



Shipbuilding

# Connecting technology for flexible aluminum cables sicame



OEM



# About us

sicame  
GROUP

Sicame Group is one of the key players in the electrical equipment business worldwide. It has been able to adapt and develop to support the continuous evolution of electricity infrastructure in France and around the world, and become the largest independent entity in its sector.

A true player in the energy transition, it offers its customers new products and services to improve energy efficiency, deal with environmental risks and support the development of electric vehicle and solar power plant markets.

+65

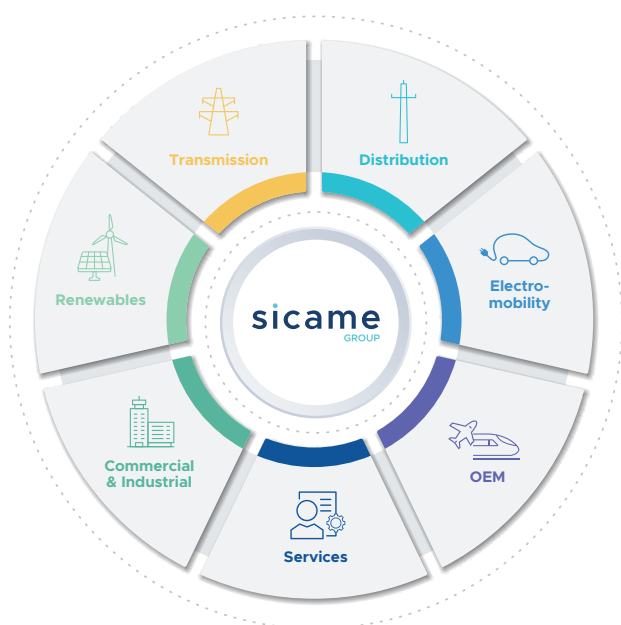
years of worldwide success

458 M€

2021 turnover

3,600

employees



## Our fields of activity

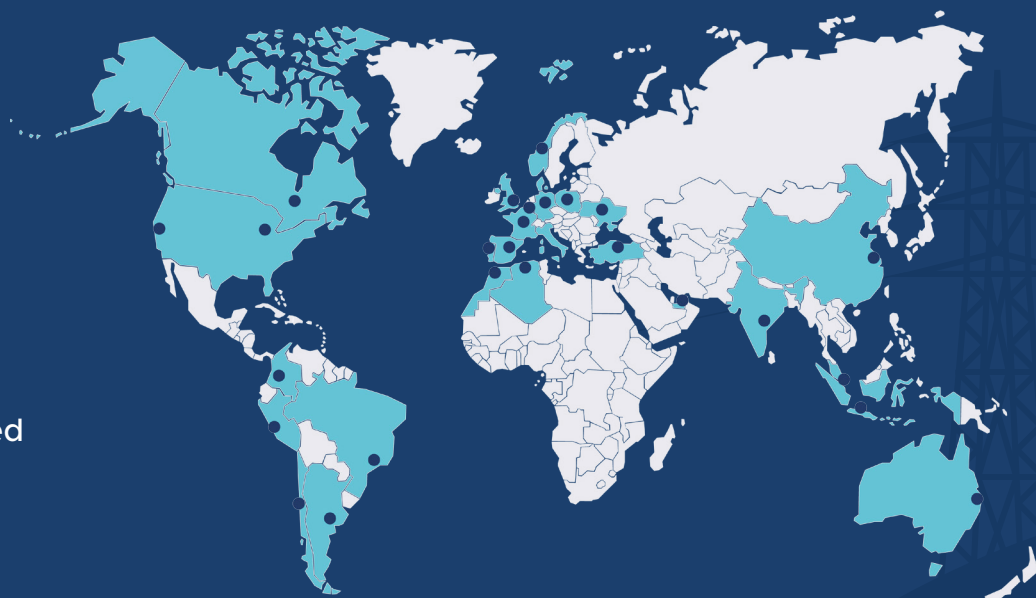
Sicame Group is specialised in **products and services** related to the transmission and distribution of **electrical energy** as well as safety equipment and industrial applications.

