

**MAGNET WIRE**  
BROCHURE



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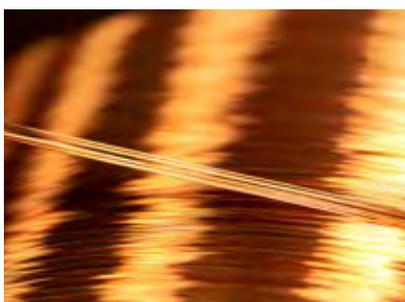
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## MAGNET WIRES FACTORY

In 1997, Elsewedy Cables established their first winding wires factory in Egypt, which is considered one of the largest factories in the Middle East specialized in manufacturing Enamelled round and paper flat wire (Copper&Aluminum) as well as plain & tinned with the capacity of 15000 ton/year, produced and quality controlled through very sophisticated devices both online and at the laboratory. The laboratory facility is equipped with almost all testing devices to meet the requirements of IEC and European norms.

Our customers in Europe, Africa and Middle East are consuming almost 50% of our production capacity in the field of Oil and Dry Transformers, Switch Gears, Motors and Compressors.





## ENAMELLED ROUND **COPPER WIRES**

### Technical data

Round Enamelled (From 0.1 up to 5.25 mm)

### Specifications

#### Insulation Types

- 1- Solderable Polyurethane (red ,green and clear color class f155°C)
- 2- Polyesterimide Class (H180°C- 200°C)  
and Solderable Polyesterimide Class ( H180°C)
- 3- Polyesterimide Over Coated with Polyamideimide  
Class ( 200°C - 220°C UL approved)
- 4- Polyvinyl Acetal or Poly Vinyl Formal Class (E120°C)

### Grades

I, II, III According to IEC:60317 , DIN 46 435

### Applications

- 1- Transformers Coils
- 2- Motor & Generators Coils
- 3- Compressors Coils
- 4- Measuring Devices Coils
- 5- Tv Deflection Yoke Coils
- 6- Relays, Solenoid Coils And Balast



### Packaging

According to IEC 264,  
DIN 46 383 & DIN 46 399

## ENAMELLED ROUND **COPPER WIRES**



**Diameter Range  
mm**

**Cylindrical Reels**

**Conical Reels**

	K125	K160	K200	K250	K355	K250	200/315	250/400	315/500	400/630
0.10 - 0.25	▪	▪	▪	◻		▪	▪	◻	◻	
0.25 - 0.50		▪	▪	▪		▪	▪	▪	◻	◻
0.50 - 1.00		◻		▪	◻	◻		▪	▪	▪
1.00 - 2.00			▪	▪	▪	◻		▪	▪	▪
2.00 - 3.00				▪	▪			◻	▪	▪
3.00 - 3.55					▪				◻	▪
3.55 - 5.25					▪					▪

▪ Preferable    ◻ Available



**Reels Type      Weight (kg)**

K125	2 - 2.5
K160	5 - 6
K200	10 - 12
K250	18 - 21
K355	40 - 45
KK250	17 - 21
200/315	17 - 20
250/400	35 - 45
315/500	90 - 100
400/630	160 - 180



## ENAMELLED ROUND ALUMINUM WIRES

### Technical data

0.335: 5.00 mm

### Specifications

- 1- IEC 60317-0-3
- 2- IEC 60371-15 Class 180
- 3- IEC 60317-25 Class 200

### Grades

- 1- G1
- 2- G2



### Applications

- 1- Lightweight Electric rotated motors
- 2- Transformers
- 3- Generator
- 4- Refrigerating system
- 5- Pumps
- 6- Fans
- 7- Switchgear
- 8- Lighting Fixtures
- 9- Induction heaters
- 10- Others

### Packaging

Reels Type	Weight (kg)
K250	2 - 2.5
250/400	5 - 6
315/500	10 - 12
400/630	18 - 21



## PAPER WRAPPED RECTANGULAR COPPER WIRES

### Technical data



Width		Flat Wire (mm) Thickness		Cross Section Area
min	max	min	max	max
6	25	1.2	8	120m <sup>2</sup>

Flang dia.	Spools Capacity	Type
K355	45	Plastic
500	90	Wooden
710	200	Plastic
750	225	Wooden

