ΔΗΜΟΣΙΑ ΕΠΙΧΕΙΡΗΣΗ ΗΛΕΚΤΡΙΣΜΟΥ Α.Ε.
ΔΙΕΥΘΥΝΣΗ ΜΕΛΕΤΩΝ - ΚΑΤΑΣΚΕΥΩΝ
ΘΕΡΜΟΗΛΕΚΤΡΙΚΩΝ ΕΡΓΩΝ

ΔΙΑΚΗΡΥΞΗ ΔΜΚΘ – 11 18 5201
Αντικείμενο: ΑΗΣ ΑΓΙΟΥ ΔΗΜΗΤΡΙΟΥ - ΜΟΝΑΔΕΣ ΙΙΙ ΚΑΙ IV – ΕΡΓΟ ΠΡΟΜΗΘΕΙΑΣ ΚΑΙ ΕΓΚΑΤΑΣΤΑΣΗΣ ΣΥΣΤΗΜΑΤΟΣ ΑΠΟΘΕΙΩΣΗΣ ΚΑΥΣΑΕΡΙΩΝ

ΣΥΜΠΛΗΡΩΜΑ Νο 1

Το παρόν Συμπλήρωμα Νο 1 εκδίδεται προκειμένου να περιληφθούν στη Διακήρυξη ΔΜΚΘ – 11 18 5201 οι ακόλουθες τροποποιήσεις και συμπληρώσεις:

1. ΤΕΥΧΟΣ 1 ΑΠΟ 8 – ΠΡΟΣΚΛΗΣΗ ΣΕ ΔΙΑΓΩΝΙΣΜΟ ΜΕ ΑΝΟΙΚΤΗ ΔΙΑΔΙΚΑΣΙΑ

1.1. Άρθρο 1 «Αρμόδια Υπηρεσία για το Διαγωνισμό - Τόπος, χρόνος υποβολής και αποσφράγισης προσφορών»

Η ημερομηνία παραλαβής και αποσφράγισης των Προσφορών μετατίθεται από τις 20.07.2018 στις 10.09.2018, ημέρα Δευτέρα.

1.2. Άρθρο 7 «Παραλαβή Στοιχείων Διαγωνισμού»

Τα Τεύχη της Διακήρυξης και του Συμπληρώματος Νο 1 αυτής θα παραμείνουν ανηρτημένα στην επίσημη ιστοσελίδα (site) της Επιχείρησης: https://eprocurement.dei.gr/ μέχρι και δέκα (10) ημέρες πριν από τη λήξη της ως άνω νέας προθεσμίας υποβολής των προσφορών.

2. ΤΕΥΧΟΣ 5 ΑΠΟ 8 – ΤΕΧΝΙΚΕΣ ΠΡΟΔΙΑΓΡΑΦΕΣ

2.1 SECTION B0, Project Outline, Paragraph 3.1 - General

Το εδάφιο:

«Some performance data for Units' ID fans are given in Annex 6 for information only.»

αντικαθίσταται με το εξής εδάφιο:

«Some performance data for Units' ID fans, as well as technical data of other Unit's equipment are given in Annex 6 for information only.»

2.2 SECTION B0 Project Outline, ANNEX 6

Στο τέλος του ANNEX 6 του SECTION B0 Project Outline προστίθεται το ακόλουθο εδάφιο:

«A. GENERATORS TECHNICAL DATA

	UNIT IV	UNIT III
Manufacturer	ELECTROSILA	ENERGOSERWIS
Type	TBB-320-2y3	TWW-320-2
Rated Voltage	20 KV ± 5%	20 KV ± 5%
Rated Current	9.940 A	10.425 A
Apparent Rated Power (S)	344 MVA	361,1 MVA
cosφ	0,90	0,90
Active Rated Power (P)	310 MW	325 MW
Speed	3.000 rpm	3.000 rpm
Frequency	50 Hz	50 Hz
Rated Excitation Voltage	430 V	455 V
Rated Excitation Current	2.774 A	2.570 A
Reactance Xd (synchronous axial)	168 %	176,2 %
Reactance Xo (zero order)	8,5 %	8,9 %
Reactance X2 (reserved order)	20,6 %	21,6 %

