

CABLE EXTRUSION LINES ELAV | THE ART OF EXTRUSION CONTROL





After 40 years of experience in wire and cable manufacturing with more than 3500 installation worldwide, Elav is proud to announce the opening of its new Mechanical Division.

Thanks to synergy with Colines SpA, leader in plastic film extrusion line manufacturing since the '70, with four manufacturing plant covering more than 25.000 sqm, Elav is now capable of supply a complete extrusion line for cable manufacturing with special attention to low energy consumption and production efficiency.

All our system can be customized to completely meet the specific requirement of our customers and all equipment can be easily integrated in already existing lines.

Our services include also the refurbishment and upgrade of old equipment and the complete installation at customer premises, giving our client the added value of a turnkey project.

The partnership with primary worldwide companies for all ancillary equipment that characterize a cable manufacturing line (e.g. dosing system, temperature control units, extrusion heads, etc.), combined with the experience in automation and process control, give our customers a state-of-the-art solution.









Automotive wire Insulation Lines

Suitable for high speed insulation of low voltage automotive wire with mulitple thermoplastic materials including flame retardants, reticulated polyethylene (XLPE), also with liquid Silane, halogen-free (HFFR), TPE and PVC.

Multiple line configurations guarantee efficient production with high speeds and low scrap.

LINE CONFIGURATION

LIN	E ELEMENT	DESCRIPTION
1	Pay Off	Single or dual flyers SDF630, SDF1250 Cantilever SCT 800, SCT 1000
2	Brake / Capstan	Pneumatic or clutch driven braking system Belt Capstan TCP series
3	Pre-Heater	On request
4	Extruders	Main: LCE 60 - LCE 80 – LCE120 Stripes: LCE 35 – LCE 45
5	Dosing system	Optional: volumetric or gravimetric system Optional: liquid Silane high accuracy dosing system Si-Jet (patented)
6	Extrusion Head	On request
7	Cooling troughs	Straight, hot/cold sections, single or multipass
8	Outlet Capstan	Belt Capstan TCP series
9	Take Up	Double automatic ADA630



LINE TYPES:

- Coex 2: insulation extruder and stripe extruder
- Coex 3: insulation extruder, skin/stripe extruders with Quick Color Change functionality
- · Ceox 4: insulation extruders with Quick Color Change functionality, skin and stripe extruders

X-Flow quick color change system ensures color change without slowing down the line with minimum scrap.

CONDUCTOR CROSS SECTION	WIRE Ø RANGE	INSULATION MATERIAL	SPEED MAX
0.22mm² – 6mm²	5mm	PVC, PE, XLPE, XLPE Liquid Silane, PVC, HFFR, TPEE	1.500 m/min



Building wire Insulation Lines

Ideal for insulation of low-voltage wire with mulitple thermoplastic materials including flame retardants, reticulated polyethylene (XLPE), also with liquid Silane, halogen-free (HFFR), PP, PU, TPE and PVC. Multiple line configurations guarantee efficient production with high speeds and low scrap.

LINE CONFIGURATION

LIN		DESCRIPTION
1	Pay Off	Single or dual flyers SDF630, SDF1250 Cantilever SCT 800, SCT 1000 Tandem with Rod Break Down Machine
2	Brake / Capstan	Pneumatic or clutch driven braking system Belt Capstan TCP series
3	Pre-Heater	On request
4	Extruders	Main: LCE 60 - LCE 80 – LCE 120 Stripes: LCE 35 – LCE 45
5	Dosing system	Optional: volumetric or gravimetric system Optional: liquid Silane high accuracy dosing system Si-Jet (patented)
6	Extrusion Head	On request
7	Cooling troughs	Straight, hot/cold sections, single or multipass
8	Outlet Capstan	Belt Capstan TCP series
9	Take Up	Cantilever ACT800 – ACT 1000 Double automatic ADA630 – ADA1250 for cylindrical and tapered reels



LINE TYPES:

- Single extruder insulation
- Coex 2: insulation extruder and stripe extruder
- Coex 3: insulation extruder, outer skin, inner skin with Quick Color Change functionality

X-Flow quick color change system ensures color change without slowing down the line with minimum scrap.

TYPICAL PRODUCT DEFINITION

CONDUCTOR CROSS SECTION	WIRE Ø RANGE	INSULATION MATERIAL	SPEED MAX
0.3 mm² – 35 mm²	5mm – 12mm	PVC, PE, XLPE, XLPE Liquid Silane, PP, HFFR, PU, TPE	1.500 m/min (*)



(*) may be higher with Tandem Rod Break Down Machine

Building wire sheating Lines

Designed for sheating of low-voltage cables with different thermoplastic materials including flame retardants, reticulated polyethylene (XLPE) including liquid Silane, halogen-free (HFFR), PVC, PP, PU, TPE. Multiple line configurations guarantee efficient production with high speeds and low scrap.