\* All dimensions in mm

### Specifications

According to DIN 46434 - IEC:60317-27

### Insulation type

- 1- Kraft and epoxy paper class 5A 105°C
- 2- Polyimide film class 180°C
- 3- Nomex T410 class 220°C

### Applications

- 1- Oil filled Transformers
- 2- Power & Distribution Transformers
- 3- Choke Coils

### Packaging

Wooden spool

### Raw Material Quality

Electrolytic Tough Pitch Copper according to ASTM-B49

### Purity

99.95% High Conductivity

\* Thickness of Insulation From 0.1 to 4.0 mm



## PAPER INSULATED **ROUND WIRES**

### Technical data



#### **Conductors range**

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Copper Diameter

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1.50 to 6.00 mm

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### Types of paper or tapes

Kraft - Diamant kraft - Nomex - Mylar Mica Glass Special papers or Tapes on request Copper  
Proof Stress 0.2 % soft Range 60 to 100 N/mm<sup>2</sup>

### Specification

E-AL UNI EN 9001 Al - CU-EPTP1 UNI EN 1977 Cu - IEC 60554-2 - Customer specification

### Applications

Windings for oil transformers or dry transformers

### General packing

Plastic reels or on request



## BARE COPPER WIRES

### Technical data



Size (mm)	Min. diameter (mm)	Max.diameter (mm)	Cross section area (mm)	Weight of 1km (Kg)	Elongation %
1.24	1.2	1.24	1.21	10.7	
1.38	1.34	1.38	1.5	13.3	22-28
1.5	1.46	1.5	1.77	15.7	

### Specifications

#### Electrolytic Copper

Int. Standard		ASTM B 49
Cooper Purity	%	Min 99.95%
Tensile Strenght Max	N/mm2	200-250%
Density	g/cm3	8.9
Specific Heat	15-100 C Cal/gc	0.093
Thermal conductivity	Cal cm/cm3C	1.22
Electric Conductivity Min. (IACS) at 20°C	%	≥100%
Resistivity at 20°C (at 10% lacs)	ohm mm2/m	0.017241

### Applications

Copper Welding Wires are mainly used for the welding process of all types of Metal Cans

### Product Range

Wires are packaged in a cylindrical steel baskets (returnable or non-returnable), covered by a plastic bag for protection against oxidation and shocks. A cilica gel bag is enclosed inside the basket to achieve humidity absorption.



## TINNED COPPER WIRES

### Technical data

An Electrolytically Tin Coated Annealed Copper Wires.

### Applications

- 1- Electrical Conductors for Cables Industry
- 2- Electronic Circuits

### Specifications

High Conductivity Electrolytic Tough Pitch Copper 99.95%

### Quality Control (Tests)

Tensile Strength, Resistivity, Dimensions, Coating Thickness, Elongation %, Coating Adherence & Continuity of Coating.

### Packaging

Product type	Standard (Design & Testing)	Dim. Range	Tin Thickness	Mode of Delivery	
				Packing Type	Capacity
Drawn Tinned	ASTM B33	0.27-1.60 mm	Up to (3 micron mt)	Plastic spools	Up to (20kg) IEC 264-2
Tinned	ASTM B33	1.35-3.00 mm	1.35-3.00 mm	Light baskets Plastic spools	Up to (1000 kg) Up to (45 kg) IEC 264-2

\* Other types as per customer request.

# TOTAL QUALITY MANAGEMENT



## Elsewedy Cables

Copper Welding Wires are mainly used for the welding process of all types of Metal Cans

## Elsewedy Cables Winding Wires

Are precisely inspected and tested through a series of sophisticated online instrumentations, followed by laboratory tests according to the International Standards Specifications.

## Quality Control for Winding Wires

Testing procedures according to IEC:60815

- (Uni & Bi) Abrasion Test
- Peel Test
- Heat Shock Test
- Spring Back Test
- Cut Through Test
- Elongation % Test
- Electric Resistance Test
- Break Down Voltage Test
- On Line Continuity Tester
- Solderability Test
- Solvent Test
- Oil Resistance Test
- Pin Hole Test
- Tangent Delta Test
- Mandrel Test
- Flexibility and Adherence "Flat Wire"
- Thermal Heat Cut Through Test
- Continuity Test
- Abrasion Test



## Certifications



ISO 9001-2008 (UIC)



0.6 Tinned Copper Wire Test Report



0.132 Enamelled Wire Test Report



3.35 Enamelled Wire Test Report



ISO 17025 - 2005



UL Certificates Magnit Wire



0.5 Tinned Copper Wire Test Report



0.7 Enamelled Wire Test Report

This study aims to layout and calculate the carbon footprint in the Magnet Wires factory:

## Power related emissions

These emissions are linked to purchased electricity the corporate used, as well as its diesel and petrol consumption.