B. MAIN STEP-UP TFs TECHNICAL DATA

	UNIT IV	UNIT III
Manufacturer	ALSTHOM ATLANTIQUE	TRO-VEM
Voltage Ratio (kV)	400/20	400/20
Rated Power (MVA)	335	360
Connection Diagram	YNd1	YNd1
Impedance Voltage (%)	15,35	15,9→420 kV 16,0→400 kV 16,3→380 kV
Tap changer	Off Load (±5%)	Off Load (±5%)

C. UNIT AUXILIARY TFs TECHNICAL DATA

	UNIT IV	UNIT III
Manufacturer	TRO-VEB- EAST GERMANY	TRO-VEB- EAST GERMANY
Voltage Ratio (kV)	20/6,3-6,3	20/6,3-6,3
Rated Power (MVA)	40/20-20	40/20-20
Connection Diagram	YNy0y0	YNy0y0
Impedance Voltage (%)	10,2 - 9,2 % → 40MVA 8,8 - 8,3 % → 20MVA 8,7 - 8,2 % → 20MVA	10,2 - 9,2 % → 40MVA 8,8 - 8,3 % → 20MVA 8,7 - 8,2 % → 20MVA
	On Load (±8x1,25%)	On Load (±8x1,25%)

D. GENERAL AUXILIARY TFs TECHNICAL DATA

	UNIT IV	UNIT III
Manufacturer	TRO	TRO
Voltage Ratio (kV)	161/6,3-6,3	161/6,3-6,3
Rated Power (MVA)	40/50 ONAN/ONAF	40/50 ONAN/ONAF
Connection Diagram	YNd1d1	YNd1d1
Impedance Voltage (%)	12,6-11,4 →50MVA 10,4-9,8→25MVA 10,5-9,9→25MVA	12,6-11,4 →50MVA 10,4-9,8→25MVA 10,5-9,9→25MVA
Tap Changer	On Load (±8x1,25%)	On Load (±8x1,25%)

E. 6 kV SWITCHGEAR
Rated Voltage: 12 kV
Operating Voltage: 6 kV
Rated Current: 2500 A
Short circuit withstand: 40 kA 1 sec
Impulse withstand voltage (1,2/50 μs): 75 kV
Power frequency withstand (1 min, 50 Hz):35 kV»

2.3 SECTION B0 Project Outline, ANNEX 6

Στο τέλος του ANNEX 6 του SECTION B0 Project Outline προστίθεται επίσης το συνημμένο του παρόντος Συμπληρώματος που αφορούν στα IPBs.

2.4 SECTION B0 Project Outline, ANNEX 7, Paragraph 1.1 – Lignite Analysis

Μετά το εδάφιο:
« Fuel Data (As received)

Lower Heating Value :	1.000 – 1.650	kcal/kg
Moisture content :	44,0 – 65,0	%w.t. as received
Ash content (not including CO2):	7,5 – 23,0	%w.t. as received»

Προστίθεται το ακόλουθο εδάφιο:

«Nitrogen content :	0,40 – 0,70	%w.t. as received
Sulfur content :	0,40 – 1,20	%w.t. as received
Carbon content :	13,00 – 23,00	%w.t. as received
Hydrogen content :	1,10 –1,38	%w.t. as received
Oxygen content :	3,60 – 13,10	%w.t. as received»

ΣΥΝΗΜΜΕΝΑ ΤΟΥ ΠΑΡΟΝΤΟΣ ΣΥΜΠΛΗΡΩΜΑΤΟΣ

ANNEX 6 OF SECTION B0
(αναφέρεται στο σημείο 2.3 του παρόντος Συμπληρώματος)

Όλοι οι άλλοι όροι της Διακήρυξης παραμένουν αμετάβλητοι.

