

REFERENCE

on

the benefic effect of the **Xb Nova additive introduced in the oil of some new or modernizing power transformers, at the Electroputere Craiova – Romainan transformer manufacturer**

No.	The transformer where has been used oil with Xb additive	Data	The place of transformer during of the tests	The insulation parameters of the transformer windings and the measurement temperature								Notes
				T _u /°C/	The insulation resistance values R ₆₀ /R ₁₅ /MΩ/:			T _u /°C/	The dielectric dissipation factor values (tanδ) /%/			
					IT - (JT+T+m) sau (IT+JT) - (T+M)	JT - (IT+T+m)	T - (IT+JT+m)		IT - (JT+T+m) sau (IT+JT) - (T+M)	JT - (IT+T+m)	T - (IT+JT+m)	
0	1	2	3	4	5	6	7	8	9	10	11	12
1	Transformer 250/250/80 MVA 400/121/20 kV No.141641/2000	07.06.2000	EP Craiova Factory	34	1990/1550	1750/1030	2100/1060	33	0,206	0,246	0,26	Oil without Xb additive
		30.12.2000	400 kV Arad Substation	16	27400/16900	19300/12100	19500/12500	16	0,21	0,28	0,38	Oil with Xb additive
2.	Transformer 250/250/80 MVA 400/121/20 kV No. 119548/2000	29.06.2000	EP Craiova Factory	28	1550/1100	1450/770	1800/850	26	0,243	0,29	0,30	Oil without Xb additive
		13.03.2001	400 kV	45	3250/2300	2300/1500	2800/1650	45	0,22	0,25	0,33	Oil with Xb additive
		13.03.2001	Draganesti	28	7500/5500	6000/3500	7000/4000	28	0,22	0,26	0,33	
		14.03.2001	Olt Substation	23	11000/7500	7000/4000	9000/6000	23	0,24	0,28	0,34	
	Transformer 250/250/80 MVA 400/121/20 kV No. 104128/M2000	28.03.2000	EP Craiova Factory	22	2100/1600	1800/1200	2100/1100	22				Oil without Xb additive
		24.01.2001	400 kV Constanta	25	2440/1840	1710/1070	1970/1000	25	0,21	0,26	0,37	Presentation to make a comparison
		07.09.2001	Nord Substation	22	1695/1107	1605/797	1819/746					
3.	Autotransformer Main Unit 400/400/160 MVA 400/231/22 kV No. 96780/2000	11.04.2000	EP Craiova Factory	17	3350/2400		2300/1400	16,5	0,26		0,278	Oil without Xb additive
		18.09.2000	400 kV Arad	17	9800/7850		6000/4460	17	0,255		0,455	Oil with Xb additive
		23.10.2000	Substation	10	12100/9965		6750/5000	10	0,24		0,42	

0	1	2	3	4	5	6	7	8	9	10	11	12
4.	Autotransformer 200/200/60 MVA 231/121/10,5 kV No. 50483/M2000	05.12.2000	EP Craiova Factory	10	4600/3100		4000/2400					Oil without Xb additive
		02.02.2002	220 kV Severin Est Substation	10	50000/35000		30000/20000	10	0,39		0,47	Oil with Xb additive
5.	Autotransformer 200/200/60 MVA 231/121/10,5 kV nr. 74397/M2000	22.12.2000	EP Craiova Factory	10	3500/3000		2000/1500	11, 9	0,305		0,318	Oil without Xb additive
		31.05.2001	220 kV Munteni Substation	26	7100/6250		4480/3460	26	0,068		0,19	Oil with Xb additive
		30.04.2002		20	19000/15500		12000/9800	20	0,247		0,39	
6.	Autotransformer 200/200/60 MVA 231/121/10,5 kV nr. 71903/M2003	02.12.2003	EP Craiova Factory	15	3760/2620		2800/1740					Oil without Xb additive
		22.12.2003		18	15200/11700		10300/7600	18	0,3		0,24	Oil with Xb additive
		13.01.2004		7	39000/27000		21000/8000					
7.	Autotransformer 200/200/60 MVA 231/121/10,5 kV No. 95728/M2003	06.11.2003	EP Craiova Factory	15	2700/2050		2300/1700					Oil without Xb additive
		04.12.2003		18	9900/8700		7500/5000					Oil with Xb additive

