



Case Study of Harmonics Analysis

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Problem occur in factory

Name: CK Cartan Company Limited, Lam phun

Manufacture of paper and paper products





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Problem occur in factory



Fuse blow

Magnetic Contactor failure

Machine Stop

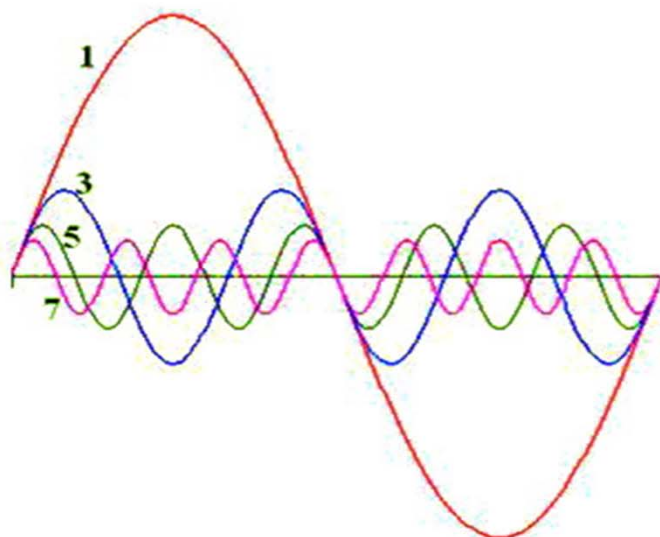
kVAr Charge



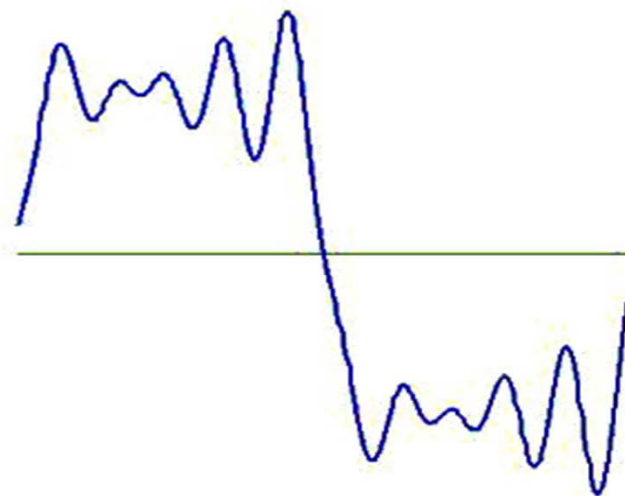


Definition of Harmonic

Harmonic is the measure of waveform distortion.



