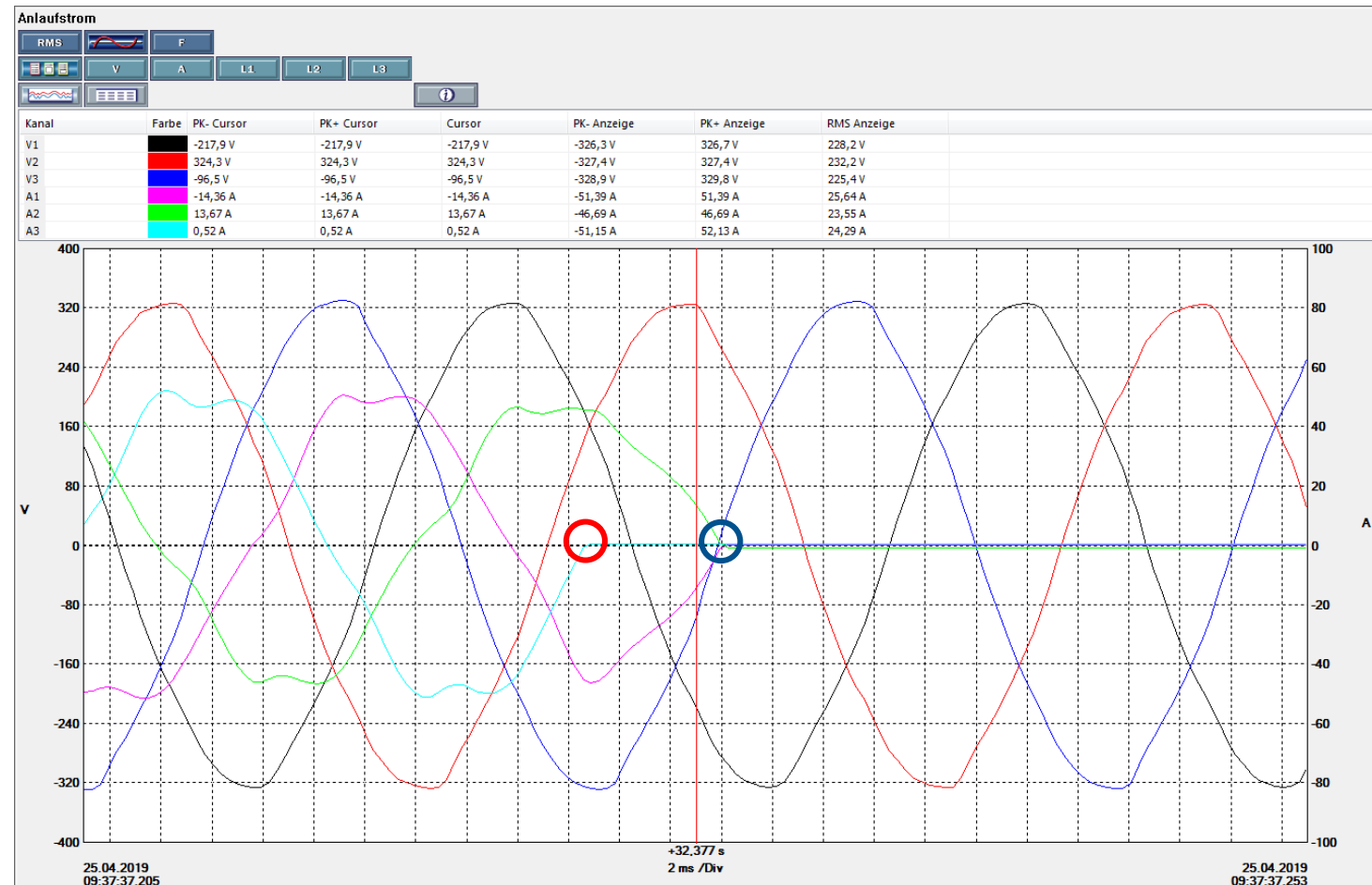


switching characteristic

BELUK

Switch-OFF of a 25 kvar 3-phase capacitor by an BEL-TS thyristor switch:

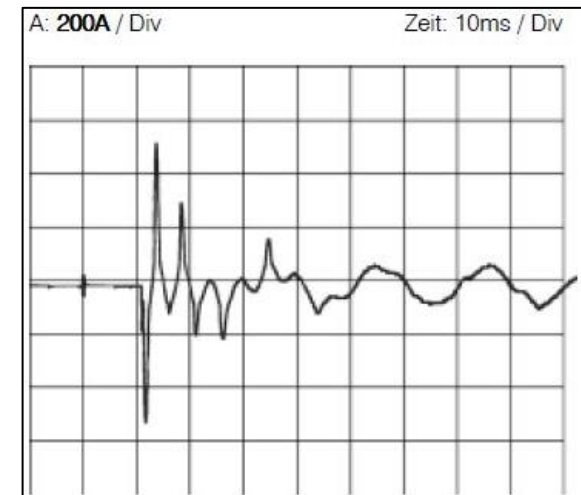
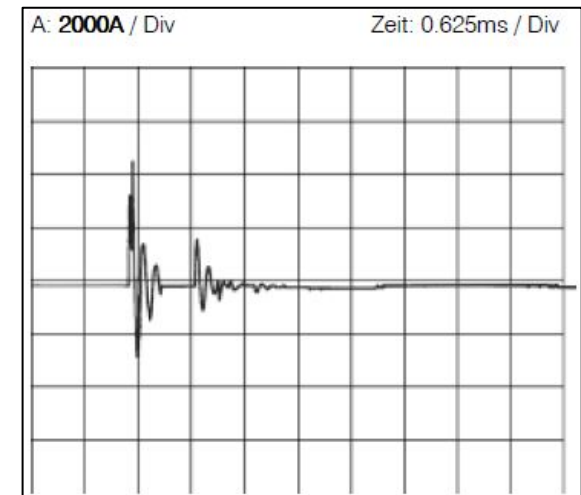
- First zero-crossing of A3 (module L3) after OFF-command 
- Switch-OFF of A1 (module L1) 120° later (6,66 ms) 
- stable operation state all the time
- No voltage and current peaks occur which strain or damage other connected electrical components