### a) Diesel

The United Industries consumed 144,000 liters of diesel annually. Diesel is a direct emission accounted for under scope 1. This amount was used in forklifts. The results are shown in Table 12.

Table 12: Direct Emissions - scope 1 Diesel

Scope 1		Consumption	UNIT	KgCO <sub>2</sub> e
2017	Diesel	144,000	l/year	384,480
2018		144,000		384,480
2019		144,000		384,480

### b) Natural Gas

United Industries consumed 715,476 m<sup>3</sup> of natural gas in 2017, 765,662 m<sup>3</sup> in 2018, and 451,714 m<sup>3</sup> in 2019. Natural gas is direct emission accounted for under scope 1. This amount used in chillier. The results are shown in Table 13.

Table 13: Direct Emissions - scope 1 Gas

Scope 1		Consumption	UNIT	KgCO <sub>2</sub> e
2017	Gas	715,476	m <sup>3</sup> /year	1,455,707
2018		765,662		1,557,816
2019		451,714		919,057

### c) Company owned cars

United Industries owned cars travelled 683,309 km in 2017, 579,000 km in 2018, and 1,889,287 km in 2019. The company-owned car emissions are a direct emission accounted for under scope 1. The results are shown in Table 14.

Table 14: Direct Emissions - scope 1 company-owned cars

Scope 1		Consumption	UNIT	KgCO <sub>2</sub> e
2017	Company owned cars (Petrol)	683,309	km/year	136,887
2018		579,000		115,991
2019		1,889,287		134,522

### d) Electricity

Electricity is an indirect emission under scope 2. United Industries used electricity from the grid as an energy source for production, lighting, cooling, etc. In 2017 United Industries consumed 25,954,800 kWh, 26,025,600kwh in 2018, and 23,803,200 kWh in 2019. The results are shown in Table 15.

Table 15: Indirect Emissions - scope 2 Electricity

Scope 2		Consumption	UNIT	KgCO <sub>2</sub> e
2017	Electricity	25,954,800	kWh/year	12,977,400
2018		26,025,600		13,012,800
2019		23,803,200		11,901,600

## Travel related emissions

These emissions consist of the corporate's employee's daily travel, as well as their business travel.

### a) Business Travel

In 2017 United Industries' total number of flights was 28. All flights were short-haul (flights up to 3,700km), and 19,200 km were business travel – no flights. In 2018 the total number of flights was 58. Fifty-six flights were short-haul, and two flights were long-haul and 29,690 km were business travel – no flights. In 2019 the total number of flights was 62, all were short-haul, and 72,414 km were business travel – no flights.

The results are shown in Table 16. Business travel is indirect emission under scope 3

Table 16: Indirect Emissions - scope 3 Travel related emission

Scope 3		Consumption	UNIT	KgCO <sub>2</sub> e
2017	Business travel	93,400	km/year	16,273
2018		177,390		31,415
2019		226,714		40,491

### b) Commuting related emissions

The total United Industries staff count was 920 employees in 2017, 926 in 2018, and 960 employees in 2019. The staff commuting emission are shown in Table 17. Commuting emissions are indirect emissions under scope 3

Table 17: Indirect Emissions - scope 3 Office staff commuting emission

Scope 3		Consumption	UNIT	KgCO <sub>2</sub> e
2017	Staff commuting	1,723,600	km/year	178,234
2018		1,522,512		154,611
2019		1,601,271		162,609

## Emissions due to paper consumption

In 2017 United Industries used 750,000 sheets. In 2018 the total used sheets was 1,120,000, and in 2019, the total used sheets was 900,000. The emission results are shown in Table 18.