Sinusoidal waveform

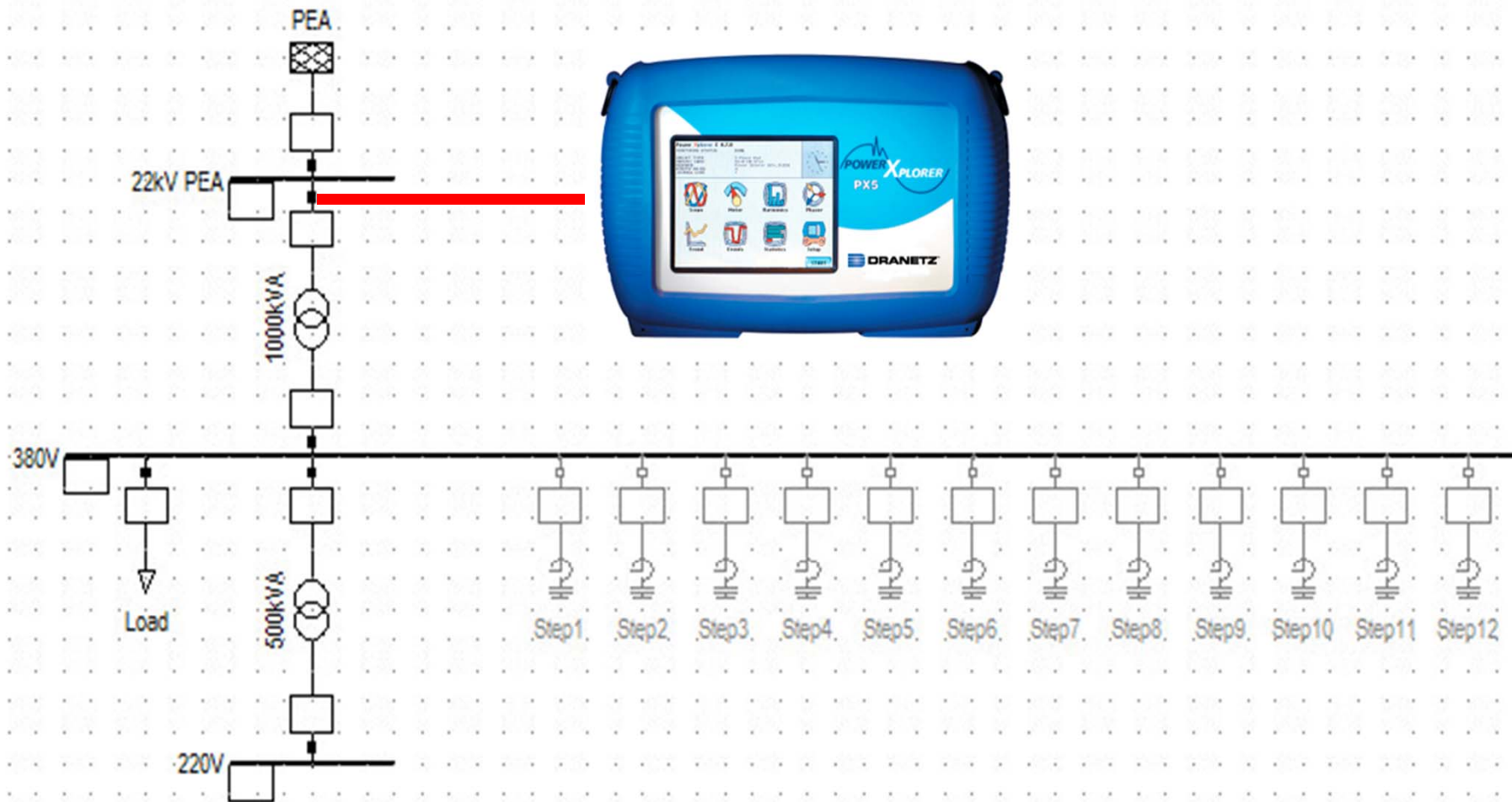


Harmonic distortion



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Harmonic assessment





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Harmonic assessment



Current Probe
TR 2510A



Dranetz PX5





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Harmonic assessment standard

EN50160

IEEE519

IEC61000-4

G5/4

Associated standard of
Harmonic

PEA+MEA+EGAT

The harmonic regulation for the
commercial and industrial (PRC-PQG-1/1998)



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The harmonic regulation for the commercial and industrial (PRC-PQG-02/1998)

Current distortion limits in each order (A_{rms})

Voltage at PCC. (kV)	Current distortion limits in each order (A_{rms})																	
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
0.400	48	34	22	56	11	40	9	8	7	19	6	16	5	5	5	6	4	6
11,12,22 and 24	13	8	6	10	4	8	3	3	3	7	2	6	2	2	2	2	1	1
33	11	7	5	9	4	6	3	2	2	6	2	5	2	1	1	2	1	1
69	8.8	5.9	4.3	7.3	3.3	4.9	2.3	1.6	1.6	4.9	1.6	4.3	1.6	1	1	1.6	1	1
115 and more than	5	4	3	4	2	3	1	1	1	3	1	3	1	1	1	1	1	1



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The harmonic regulation for the commercial and industrial (PRC-PQG-02/1998)

Voltage at PCC. (kV)	Total harmonic distortion (%)	Total harmonic distortion in each order.(THD _V %)	
		% Odd	% Even
0.400	5	4	2
11,12,22 and 24	4	3	1.75
33	3	2	1
69	2.45	1.63	0.82
115 and more than	1.5	1	0.5