LINE CONFIGURATION

LINE ELEMENT	DESCRIPTION
1 Pay Off	Single or dual flyers SDF1250 Cantilever SCT 1000 Sliding arms SSM 1600 SSM 2000 Portal SPT 1600 SPT 2000 SPT 2800
2 Accumulator	Vertical ACV series Horizontal ACH series
3 Inlet Capstan / Caterpillar	Belt Capstan TCP series Caterpillar TCT series
4 Extruders	Filling: LCE 80 – LCE 120 – LCE 150 Sheating: LCE 60- LCE 80 – LCE 120 - LCE150 Skin: LCE 80 – LCE 120 – LCE 150
5 Dosing system	Optional: volumetric or gravimetric system Optional: liquid Silane high accuracy dosing system Si-Jet (patented)
6 Extrusion Head	On request Single Layer or Coex
7 Cooling troughs	Straight, hot/cold sections, single or multipass
8 Outlet Capstan / Caterpillar	Belt Capstan TCP series Caterpillar TCT series
9 Accumulator	Vertical ACV series Horizontal ACH series
10 Take Up	Sliding arms ASM 1600 ASM 2000 Portal APT 1600 APT 2000 APT 2800 Double automatic ADA630 – ADA1250
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LINE TYPES:

- Single extruder sheating
- Coex 2: Filling Extruder, Sheating Extruder
- Coex 3: Filling Extruder, Sheating Extruder, skin extruder
- Tandem: Filling group Single Extruder Sheating Group Single Extruder

CONDUCTOR CROSS SECTION	WIRE Ø RANGE	FILLING MATERIAL	INSULATION MATERIAL	SPEED MAX
Assembled cables	5mm – 30mm	PVC, HFFR	PVC, PE, XLPE, XLPE Liquid Silane, PP, HFFR, PU, TPE	500 m/min

Building wire sheating Lines with S-Z Stranding

With our building wire SZ Strander ESZ, the core assembly is combined with filling and sheathing lines to guarantee continuous production with materials including flame retardants, halogen-free (HFFR), PVC, PE and EPDM (for filling).

LINE CONFIGURATION

LIN	E ELEMENT	DESCRIPTION
1	Pay Off	Single or dual flyers SDF630 SDF1250 Cantilever SCT 1000 Sliding arms SSM 1600
2	S-Z Group	Tension lowering entry capstan ZTCP S-Z Strander ESZ Torsion Block Caterpillar ZTCT
3	Extruders	Filling: LCE 80 – LCE 120 – LCE 150 Sheating: LCE 80 – LCE 120 – LCE 150 Skin: LCE 80 – LCE 120 – LCE 150
4	Dosing system	Optional – volumetric or gravimetric
5	Extrusion Head	On request Single Layer or Coex
6	Cooling troughs	Straight, hot/cold sections, single or multipass, motorized capstan
7	Outlet Caterpillar	Caterpillar TCT series
8	Accumulator	Vertical ACV series Horizontal ACH series
9	Take Up	Sliding arms ASM 2000 Portal APT 2000 APT 2800



LINE TYPES:

- Coex 2: Filling Extruder, Sheating Extruder
- Coex 3: Filling Extruder, Sheating Extruder, Skin Extruder
- Tandem: Filling/Sheating group Coex 2 Skin Group Single Extruder

CONDUCTOR	CABLE	N. OF	FILLING	SHEATING	SPEED MAX
CROSS SECTION	Ø MAX	WIRE MAX	MATERIAL	MATERIAL	
0.5mm² – 16mm²	30mm	7 x 6mm² 5 x 16mm²	EPDM, PVC, HFFR	PVC, PE, XLPE, HFFR, TPE	400 m/min



Power Cable Insulation Lines

Suitable for insulation of power cables with differemt thermoplastic materials including flame retardants, reticulated polyethylene (XLPE) – liquid silane, halogen-free (HFFR), PVC, PUR, TPE. Multiple line configurations guarantee efficient production with high speeds and low scrap.