Table 18: Indirect Emissions - scope 3 Emissions due to paper consumption

Scope 3		Consumption	UNIT	KgCO <sub>2</sub> e
2017	Paper consumption	3,742	kg/year	5,389
2018		5,588		8,047
2019		4,491		6,467

## Emissions due to waste management and disposal

Emissions at this section occur through the United Industries waste management and waste disposal process. The total amount of waste in 2017 was 1,409 tons, 1,448 tons in 2018, and 1,449 tons in 2019. The emission results are shown in Table 19.

Table 19: waste management and disposal

Scope 3		Consumption	UNIT
2017	Waste management & transport	63,542	KgCO <sub>2</sub> e
2018		38,825	
2019		39,117	

## Results United Industries Egypt

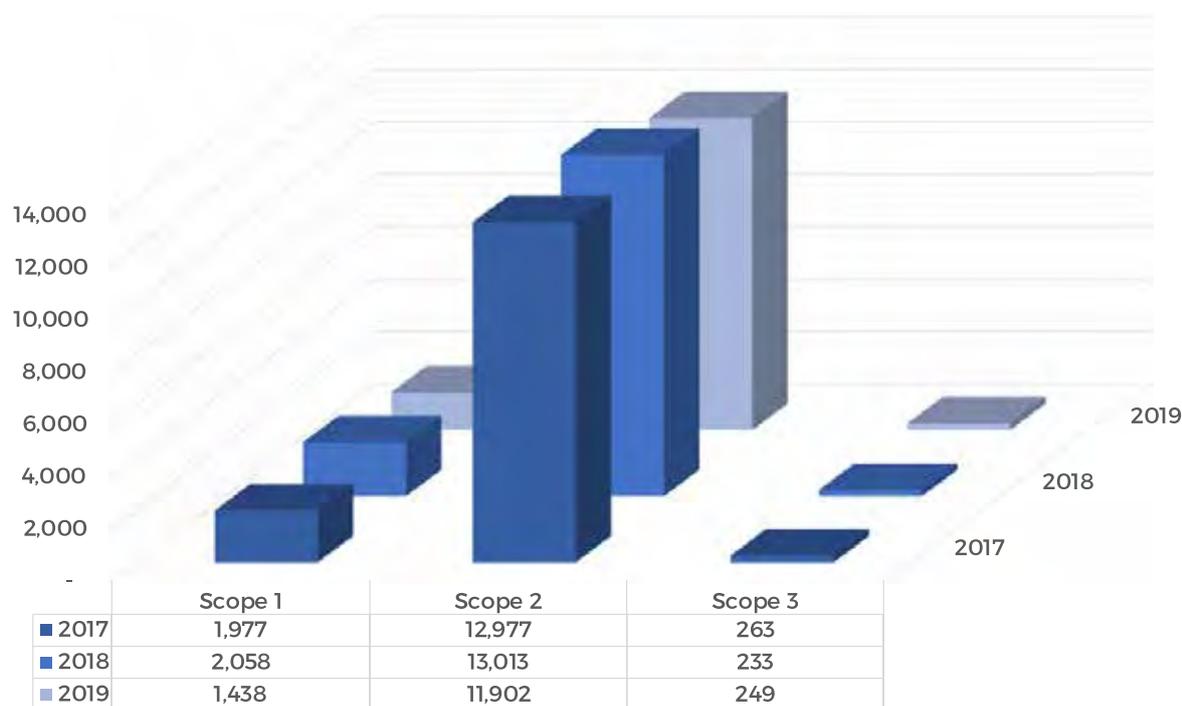
The total carbon footprint for United Industries amounts to 15,218 tons of CO<sub>2</sub>e in 2017, 15,304 tons of CO<sub>2</sub>e in 2018, and 13,832 tons of CO<sub>2</sub>e in 2019.