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Analysis of harmonic

Dran-View 6.15.03 HASP

File View Tools Help

DRAN-VIEW
Power Quality Browser

Dran-View Enterprise
Version 6.15.03

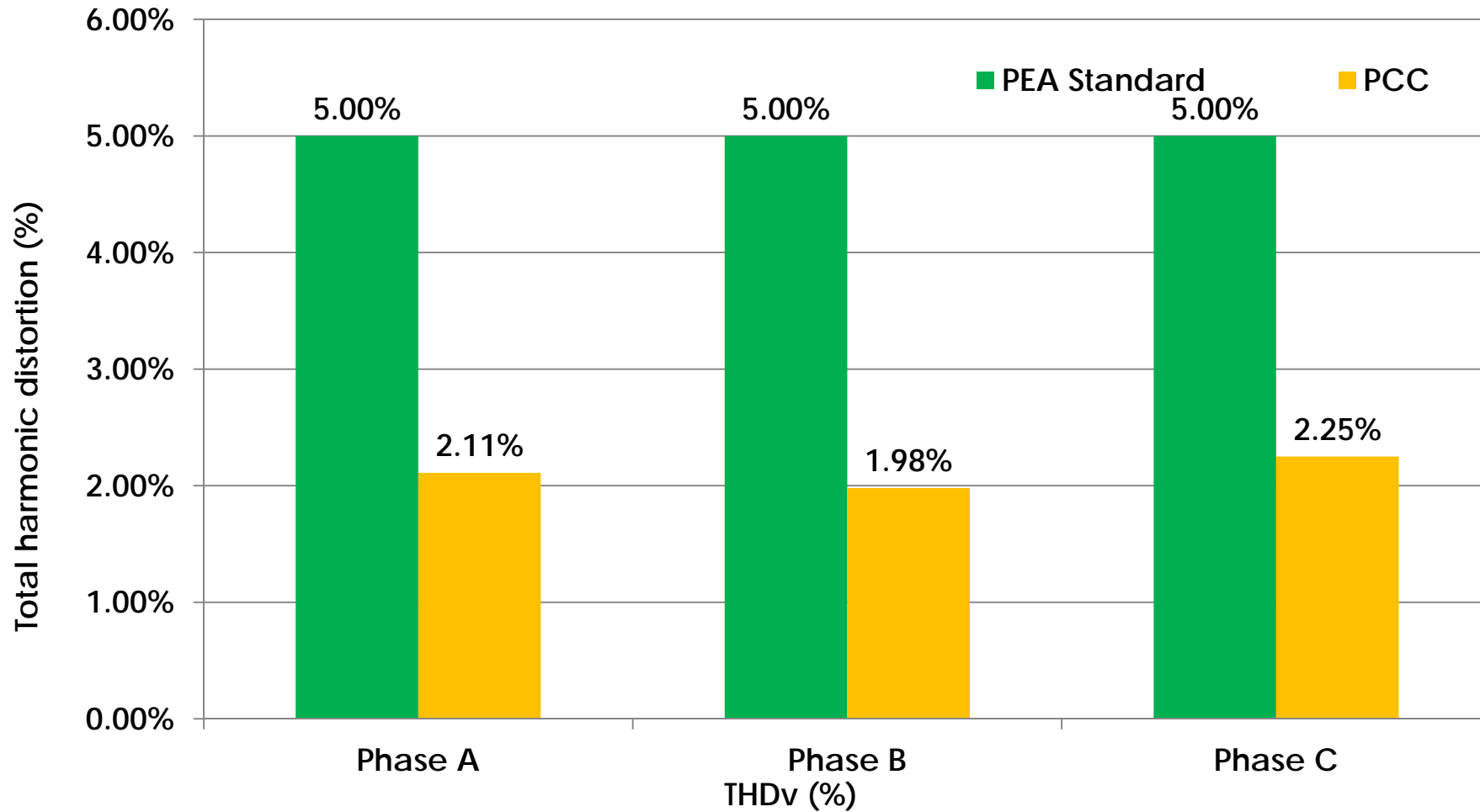
This product is licensed to:

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HASP : 1344638657 (50258EC1h)