5 continents

26 countries

50 companies  
around the world

Products distributed  
in 157 countries



# Approved certificates

MECATRACTION has obtained the certificate of authorization for a connecting system using DBI lugs established on 2018-04-24.

DNV

TYPE APPROVAL CERTIFICATE

Certificate No:  
TAE00002GK  
Revision No:  
3

This is to certify:  
That the Electric Power Cable

with type designation(s)  
Texiline Power EMC ALUFLEX 0,6/1 kV,  
Texiline Power EMC VFD ALUFLEX 1,8/3 kV,  
Texiline Heli Twist Alu EMC

Issued to  
**amo specialkabel AB**  
ALSTERMO, Sweden

is found to comply with  
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :  
Power cables with aluminum conductor, EMC Screened.  
Products approved by this certificate are accepted for installation on all vessels classed by DNV

Type	Rated voltage (kV)	Temp. class (°C)
Texiline Power EMC ALUFLEX 0,6/1 kV	0,6/1	90
Texiline Power EMC VFD ALUFLEX 1,8/3 kV	1,8/3	90
Texiline Heli Twist Alu EMC	0,6/1	90

Issued at Høvik on 2022-03-15

This Certificate is valid until 2023-05-29.  
DNV local station: Malmö

Approval Engineer: Ivar Bull

for DNV  
Digitally Signed By: Självåg, Trond  
Location: DNV Høvik, Norway

Trond Självåg  
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the service purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and shall be limited to 350,000 USD.

Form code: TA 251

Revision: 2021-03

www.dnv.com

DNV is a global quality assurance and risk management company. DNV provides classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas, power and renewables industries. DNV also provide certification.

DNV

IEC 61238-1 class A tested

Job Id: 262.1-036721-1  
Certificate No: TAE00002GK  
Revision No: 3

Product description

Types: Texiline Power EMC ALUFLEX 0,6/1 kV,  
Texiline Power EMC VFD ALUFLEX 1,8/3 kV

Construction:  
Conductors: Stranded aluminum class 5 according to ISO 6722-2.  
Core insulation: XLPE  
Inner covering: Flame retardant halogen-free compound  
Braid: Copper braid  
EMC Screen: Metal backed PE tape  
Outer sheath: SHF 1

No of cores:	Cross sectional area [mm <sup>2</sup> ]
1,3	50, 70, 95, 120, 150

Texiline Heli Twist Alu EMC

Construction:  
Conductors: Plain, stranded copper class 5  
Core insulation: HF XLPE  
Screen: Cu wire braid and Cu/PET foil  
Outer sheath: SHF 1

3 single core cables twisted together in trefoil construction without common outer sheath.

No of cores:	Cross sectional area [mm <sup>2</sup> ]
3 x 1	50, 70, 95, 120, 150

Application/Limitation

The requirements of SOLAS Amendments Chapter II-1, Part D, Reg. 45, 5.2 (provision to be taken to limit Fire Propagation along Bunches of Cables or Wires) are fulfilled without any additional measures.

Cable shall be terminated with DNV type approved DBI-terminations designed for aluminium conductors, ref. DNV TA certificate TAE00002GJ.

Press to be performed with approved press tool and correct die size.

Heat shrink tubing with melt glue shall be installed over pressed termination in order to prevent ingress of moisture.

DNV Rules states: If bunched cables are expected to be under full continuous load simultaneously with risk of being overheated, then IEC 60092-352 Annex A should be used. Ampacities from IEC 60092-352 table A4 shall be derated with 0.76 for aluminum conductors.