ANNEX 6 OF SECTION B0

(αναφέρεται στο σημείο 2.3 του παρόντος Συμπληρώματος)

Dept.	Supplement to Single Phase Isolated Bus-ducts AGHIOS DIMITRIOS III / IV	Date 30.03.83	Page

Technical Data

rated power: 344MVA
rated nominal voltage: 20kV
continuous current 50c/s: 9,93kA

Isolation according to VDE 0111

U_m: 24kV

Insulation level
(impulse withstand): 125kV
Withstand voltage r.m.s. 50kV

ROLLED ALUMINIUM TUBES FOR CONDUCTORS AND ENCLOSURES (SELF COOLED DESIGN)

SI/XTW

1 LOSSES

CONDUCTOR (1)	ENCLOSURE (2)
$R_{1\,20} = \frac{1}{\varkappa_1 \cdot A_1}$	$R_{2\,20} = \frac{1}{\varkappa_2 \cdot A_2}$
$R_{1\,\vartheta_1} = R_{1\,20} \cdot [1 + \alpha_{Al} \cdot (\vartheta_1 - 20°)]$	$R_{2\,\vartheta_2} = R_{2\,20} \cdot [1 + \alpha_{Al} \cdot (\vartheta_2 - 20°)]$
$R_{1\sim} = R_{1\,\vartheta_1} \cdot (1 + K_1 \cdot d_a^4)$	$R_{2\sim} = R_{2\,\vartheta_2} \cdot (1 + K_1 \cdot d_a^4)$
$V_1 = J_1^2 \cdot R_{1\sim}$; $Q_1 = 0{,}86 \cdot V_1$	$V_2 = J_2^2 \cdot R_{2\sim}$; $Q_2 = 0{,}86 \cdot V_2$

2 HEAT RESISTANCE

CONDUCTION A CONVECTION	RADIATION	CONVECTION	RADIATION
$R'_{LK_{12}} = \frac{l_n \, d_{ka}/d_{sa}}{2\pi \cdot \lambda_s}$	$\varepsilon = \frac{C}{C_s}$; $C_s = 4{,}96$	$R'_{K_{20}} = \frac{1}{\alpha_K \cdot F_2}$	$\varepsilon = \frac{C}{C_s}$; $C_s = 4{,}96$
$\lambda_s = K \cdot (P_r \cdot G_r)^{0,2}$	$\frac{1}{\varepsilon_{12}} = \frac{1}{\varepsilon_1} + \frac{F_1}{F_2} \cdot \left(\frac{1}{\varepsilon_2} - 1\right)$	$F_2 = \pi \cdot d_{ka} \cdot 1$	$\varepsilon_{20} = \varepsilon_2$
$K = 357 \cdot 10^{-5}$ (111)	$\beta_{12} = \frac{(T_1^4 - T_2^4) \cdot 10^{-8}}{(T_1 - T_2)}$	(I) INNDOOR ; (F) OUTDOOR $\alpha_{K_{20}} = 1{,}5\,(2{,}5)$	$\beta_{20} = \frac{(T_2^4 - T_0^4) \cdot 10^{-8}}{(T_2 - T_0)}$
$K = 162 \cdot 10^{-5}$ (110)	$R'_{S_{12}} = \frac{1}{\varepsilon_{12} \cdot \pi \cdot d_{sa} \cdot C_s \cdot \beta_{12}}$	$\alpha_{K_{20}} = 8{,}2$	$R'_{S_{20}} = \frac{1}{\varepsilon_{20} \cdot \pi \cdot d_{ka} \cdot C_s \cdot \beta_{20}}$