### a) Emissions per scope

Table 20: Emissions per scope

	2017	2018	2019
Scope	Emissions in tCO <sub>2</sub> e	Emissions in tCO <sub>2</sub> e	Emissions in tCO <sub>2</sub> e
Scope 1	1,977	2,058	1,438
Scope 2	12,977	13,013	11,902
Scope 3	263	233	249
<b>Total</b>	<b>15,218</b>	<b>15,304</b>	<b>13,588</b>

Graphic 6: Emissions per scope



### b) Emission per category

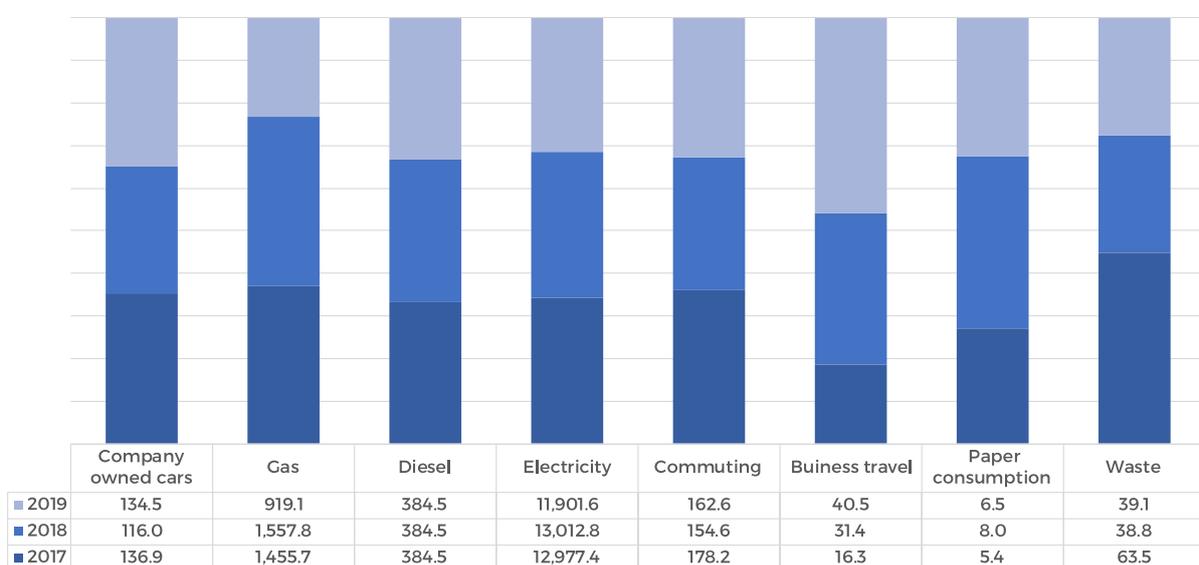
Table 21: Emissions per scope

	2017	2018	2019
Category	Emissions in tCO <sub>2</sub> e	Emissions in tCO <sub>2</sub> e	Emissions in tCO <sub>2</sub> e
Company owned cars	136.9	116.0	134.5
Gas	1,455.7	1,557.8	919.06
Diesel	384.5	384.5	384.48
Electricity	12,977.4	13,012.8	11,901.60
Commuting	178.2	154.6	162.61

# SUSTAINABILITY

	2017	2018	2019
Buiness travel	16.3	31.4	40.49
Paper consumption	5.4	8.0	6.47
Waste	63.5	38.8	39.12
<b>TOTAL</b>	<b>15,218</b>	<b>15,304</b>	<b>13,588</b>

Graphic 7: Emissions per category



## C) Emission per employee

Table 22: Emissions per employee

Per employee	Emissions in tCO2e	tCO2e
2017	15,218	16.54
2018	15,304	16.53
2019	13,588	14.15

## D) Emission per m<sup>2</sup>

Table 23: Emissions per m<sup>2</sup>

Per m <sup>2</sup> (office space)	Emissions in tCO2e	tCO2e
2017	15,218	0.35
2018	15,304	0.22
2019	13,588	0.19



## CERTIFICATE

**TÜV NORD CERT Standard TN-CC 020**  
"Calculation & Verification of Carbon Footprints & Carbon Neutrality"

Evidence of conformity with the above standard has been furnished and is certified in accordance with TÜV NORD CERT procedures for

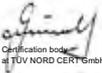
**Elsewedy Cables**  
A3 Industrial Zone  
10th Ramadan  
Al Sharqia, 44629  
Egypt



The calculation of carbon footprint encompasses the emission from manufacture of the cables in terms of the raw materials, upstream and downstream transportation and manufacturing processes

Based on the performed assessment it can be stated that the calculation meets the requirements of the standard ISO 14067, which is the basis of the calculation and TN-CC 020, which has been used for the certification standard.