Type Approval documentation  
Data sheets: Texiline Power EMC ALUFLEX 0,6/1 kV,  
Texiline Power EMC VFD ALUFLEX 1,8/3 kV  
TEXILine Heli Twist EMC dated 07.01.2022

Test reports:

Tests carried out

	Release	General description	Limitation
DNV-CP-0399	2021-08	Class Programme Electric cables	Same requirements as for copper cables except for Aluminum conductor
DNV-CP-0409	2021-09	Class Programme for terminal lugs for LV power cables with aluminium conductors	

Form code: TA 251

Revision: 2021-03

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## The specificity of flexible cables in aluminum

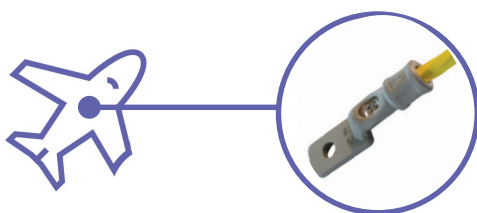
The crimping of aluminum cables is made difficult by the very rapid formation of an insulating oxide layer around each strand of the cable that does not allow good conductivity.

Oxide thickness: 1-10  $\mu\text{m}$   
Oxide formation time: <1s

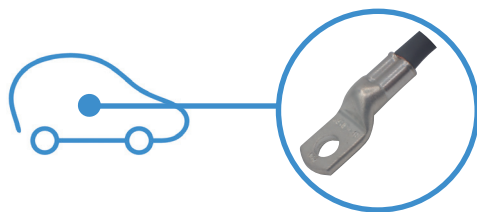
Natural aluminum oxide layer

Aluminum core

## Crimping know-how



**Over 35 years**  
of experience in  
the aerospace  
market  
- Contact grease  
- Indent crimp



**Over 30 years**  
of experience in  
the automotive  
market  
- B Crimp  
- Watertightness



**Know-how**





## A patented solution

The DBI solution combines a special "DBI terminal" associated to an innovative "DBI crimp":

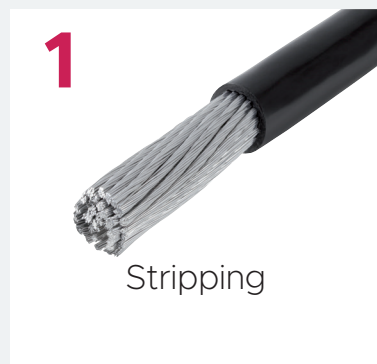
- "DBI Terminal": a copper tubular lug equipped with an interface grid and contact grease.
- "DBI crimp": includes a deep indent shape and two B shapes (one on each side), acting in single crimping step.



- "DBI crimp" creates elongation of the conductor inducing a high deformation of the strands.
- "DBI crimp" breaks alumina layer and creates a reliable electrical contact with durability ensured by the grease.



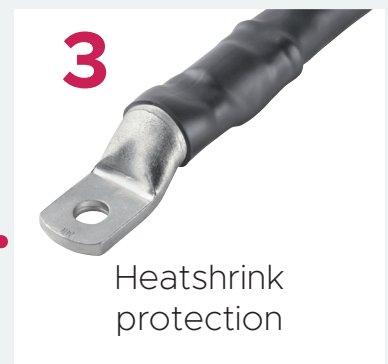
## Conventional crimping process



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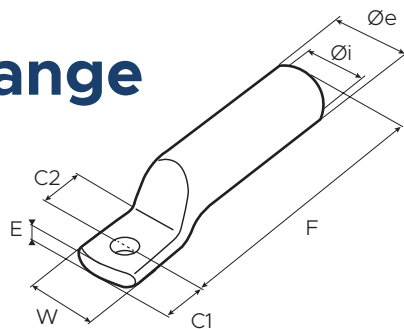





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Scan to see the video presentation of DBI