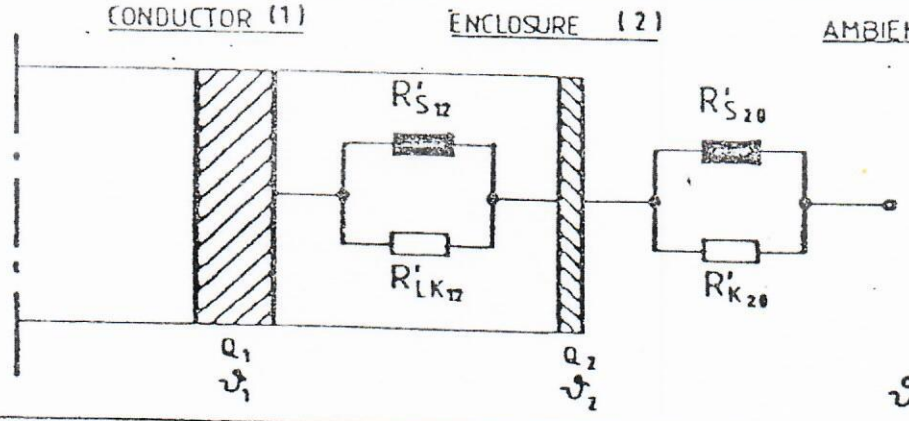
HEAT TRANSFER RESISTANCE	HEAT TRANSFER RESISTANCE
$R'_{U_{12}} = \frac{R'_{LK_{12}} \cdot R'_{S_{12}}}{R'_{LK_{12}} + R'_{S_{12}}}$	$R'_{U_{20}} = \frac{R'_{K_{20}} \cdot R'_{S_{20}}}{R'_{K_{20}} + R'_{S_{20}}}$

3 TEMPERATURES

OVER TEMPERATURE	OVER TEMPERATURE
$\vartheta_{U_1} = Q_1 \, R'_{U_{12}} + (Q_1 + Q_2 + Q_{SO}) \cdot R'_{U_{20}}$	$\vartheta_{U_2} = (Q_1 + Q_2 + Q_{SO}) \cdot R'_{U_{20}}$
OPERATING TEMPERATURE	OPERATING TEMPERATURE
$\vartheta_1 = \vartheta_0 + \vartheta_{U_1}$	$\vartheta_2 = \vartheta_0 + \vartheta_{U_2}$

4 EQUIVALENT SYSTEM

CONDUCTOR (1) ENCLOSURE (2) AMBIENT (0)



5 MARKING

$A_{\_}$	CROSS SECTION [mm²]	$G_{\_}$	WEIGHT [kg/m]	$R_{K\_}$	HEAT RESISTANCE OF CONVECTION
α_{Al}	COEFFICIENT OF TEMP FOR AL [1/°C]	$S_{\_}$	CURRENT DENSITY [A/mm²]	$R_{S\_}$	HEAT RESISTANCE OF RADIATION
$\varkappa_{\_}$	EL CONDUCTIVITY [m/Ωmm²]	K	DEPENDENCE COEFFICIENT	$Q_{\_}$	THERMAL SOURCE [kcal/h m]
α_K	HEAT CONVECTION TRANSFERENCE NUMBER [kcal/m²h°C]	λ_S	THERMAL CONDUCTIVITY OF THE AIR [kcal/mh°C]	$V_{\_}$	EL LOSSES AT OPERATING TEMP [W/m]
$\beta_{\_}$	COEFFICIENT OF TEMPERATURE [°C³]	G_r	GRASHOFS NUMBER	J	CURRENT ITENSITY AT MAKE [A]
C	RADITION NUMBER [kcal/m²h°C⁴]	P_r	PRANDTLS NUMBER	111	CONDUCTOR PAINTED-ENCLOSURE WITH INT SURFACE PAINTED ENC WITH EXTER SURFACE PAINTED
$d_{\_a}$	DIAMETER [mm, m]	$R_{\_20}$	EL RESISTANCE OF CONDUCTOR 20° [Ω/m]	110	CONDUCTOR PAINTED ENCLOSURE WITH INT SURFACE PAINTED ENC EXTER NOT PAINTED
$\vartheta_{\_}$	OVER TEMPERATURE [°C]	$R_{\_\vartheta}$	EL RESISTANCE OF ENCLOSURE 20° [Ω/m]	XM 621 176	
ϑ_0	AMBIENT TEMP [°C]	$R_{\_\sim}$	ALTERNATING CORRENT [Ω/m]	AGHIOS-DIMITRIOS III	