Analysis of harmonic

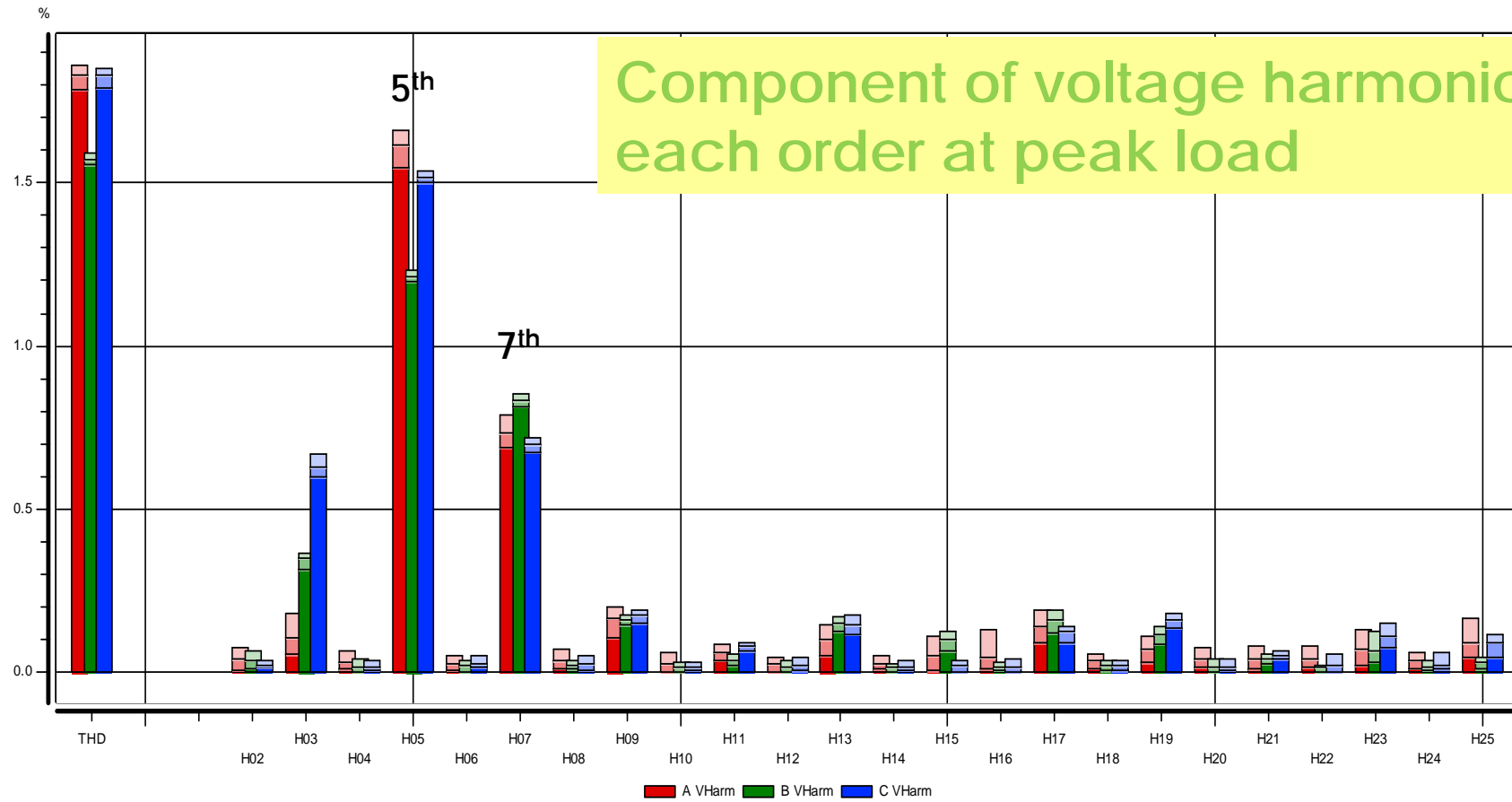
Total harmonic Distortion each phase compare PEA Standard between PCC.





