

T&D Europe view

Result of Meeting

September 1 2016-September 14 2016

Manufacturers views

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The European Association of the Electricity Transmission
and Distribution Equipment and Services Industry

Revision of the Regulation

➤ T&D Europe Summary

- ❑ Article 7 of Regulation 548/2014 and additional questions, request to study, if it is appropriate to make some changes in the regulation.
- ❑ Target is to give the view of the manufacturers regarding the possible changes and the studies to achieve
- ❑ Executive summary
 - ✓ A) Our understanding of the revision is split in 3 parts
 - Part 1 Main values
 - Part 2 Other Special criteria
 - Part 3 New aspects of the regulation
 - ✓ B) T&D Europe wishes
 - ✓ C) Standardization aspect (Cenelec)

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A)Part 1 Main values 1/2

- To set out minimum values of the **Peak Efficiency Index** for all transformers (Conversion of standard losses in PEI)
 - ✓ Regarding the standardization of the components (foils and cores) the manufacturers **wishes to keep** the level of losses and not to apply PEI
- To Establish minimum performance requirements for single-phase power transformers
 - TD Europe is ready to **participate to help** in the definition
 - **Clarification** of the scope should be done (Rated power....)

A)Part 1 Main values 2/2

- To review minimum requirements set out for Tier 2 in 2021 are still appropriate (Evolution of Magnetic steel as amorphous core, Cost-effective from a lifecycle analysis perspective)
 - ✓ >**75%** of the suppliers **are able** to reach the **Tier 2**. Nevertheless some **concessions** on 1000kVA and Pole mounted and wind turbine on-shore 36kV Dry type.... must be done.
 - ✓ **Large Power Transformers no issues** to move to **Tier 2**
 - ✓ Case of **Amorphous** and other technologies for **small distribution** transformers shall be **studied** taking into account **dimensions, weight** and supplies
 - ✓ **Magnetic steel** has been improved since the last regulation but it seems that the **minimum value are now reached**. Tiers 3 then could be studied
 - ✓ TD Europe is ready **to launch some studies** accordingly

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A)Part 2 Other special criteria 1/2

- To maintain or not the **concessions** made for **pole-mounted** transformers
 - That is the topic of **the utilities** but the weight remains a **design issue**.
- To maintain or not the **concessions** for **special combinations of winding voltages**
 - T&D Europe will make some proposals to **simplify** this topic
 - **Not logical** to have these coefficients for future applications and the rated power can be **then adjusted** on each voltage.
 - Some cases can be **eliminated** and others **kept** as 36kV or high voltage insulation.

A)Part 2 Other special criteria 2/2

- To Eliminate from minimum performance requirements the losses performing voltage regulation functions
 - The **devices** has been **modified** and probably no need!
 - This point has to be **restudied** and percentage shall be **reduced...**
 - T&D can propose something on this topic.
 - **Separate the measurement** of the additional device increase the **complexity** and the frame of possibility of **cheating** with the regulation during the measurement stage andwhy not to apply on new design.....(DETC)
- To cover environmental impacts other than energy can be regulated
 - This point shall be **clarified** (Area covered?)

A)Part 3 New aspects of the regulation

- To Define accepted criteria for the **repair** of transformers
 - **Blue guide** is applied today
 - **Clarification** is needed to avoid legal issues
 - Clarification regarding the limits of **rated power** is needed to fix the repair topic
 - Other ways can be found
 - Performance
 - Life time
 - Large debate attended in T&D Europe without reaching **real consensus** today at least for Large power
 - Some works are undertaken in Cenelec on this topic

B) T&D Europe wishes:

- To determine how **Market surveillance** must be deployed homogeneously
- To **clarify** the **scope** of the transformers **application** taking into account some part of Cenelec standard (PEI & KPEI definition....etc) as T&D Europe position paper
- To clarify **emergency** definition
- To clarify **Rectifier** application and associated efficiency requirements (Include special regulating transformers connected to Rectifier)
- To clarify the **documentation** (Web, Plate)
- To clarify the **cooling system** in the frame in the efficiency
- To clarify the **concession case** for **Large Power Transformer** and add some for **Medium power transformers**
 - Collection of data are needed....(Typical Maximum weight , Maximum dimensions....)