10. MRZ. 1983

ABB BOVERI

ALUMINIUM TUBES FOR CONDUCTORS AND ENCLOSURES (SELF COOLED DESIGN)

DEPARTMENT: SI/XTW

ORDER - NO: XM 621 176

POWER PLANT: AGHIOS - DIMITRIOS III/IV

BASIC - DATA

AMBIENT - TEMP ϑ_u [°C]	40.000
PAINT	111.000
FREQUENZ [Hz]	50.000
COEFFICIENT OF TEMPERATURE	0.004
COND. DIAMETER [mm]	480.000
COND. THICKNESS [mm]	12.000
EL. CONDUCTANCE [m/Ω mm²]	35.400
ENCL DIAMETER [mm]	910.000
ENCL DIAMETER [mm]	5.000
EL CONDUCTANCE [m/Ω mm²]	34.800
DENSITY OF THE WEIGHT [g/cm³]	2.700
RATED CURRENT J [A]	9930.000

EL. CONDUCTANCE, WEIGHTS, CURRENT DENSITY, LOSSES AND HEAT SOURCE

CONDUCTOR (1)	A_1	$= [d_{ka} + (d_{ka} - 2 \cdot d_s)] \pi \cdot \frac{d_s}{2}$	[mm²]	17643.184
	G_1	$= \gamma_{AL} \cdot 10^{-3} \cdot A_1$	[kg/m]	47.637
	S_1	$= \frac{J}{A_1}$	[A/mm²]	0.563
	R_{120}	$= \frac{1}{\varkappa_1 \cdot A_1}$	[Ω/m]	1.601-06
	$R_{1\vartheta_1}$	$= R_{120} \cdot [1 + \alpha_{Al} \cdot (\vartheta_1 - 20°)]$	[Ω/m]	1.906-06
	$R_{1\sim}$	$= R_{1\vartheta_1} \cdot (1 + K_1 \cdot d_s^4)$	[Ω/m]	2.024-06
	V_1	$= J^2 \cdot R_{1\sim}$	[W/m]	199.540
	Q_1	$= 0{,}86 \cdot V_1$	[kcal/h·m]	171.604
ENCLOSURE (2)	A_2	$= [d_{ka} + (d_{ka} - 2 \cdot d_k)] \pi \cdot \frac{d_k}{2}$	[mm²]	14215.707
	G_2	$= \gamma_{Al} \cdot 10^{-3} \cdot A_2$	[kg/m]	38.382
	S_2	$= \frac{J \cdot 0{,}9}{A_2}$	[A/mm²]	0.629
	R_{220}	$= \frac{1}{\varkappa_2 \cdot A_2}$	[Ω/m]	2.021-06
	$R_{2\vartheta_2}$	$= R_{220} \cdot [1 + \alpha_{Al} \cdot (\vartheta_2 - 20°)]$	[Ω/m]	2.284-06
	$R_{2\sim}$	$= R_{2\vartheta_2} \cdot (1 + K_1 \cdot d_k^4)$	[Ω/m]	2.289-06
	V_2	$= (J \cdot 0{,}9)^2 \cdot R_{2\sim}$	[W/m]	182.785
	Q_2	$= 0{,}86 \cdot V_2$	[kcal/h·m]	157.195