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on

the benefic effect of the **Xb Nova additive introduced in the oil of some power transformers after their general repairing (solid insulation partial or total changed), at the Romanian specialized companies**

No.	The transformer where has been used oil with Xb additive	Data	The place of transformer during of the tests	The insulation parameters of the transformer windings and the measurement temperature							Notes	
				T _u /°C/	The insulation resistance values R ₆₀ /R ₁₅ /MΩ/:			T _u /°C/	The dielectric dissipation factor values (tanδ) /%/			
					(IT+JT) - (T+M)	JT - (IT+T+m)	T - (IT+JT+m)		(IT+JT) - (T+M)	JT - (IT+T+m)		T - (IT+JT+m)
0	1	2	3	4	5	6	7	8	9	10	11	12
1.	Autotransformer 200/200/60 MVA 231/121/10,5 kV No. 95385/74/RK2000	05.07.2000	RETRASIB Specialized repairing company	25	4500/3400		3300/2000	25	0,2		0,15	Oil with Xb additive
2.	Autotransformer 200/200/60 MVA 231/121/10,5 kV No. 114786/84/RK2001	29.06.2001	RETRASIB	24	7300/5900		5300/4000	24	0,21		0,19	Oil with Xb additive
3.	Autotransformer 200/200/60 MVA 231/121/10,5 kV No. 88554/73/RK2003	17.04.2003	RETRASIB	20	11200/9500		8900/7100	20	0,17		0,16	Oil with Xb additive
4.	Autotransformer 200/200/60 MVA 231/121/10,5 kV No. 920261/RK2003	06.10.2003	RETRASIB	20,5	5600/2950		5030/3750	20,5	0,31		0,51	Oil with Xb additive

0	1	2	3	4	5	6	7	8	9	10	11	12
5.	Autotransformer 200/200/60 MVA 231/121/10,5 kV No. 97745/77/RK2003	09.01.2003	ELEROM Specialized repairing company	20	31800/13820		17000/10120	23	0,312		0,486	Oil with Xb additive
6.	Autotransformer 200/200/60 MVA 225/123/10,5 kV No. 114785/84/RK2003	03.07.2003	ELEROM	29	8200/5600		6350/4380	29	0.335		0,320	Oil with Xb additive
7.	Autotransformer 200/200/60 MVA 225/123/10,5 kV No. 67503/RK2003	30.01.2004	ELEROM	21,5	4920/4040		3880/2820	21, 5	0,197		0,225	Oil with Xb additive

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referring to

the benefic effect of the **Xb NOVA additive** introduced in the oil of some power transformers after their solid insulation drying, on-site