Analysis of harmonic

Waveform harmonics



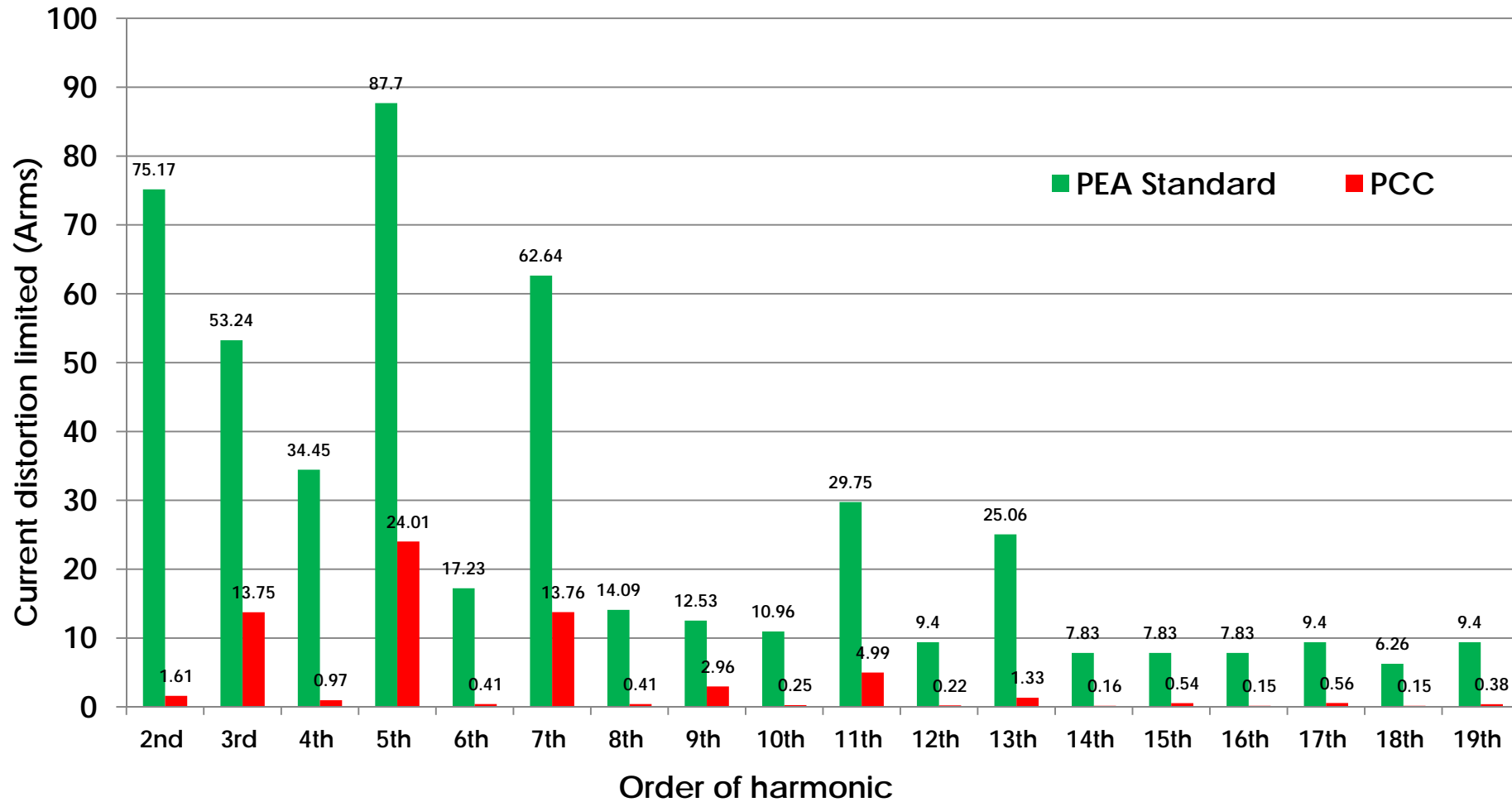
No DFT data available

Created with DataViz 6.153