OPERATING TEMPERATURE

ENCLOSURE	ϑ_2	$= (Q_1 + Q_2 + Q_{SO}) \cdot R'_{\ddot{U}_{2\vartheta}} + \vartheta_u$	[°C]	52.350
CONDUCTOR	ϑ_1	$= Q_1 \cdot R'_{\ddot{U}_{12}} + \vartheta_2$	[°C]	68.475

DATE: 10. MRZ. 1983

REVISER:

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BBC BROWN BOVERI

ALUMINIUM TUBES FOR CONDUCTORS AND ENCLOSURES (SELF COOLED DESIGN)

DEPARTMENT SIXTW

ORDER - Nº

XM 621 176

POWER PLANT

AGIOS - DIMITRIOS III/IV

BASIC-DATA		
AMBIENT -TEMP ϑ_0 [°C]		40.000
PAINT		111.000
FREQUENZ	[Hz]	50.000
COEFFICIENT OF TEMPERATURE		0.004
COND. DIAMETER	[mm]	480.000
COND. THICKNESS	[mm]	12.000
EL. CONDUCTANCE	[m/Ω mm²]	35.400
ENCL DIAMETER	[mm]	910.000
ENCL DIAMETER	[mm]	5.000
EL CONDUCTANCE	[m/Ω mm²]	34.800
DENSITY OF THE WEIGHT	[g/cm³]	2.700
RATED CURRENT J	[A]	9930.000

EL. CONDUCTANCE, WEIGHTS, CURRENT DENSITY, LOSSES AND HEAT SOURCE				
CONDUCTOR (1)	A_1	$= [d_{ka} + (d_{ka} - 2 \cdot d_s)] \cdot \pi \cdot \frac{d_s}{2}$	[mm²]	17643.184
	G_1	$= \gamma_{AL} \cdot 10^{-3} \cdot A_1$	[kg/m]	47.637
	S_1	$= \frac{J}{A_1}$	[A/mm²]	0.563
	R_{120}	$= \frac{1}{\varkappa_1 \cdot A_1}$	[Ω/m]	1.601-06
	$R_{1\vartheta_1}$	$= R_{120} \cdot [1 + \alpha_{Al} \cdot (\vartheta_1 - 20°)]$	[Ω/m]	1.885-06
	$R_{1\sim}$	$= R_{1\vartheta_1} \cdot (1 + K_1 \cdot d_s^4)$	[Ω/m]	2.001-06
	V_1	$= J^2 \cdot R_{1\sim}$	[W/m]	197.352
	Q_1	$= 0{,}86 \cdot V_1$	[kcal/h·m]	169.723
ENCLOSURE (2)	A_2	$= [d_{ka} + (d_{ka} - 2 \cdot d_k)] \cdot \pi \cdot \frac{d_k}{2}$	[mm²]	14215.707
	G_2	$= \gamma_{Al} \cdot 10^{-3} \cdot A_2$	[kg/m]	38.382
	S_2	$= \frac{J \cdot 0{,}9}{A_2}$	[A/mm²]	0.629
	R_{2Z0}	$= \frac{1}{\varkappa_2 \cdot A_2}$	[Ω/m]	2.021-06
	$R_{2\vartheta_2}$	$= R_{2Z0} \cdot [1 + \alpha_{Al} \cdot (\vartheta_2 - 20°)]$	[Ω/m]	2.250-06
	$R_{2\sim}$	$= R_{2\vartheta_2} \cdot (1 + K_1 \cdot d_k^4)$	[Ω/m]	2.254-06
	V_2	$= (J \cdot 0{,}9)^2 \cdot R_{2\sim}$	[W/m]	180.009
	Q_2	$= 0{,}86 \cdot V_2$	[kcal/h·m]	154.808
OPERATING TEMPERATURE	ENCLOSURE	$\vartheta_2 = (Q_1 + Q_2 + Q_{SO}) \cdot R'_{\ddot{U}Z0} + \vartheta_0$	[°C]	48.170
	CONDUCTOR	$\vartheta_1 = Q_1 \cdot R'_{\ddot{U}12} + \vartheta_2$	[°C]	64.587