Certificate Registration No. 44 811 191730      Valid from 2018-01-01  
Audit Report No. 3525 4752                      Valid until 2018-12-31



Certification body  
at TÜV NORD CERT GmbH

Essen, 2020-06-29

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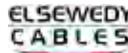


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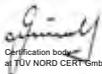
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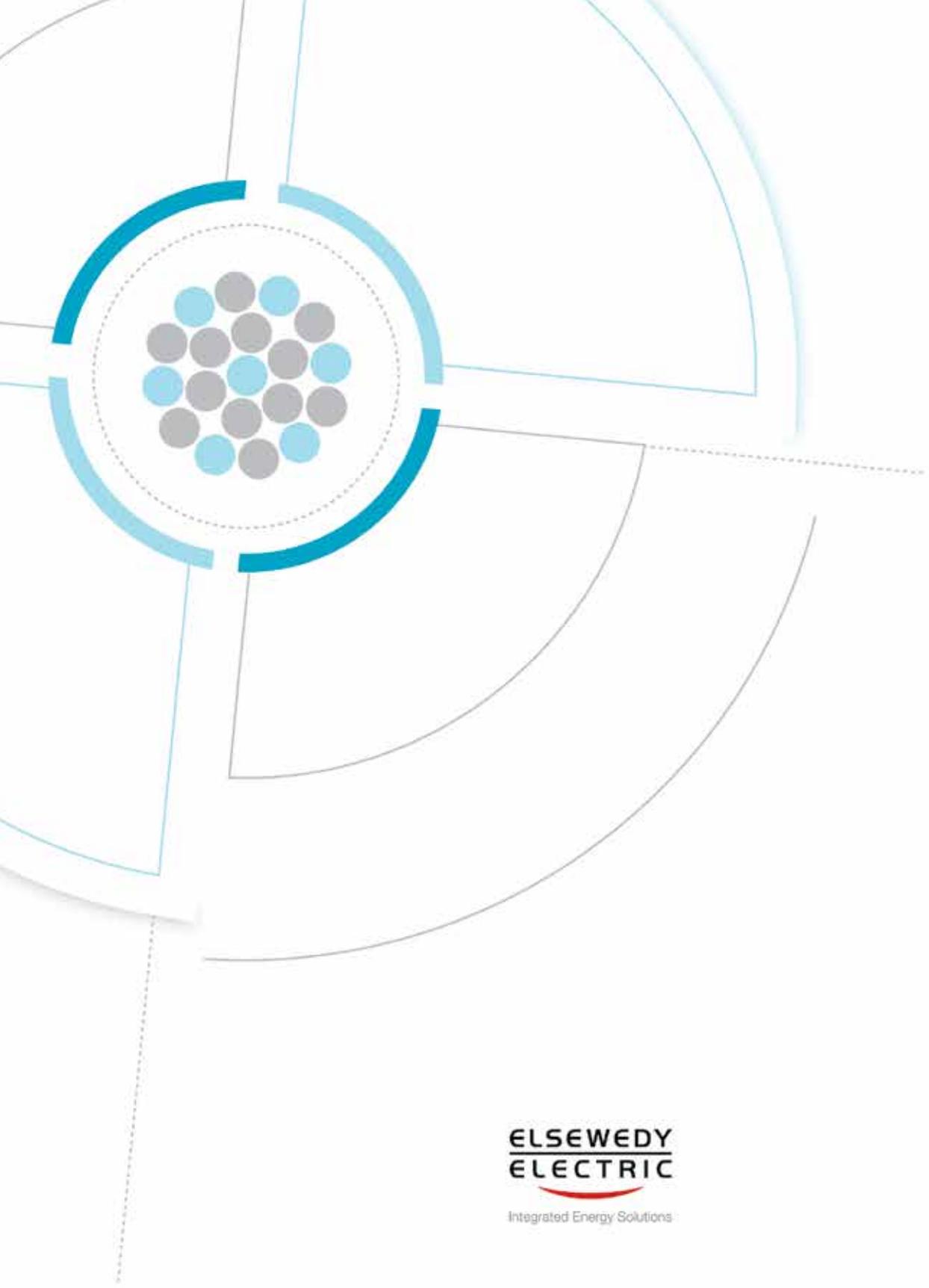


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**ELSEWEDY  
ELECTRIC**

Integrated Energy Solutions

## **MAGNET WIRE** CATALOGUE

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