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C)Standardization aspect

- The **split** of the document **could** be changed
 - ❑ Standard transformers up to 3150kVA (Cast and oil) with fix losses
 - ❑ Other transformers above 3150kVA with PEI
- **Common** part between EN50588-EN50629 **could** be done in Standardization
- **Technical specification** with recommendations **could** come from WG32
- **TD Europe** will give **his opinion** on this Technical Specification coming from WG32 after analysis

BACK UP SLIDE NOT PRESENTED

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Medium Power Liquid

LIQUID							
	Tier 1 (from 1 July 2015)		Tier 2 (from 1 July 2021)				
Rated Power (kVA)	Maximum load losses Pk (W) *	Maximum no-load losses Po (W)*	Maximum load losses Pk (W)*	Maximum no-load losses Po (W)*		Pk Tiers 2/Tiers1	PO Tiers 2/Tiers1
≤25	900	70	600	63		-33%	-10%
50	1100	90	750	81		-32%	-10%
100	1750	145	1250	130		-29%	-10%
160	2350	210	1750	189		-26%	-10%
250	3250	300	2350	270		-28%	-10%
315	3900	360	2800	324		-28%	-10%
400	4600	430	3250	387		-29%	-10%
500	5500	510	3900	459		-29%	-10%
630	6500	600	4600	540		-29%	-10%
800	8400	650	6000	585		-29%	-10%
1000	10500	770	7600	693		-28%	-10%
1250	11000	950	9500	855		-14%	-10%
1600	14000	1200	12000	1080		-14%	-10%
2000	18000	1450	15000	1305		-17%	-10%
2500	22000	1750	18500	1575		-16%	-10%
3150	27500	2200	23000	1980		-16%	-10%

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Medium Power Dry-Type

DRY TYPE								
Rated Power (kVA)	Power	Tier 1 (1 July 2015)		Tier 2 (1 July 2021)				
		Maximum load losses P _k (W)*	Maximum no-load losses P ₀ (W)*	Maximum load losses P _k	Maximum no-load losses P ₀ (
≤50		1700	200	1500	180		Tiers 2/Tiers1	Tiers 2/Tiers1
100		2050	280	1800	252		-12%	-10%
160		2900	400	2600	360		-10%	-10%
250		3800	520	3400	468		-11%	-10%
400		5500	750	4500	675		-18%	-10%
630		7600	1100	7100	990		-7%	-10%
800		8000	1300	8000	1170		0%	-10%
1000		9000	1550	9000	1395		0%	-10%
1250		11000	1800	11000	1620		0%	-10%
1600		13000	2200	13000	1980		0%	-10%
2000		16000	2600	16000	2340		0%	-10%
2500		19000	3100	19000	2790		0%	-10%
3150		22000	3800	22000	3420		0%	-10%

Medium Power PEI

	LIQUID							
		Tier 1 (01.07.2015)	Tier 2 (01.07.2021)					
	Rated Power (kVA)	Minimum Peak Efficiency Index (%)				Pk Tiers 2/Tiers1	P0 Tiers 2/Tiers1	
3150 < Sr ≤ 4000	4000	99,465	99,532			-13%	-13%	
	5000	99,483	99,548			-13%	-13%	
	6300	99,51	99,571			-12%	-12%	
	8000	99,535	99,593			-12%	-12%	
	10000	99,56	99,615			-12%	-12%	
	12500	99,588	99,64			-13%	-13%	
	16000	99,615	99,663			-12%	-12%	
	20000	99,639	99,684			-12%	-12%	
	25000	99,657	99,7			-13%	-13%	
	31500	99,671	99,712			-12%	-12%	
	40000	99,684	99,724			-13%	-13%	

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Medium Power Dry-type

DRY TYPE						
		Tier 1 (01.07.2015)	Tier 2 (01.07.2021)			
	Rated Power (kVA)	Minimum Peak Efficiency Index (%)			Tiers 2/Tiers1	Tiers 2/Tiers1
3150 < Sr ≤ 4000	4000	99,348	99,382		-5%	-5%
	5000	99,354	99,387		-5%	-5%
	6300	99,356	99,389		-5%	-5%
	8000	99,357	99,39		-5%	-5%
	10000	99,357	99,39		-5%	-5%