## DBI terminal range



 mm <sup>2</sup>	Item code	Part No.		 Ø mm	E	W	Øi	Øe	C1	C2	F
50	7350760	DBI50-6	10	6	4.3	22.5	13.0	18.0	13.0	18.0	60.5
	7350770	DBI50-8	10	8	4.3	22.5	13.0	18.0	13.0	18.0	60.5
	7350780	DBI50-10	10	10	4.3	22.5	13.0	18.0	13.0	18.0	60.5
70	7350800	DBI70-6	15	6	4.5	24.5	14.5	19.5	13.0	18.0	71.0
	7350810	DBI70-8	15	8	4.5	24.5	14.5	19.5	13.0	18.0	71.0
	7350820	DBI70-10	15	10	4.5	24.5	14.5	19.5	13.0	18.0	71.0
	7350830	DBI70-12	15	12	4.5	24.5	14.5	19.5	13.0	18.0	71.0
95	7350840	DBI95-8	15	8	4.3	24.5	15.9	20.8	13.0	18.0	84.0
	7350850	DBI95-10	15	10	4.3	24.5	15.9	20.8	13.0	18.0	84.0
	7350860	DBI95-12	15	12	4.3	24.5	15.9	20.8	13.0	18.0	84.0
120	7350890	DBI120-8	15	8	5.2	24.5	17.6	22.8	13.0	18.0	86.0
	7350900	DBI120-10	15	10	5.2	24.5	17.6	22.8	13.0	18.0	86.0
	7350910	DBI120-12	15	12	5.2	24.5	17.6	22.8	13.0	18.0	86.0
150	7350940	DBI150-8	10	8	5.8	29.0	21.3	27.2	13.0	18.0	102.0
	7350950	DBI150-10	10	10	5.8	29.0	21.3	27.2	13.0	18.0	102.0
	7350960	DBI150-12	10	12	5.8	29.0	21.3	27.2	13.0	18.0	102.0
	7350970	DBI150-14	10	14	5.8	29.0	21.3	27.2	15.5	20.5	104.5
	7350980	DBI150-16	10	16	5.8	29.0	21.3	27.2	15.5	20.5	104.5

## Heat shrink tubing


Suitable for DBI 95, 120 and 150 terminals.

 mm <sup>2</sup>	Item code	Part No.		L	Øi
50-70	7469351	GTMA33-8BKL80	10	80	33
95-150	7469350	GT MA33-12BKL130	10	130	40



## Crimping dies set

Compatible with SH450J hydraulic compression head.

Item code	Part No.		TERMINAL TYPE
7510635	H45DBI50-370	1	DBI50
7510636	H45DBI70-460	1	DBI70
7510629	H45DBI95-520	1	DBI95
7510630	H45DBI120-585	1	DBI120
7510631	H45DBI150-715	1	DBI150



Nominal cross section in Aluminium core



Stud hole diameter



Packaging

Unless otherwise stated, all dimensions are in millimeters



# Crimping tooling

## Hydraulic compression head

Single action.

- Output force: 540 kN under 850 bar
- Size: 260 x 135 x 115 mm
- Weight: 9.8 kg



Item  
code

7515045

Part  
No.

SH450J

Metallic carrying case  
For 1 crimping head  
and up to 4 diesets



Item  
code

7515047

Part  
No.

CMSH450

## SH450 connectable hydraulic compression head kit

Kit composition:

- Hydraulic compression head PN: SH450J
- Metallic carry case PN: CMSH450



## Electro-hydraulic pump

Single action. Wire remote control. Operating energy:  
Li-Ion battery or 110-230 VAC adapter EU plug (included).

- Nominal output pressure : 850 bar
- Flow rate: 0.7-1 L/minute
- Oil tank: 0.65 L
- Size: 285 x 255 x 185 mm
- Weight: 6.5 kg



Item  
code

7515120

Part  
No.

SVEPT20-520J

Metallic carrying case



Item  
code

7515026

Part  
No.

CMSPT20

## Hydraulic hose with push-pull couplers CEJN115



Item  
code

7510210

Part  
No.

SF30J

## SVEPT20-520 portable and compact electro-hydraulic pump kit

Kit composition:

- Electro-hydraulic pump PN: SVEPT20-520J
- Metallic carry case PN: CMSPT20
- Hydraulic hose PN: SF30J

Item  
code

7515121

Part  
No.

SVEPT20-520JCM



Nominal cross  
section in  
Aluminium core



Stud hole diameter



Packaging

Unless otherwise stated,  
all dimensions are in millimeters



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