Analysis of harmonic

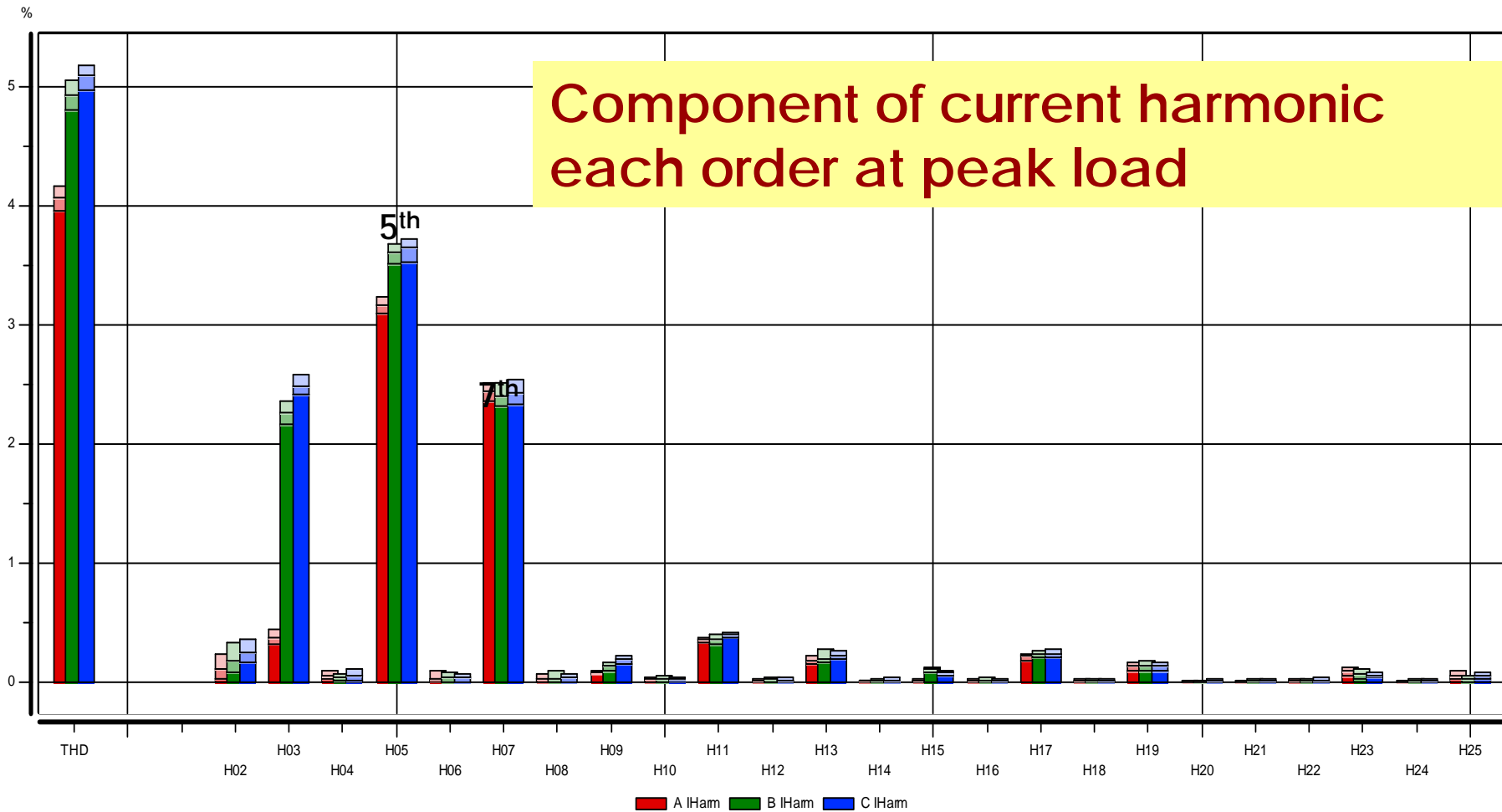
current harmonic each order compare PEA Standard between PCC.