Pole Mounted

POLE MOUNTED					
	Tier 1 (1.07.2015)		Tier 2 (1.07.2021)		
Rated Power(kVA)	Maximum load losses (in W) *	Maximum no-load losses (in W)*	Maximum load losses (in W)*	Maximum no-load losses (in W)*	
25	900	70	725	70	Pk Tiers 2/Tiers1
50	1100	90	875	90	-19%
100	1750	145	1475	145	0%
160	3102	300	3102	270	-20%
200	2750	356	2333	310	-16%
250	3250	425	2750	360	0%
315	3900	520	3250	440	-10%
					-15%
					-15%
					-17%
					-15%

Large Power Liquid

	LIQUID						
	Rated Power (MVA)	Tier 1 (01.07.2015)	Tier 2 (01.07.2021)				
		Minimum Peak Efficiency Index (%)				Tiers 2/Tiers1	Tiers 2/Tiers1
≤ 4	4	99,465	99,532			-12,5%	-12,5%
	5	99,483	99,548			-12,6%	-12,6%
	6,3	99,51	99,571			-12,4%	-12,4%
	8	99,535	99,593			-12,5%	-12,5%
	10	99,56	99,615			-12,5%	-12,5%
	12,5	99,588	99,64			-12,6%	-12,6%
	16	99,615	99,663			-12,5%	-12,5%
	20	99,639	99,684			-12,5%	-12,5%
	25	99,657	99,7			-12,5%	-12,5%
	31,5	99,671	99,712			-12,5%	-12,5%
	40	99,684	99,724			-12,7%	-12,7%
	50	99,696	99,734			-12,5%	-12,5%
	63	99,709	99,745			-12,4%	-12,4%
	80	99,723	99,758			-12,6%	-12,6%
≥100	100	99,737	99,77			-12,5%	-12,5%

Large Power Dry-Type

DRY TYPE								
	Rated Power (MVA)	Tier 1 (01.07.2015)	Tier 2 (01.07.2021)					
		Minimum Peak Efficiency Index (%)						
≤ 4	4	99,158	99,225				Tiers 2/Tiers1	Tiers 2/Tiers1
	5	99,2	99,265				-8,0%	-8,0%
	6,3	99,242	99,303				-8,1%	-8,1%
	8	99,298	99,356				-8,0%	-8,0%
	10	99,33	99,385				-8,3%	-8,3%
	12,5	99,37	99,422				-8,2%	-8,2%
	16	99,416	99,464				-8,3%	-8,3%
	20	99,468	99,513				-8,2%	-8,2%
	25	99,521	99,564				-8,5%	-8,5%
	31,5	99,551	99,592				-8,5%	-8,5%
	40	99,567	99,607				-9,0%	-9,0%
	50	99,585	99,623				-9,1%	-9,1%
	63	99,59	99,626				-9,2%	-9,2%
							-9,2%	-9,2%
							-8,8%	-8,8%

AGENDA

Dear Stakeholder,

Thank you for registration to the stakeholder meeting next Friday 16/9 at the EC Breydel building (Ayrat room), avenue d'Auderghem 45, Brussels.

We hereby confirm your registration and please find hereafter the detailed agenda for the stakeholder kick-off meeting:

9h30: registration desk opens in EC building Breydel in Brussels **(please check that you have your ID card or passport with you)**

10h00-10h20 Coffee in meeting room Ayrat

10h20-10h30: Presentation of the study team and tour de table

10h30-10h50: Scope of the assignment (Paul Van Tichelen, VITO)

10h50-11h20: Regulation 548/2014 (Paul Waide, Waide Strategic)

11h20-11h40: Data needs and data sourcing (Berend Evenblij, TNO)

11h40-12h: Comments on data sourcing

12h00-12h20: State of art in CENELEC TC 14 standardization (Angelo Baginni, CENELEC TC14, University Bergamo)

12h20-13h20: lunch (provided in the building)

13h20-14h40 Stakeholders view in the review of Commission Regulation 548/2014

Stakeholders can present their views and feedback, if you want to make a presentation sent a request and proposal.

Planned:

13h20-13h40 The present time situation viewed by the manufacturers (Michel Sacotte, Orgalime, Schneider-Electric)

13h40-14h10 The view of a DSO: Wim De Maesschalck (Synergrid) & Anthony Walsh (ESB Networks)

14h10-14h40 Any other welcome

14h40-15h: Closing, participants expectations and priorities with respect to the review of Regulation 548/2014, AOB