DATE 10. MRZ. 1983

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ALUMINIUM TUBES FOR CONDUCTORS AND ENCLOSURES (SELF COOLED DESIGN)

DEPARTMENT
SIIXTN

ORDER - Nº
XM 621 176

POWER PLANT
AGHIOS - DIMITRIOS III/IV

BASIC - DATA

AMBIENT - TEMP ϑ_0 [°C]	40.000
PAINT	0.000
FREQUENZ [Hz]	50.000
COEFFICIENT OF TEMPERATURE	0.004
COND. DIAMETER [mm]	120.000
COND. THICKNESS [mm]	10.000
EL. CONDUCTANCE [m/Ω mm²]	33.060
ENCL. DIAMETER [mm]	550.000
ENCL. DIAMETER [mm]	3.000
EL. CONDUCTANCE [m/Ω mm²]	34.800
DENSITY OF THE WEIGHT [g/cm³]	2.700
RATED CURRENT J [A]	1157.000

EL. CONDUCTANCE, WEIGHTS, CURRENT DENSITY, LOSSES AND HEAT SOURCE

CONDUCTOR (1)	A_1	=	$[d_{ka} \cdot (d_{ka} - 2 \cdot d_s)] \cdot \pi \cdot \frac{d_s}{2}$ [mm²]	3455.752
	G_1	=	$\gamma_{AL} \cdot 10^{-3} \cdot A_1$ [kg/m]	9.331
	S_1	=	$\frac{J}{A_1}$ [A/mm²]	0.335
	R_{120}	=	$\frac{1}{\varkappa_1 \cdot A_1}$ [Ω/m]	8.753-06
	$R_{1\vartheta_1}$	=	$R_{120} \cdot [1 + \alpha_{AL} \cdot (\vartheta_1 - 20°)]$ [Ω/m]	9.890-06
	$R_{1\sim}$	=	$R_{1\vartheta_1} \cdot (1 + K_1 \cdot d_s^4)$ [Ω/m]	1.019-05
	V_1	=	$J^2 \cdot R_{1\sim}$ [W/m]	13.634
	Q_1	=	$0,86 \cdot V_1$ [kcal/h·m]	11.725
ENCLOSURE (2)	A_2	=	$[d_{ka} \cdot (d_{ka} - 2 \cdot d_k)] \cdot \pi \cdot \frac{d_k}{2}$ [mm²]	5155.354
	G_2	=	$\gamma_{AL} \cdot 10^{-3} \cdot A_2$ [kg/m]	13.919
	S_2	=	$\frac{J \cdot 0,9}{A_2}$ [A/mm²]	0.202
	R_{220}	=	$\frac{1}{\varkappa_2 \cdot A_2}$ [Ω/m]	5.574-06
	$R_{2\vartheta_2}$	=	$R_{220} \cdot [1 + \alpha_{AL} \cdot (\vartheta_2 - 20°)]$ [Ω/m]	6.042-06
	$R_{2\sim}$	=	$R_{2\vartheta_2} \cdot (1 + K_1 \cdot d_k^4)$ [Ω/m]	6.044-06
	V_2	=	$(J \cdot 0,9)^2 \cdot R_{2\sim}$ [W/m]	6.553
	Q_2	=	$0,86 \cdot V_2$ [kcal/h·m]	5.636
OPERATING TEMPERATURE ENCLOSURE	ϑ_2	=	$(Q_1 + Q_2 + Q_{SO}) \cdot R'_{U2\vartheta} + \vartheta_0$ [°C]	41.001
OPERATING TEMPERATURE CONDUCTOR	ϑ_1	=	$Q_1 \cdot R'_{U12} + \vartheta_2$ [°C]	52.547

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