Analysis of harmonic

Waveform harmonics

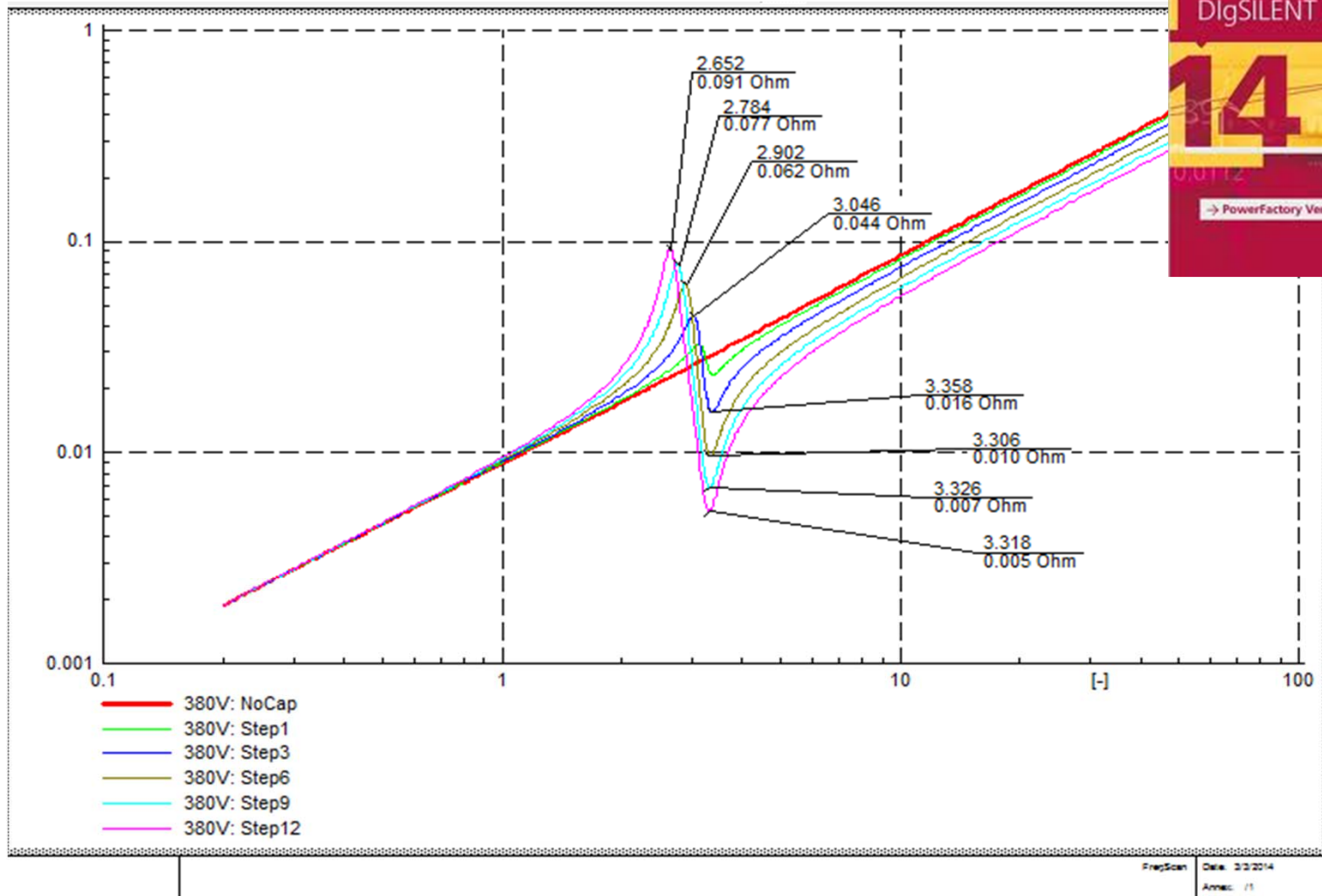


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Analysis of harmonic





Analysis of harmonic



Capacitor Bank



Fuse



Magnetic
Contactor





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CONCLUSION

- In this case use the harmonic regulation for the commercial and industrial.*
- Background of THDv and THDi following with standard.*
- Should be installation detune, tune, active filter for improvement system.*



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Thank you