No.	The transformer where has been used oil with Xb additive	Data	The place of transformer during of the tests	The insulation parameters of the transformer windings and the measurement temperature								Notes
				T _u /°C/	The insulation resistance values R ₆₀ /R ₁₅ /MΩ/:			T _u /°C/	The dielectric dissipation factor values (tanδ) /%/			
					IT - (JT+T+m) sau (IT+JT) - (T+M)	JT - (IT+T+m)	T - (IT+JT+m)		IT - (JT+T+m) sau (IT+JT) - (T+M)	JT - (IT+T+m)	T - (IT+JT+m)	
0	1	2	3	4	5	6	7	8	9	10	11	12
1.	Transformer 250/250/80 MVA 400/121/20 kV nr.114542/1985	01.05.1985	EP Craiova Factory	27	2450/2150	2300/1600	2400/1400	28	0,15	0,26	0,30	Oil without Xb additive
		05.03.2001	400 kV Brasov Substation	30	665/368	1030/324	1170/372	30	0,11	0,119	0,57	Oil without Xb additive Before drying
		31.05.2001		24	3960/3340	2860/2220	3440/2420	24	0,078	0,11	0,50	Oil with Xb additive After drying
2.	Autotransformer 200/200/60 MVA 225/123±8x1,66%/10,5 kV No. 109260/1983	28.03.1983	EP Craiova Factory	21	4400/3400		3500/2000	22	0,35		0,83	Oil without Xb additive
		28.08.2000	220 kV Fundeni Substation	20	545/308		805/314	20	0,84		0,67	Oil without Xb additive Before drying
		27.05.2001		23	5000/3920		3460/2360	23	0,54		0,393	Oil with Xb additive After drying
3.	Autotransformer 200/200/60 MVA 225/123±8x1,66%/10,5 kV No. 106794/1982	30.05.1983	EP Craiova Factory	29	2550/1300		2400/1500	29	0,665		0,477	Oil without Xb additive
		08.03.2000	220 kV Alba Iulia Substation	27	370/197		452/176	27	0,57		0,74	Oil without Xb additive Before drying
		08.06.2000		26	2200/1710		1660/1710	26	0,41		0,35	Oil with Xb additive After drying

0	1	2	3	4	5	6	7	8	9	10	11	12
4.	Autotransformer 200/200/60 MVA 231±12x1,25%/121/10,5 kV No. 95731/1986	21.02.1986	EP Craiova Factory	14	3000/2000		1600/1200	12	0,575		0,321	Oil without Xb additive
		31.03.2000	220 kV Turnu Magurele	32	315/198		444/164	32	0,49		0,74	Oil without Xb additive Before drying
		06.11.2000	Substation	31	2380/1690		1620/995	31	0,163		0,4	Oil with Xb additive After drying
5.	Autotransformer 200/200/60 MVA 231±12x1,25%/121/10,5 kV No. 69013/1969	20.12.1969	EP Craiova Factory	23	1100/800		1050/650	45	0,3		0,8	Oil without Xb additive
		17.09.2002	220 kV Pitesti Sud Substation	29	266/159		460/190	29	1,47		1,58	Oil without Xb additive Before drying
		25.02.2003		25	9350/6300		7650/4940	25	0,36		0,35	Oil with Xb additive After drying
6.	Regulating special transformer (a+t) 400/60 MVA ± [12 x 34,65/12] / 22kV No. 95701/74	15.07.1974	EP Craiova Factory	24	6500/3500		1500/9000	24	0,4		0,34	Oil without Xb additive
		10.11.2002	400 kV Sibiu Sud Substation	34	835/496		230/133	34	0,66		0,67	Oil without Xb additive Before drying
		04.01.2003		52	1950/1320		540/378	52	0,63		0,85	Oil with Xb additive
		05.01.2003		23	5850/3800		1730/1240	23	0,5		0,62	After drying
7.	Regulating special transformer (a+t) 400/60 MVA ± [12 x 34,65/12] / 22kV No. 85766/72	21.05.2003	400 kV Sibiu Sud Substation	46	520/306		134/82,5		1,52		1,31	Oil without Xb additive Before drying
		21.07.2003		48	2080/1340		625/380		1,33		1,29	Oil with Xb additive
		22.07.2003		32	4009/3040		1730/1200		1,0		0,88	After drying

0	1	2	3	4	5	6	7	8	9	10	11	12
8.	Autotransformer 66,6/66,6/21 MVA 231±12x1,25%/121/10,5 kV No. 1173722 /1966	25.10.1982	ELEROM Speci. repair. company	22	2000/1200		2800/1800	22	0,29		0,25	Oil without Xb additive
		11.12.2002	400 kV Iernut Substation	51	182/130		111,7/80,3	51	2,13		1,91	Oil without Xb additive Before drying
		08.05.2003		51,5	788/584		714/514	51,5	0,74		0,58	Oil with Xb additive
		09.05.2003		22	6900/5308		5200/4094	22	0,3		0,24	After drying