Switching on a 50 kvar capacitor with different switchgear (1)

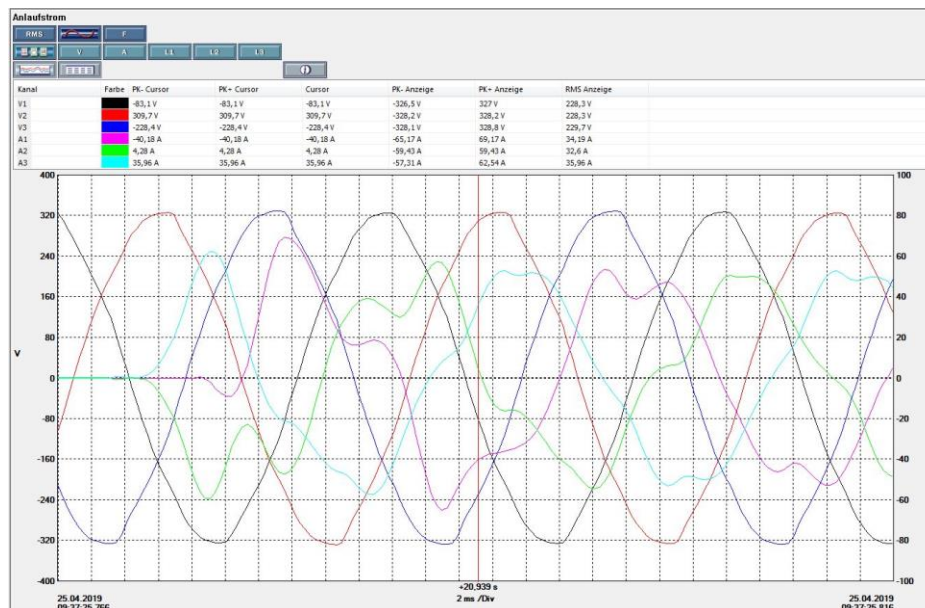
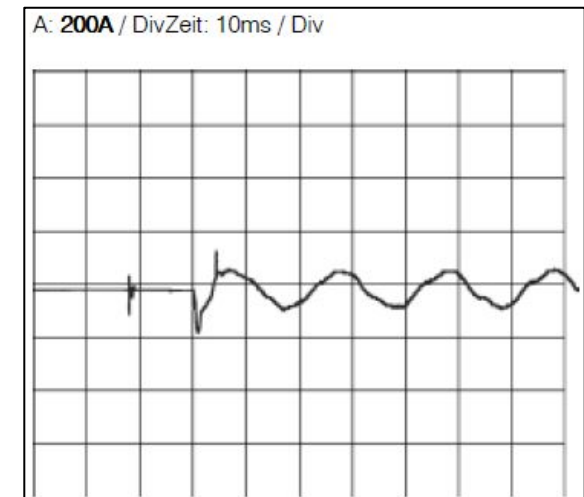
- Switch-on of a 50 kvar capacitor in a non-choked system without pre-contacts:
 - Massive distortion of current sine wave with a current peak > 4000 A (nominal current peak $\hat{I} = 101$ A).
 - Data loss, major disturbances and damage of other components are possible
- Switch-on of a 50 kvar capacitor in a choked system without pre-contacts:
 - Significant distortion with a current peak > 500 A (nominal current peak $\hat{I} = 101$ A)
 - Data loss , major disturbances and damage of other components are possible





Switching on a 50 kvar capacitor with different switchgear (2)

- Switch-on of a 50 kvar capacitor in a choked system with pre-contacts:
 → Improved distortion of current sine wave with a current peak ≈ 200 A
 (nominal current peak $\hat{I} = 101$ A)



Switch-on of a 25 kvar capacitor with BEL TS:

- No distortion of the current sine wave
- nominal current peak $\hat{I} = 51$ A

Available ratings:

BELUK

25 kvar	50 kvar	60 kvar	75 kvar	100 kvar	125 kvar	200 kvar
400 V + UL	400 V	400 V + UL	400 V	400 V		400 V
440 V	440 V		440 V	440 V		
480 V + UL	480 V + UL		480 V + UL	480 V + UL	480 V + UL	
	690 V			690V		

Certificate



No. U8V 015997 0006 Rev. 00

Production 015997

Certification Mark:




Model(s): BEL TS
Type: 3TA162H2-EB22B-03

Tested according to: UL 508:2018

Test report no.: 028-713152555-000

(Abdul Sabbagh)

441 (REV. 1)



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