LINE CONFIGURATION

LINE ELEMENT	DESCRIPTION
1 Pay Off	Single or dual flyers SDF1250 complete with braking belt capstan Cantilever SCT 1000 Sliding arms SSM 1600 SSM 2000 Portal SPT 1600 SPT 2000 SPT 2800
2 Accumulator	Vertical ACV series Horizontal ACV series
3 Inlet Capstan/ Caterpillar	Belt Capstan TCP series Caterpillar TCT series
4 Extruders	Main: LCE 80 – LCE 120 – LCE 150 Stripe: LCE 45 – LCE 60 – LCE 80
5 Dosing system	Optional: volumetric or gravimetric system Optional: liquid Silane high accuracy dosing system Si-Jet (patented)
6 Extrusion Head	On request Single Layer or Coex
7 Cooling troughs	Straight, hot/cold sections, single or multipass
8 Outlet Capstan / Caterpillar	Belt Capstan TCP series Caterpillar TCT series
9 Accumulator	Vertical ACV series Horizontal ACH series
¹⁰ Take Up	Sliding arms ASM 1600 ASM 2000 Portal APT 1600 APT 2000 APT 2800 Double automatic ADA1250 (without accumulator)

LINE TYPES:

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- Single extruder insulation
- Coex 2: insulation extruder and stripe extruder

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TYPICAL PRODUCT DEFINITION

CONDUCTOR CROSS SECTION	WIRE Ø RANGE	INSULATION MATERIAL	SPEED MAX
1mm² – 800mm²	50mm	PVC, PE, XLPE, XLPE Liquid Silane, PP, HFFR, PU, TPE	500 m/min

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Power Cable sheating Lines

Designed for sheating of low-voltage power cables with different thermoplastic materials including flame retardants, reticulated polyethylene (XLPE) – liquid silane, halogen-free (HFFR), PVC, PUR, TPE and EPDM (for filling).

Multiple line configurations guarantee efficient production with high speeds and low scrap.

LINE CONFIGURATION

LIN	E ELEMENT	DESCRIPTION
1	Pay Off	Sliding arms SSM 1600 SSM 2000 Portal SPT 1600 SPT 2000 SPT 2800
2	Inlet Caterpillar	Caterpillar TCT series
3	Extruders	Filling: LCE 120 – LCE 150 Sheating: LCE 120 – LCE 150 Skin: LCE 120 – LCE 150
4	Dosing system	Optional: volumetric or gravimetric system Optional: liquid Silane high accuracy dosing system Si-Jet (patented)
5	Head	On request Single Layer or Coex
6	Cooling troughs	Straight, hot/cold sections, single or multipass
7	Outlet Caterpillar	Caterpillar TCT series
8	Take Up	Sliding arms ASM 1600 ASM 2000 Portal APT 1600 APT 2000 APT 2800



LINE TYPES:

- Single extruder sheating
- Coex 2: Filling Extruder, Sheating Extruder
- Coex 3: Filling Extruder, Sheating Extruder, Skin Extruder
- Tandem: Filling/Sheating group Coex 2 Skin Group Single Extruder

CONDUCTOR CROSS SECTION	CABLE Ø RANGE	FILLING MATERIAL	SHEATING MATERIAL	SPEED MAX
Assembled cables	30mm - 200mm	PVC, HFFR	PVC, PE, XLPE, XLPE Liquid Silane, PP, HFFR, PU, TPE	500 m∕min



LAN and telephone cables insulation line

Ideal solution for the production of LAN (up to Cat. 7) and telephonic cables with different thermoplastic materials (PE, FEP, PVC).

Multiple line configurations guarantee efficient production with high speeds and low scrap.

LINE CONFIGURATION

LINE ELEMENT	DESCRIPTION
1 Pay Off	Cantilever SCT 800 SCT 1000 Flyer combined with Wire Drawing machine tandem with the line
2 Dancer	Dancer DNCO or DNCV series
3 Pre-Heater	On request
4 Extruders	Foam: LCE60/32D - LCE 80/32D (PE) LCEF 60/32D - LCEF 80/32D (FEP) Skin: LCE 35/25D (PE) – LCEF 35/25D (FEP)
5 Dosing system	Optional – volumetric
6 Nitrogen injection	On request
7 Head	Coex 3 or Coex 4
8 Cooling troughs	Telescopic hot sections, straight cold, cold multipass with motorized capstan with integrated motorized capstan
9 Take Up	Double automatic ADA630



LINE TYPES:

- Standard: Solid PE and Physical PE Foam expansion up to 70%
- Tandem: Wire Drawing machine tandem with the line
- FEP: Solid FEP or Physical FEP foam and Solid PE

TYPICAL PRODUCT DEFINITION

	LAN	Telephone
Cable category	Cat 5e, Cat 6, Cat 7	Std. Telecom
Conductor material	Copper	Copper
Conductor Ø	0.32÷0.90mm	0.32÷0.90mm
Insulated cable max Ø	3.0mm	3.0mm
Insulation material	PE, FEP	PVC, PE
Process	Solid and Physical foam	Solid and Physical foam
Expansion level, max.	50% FEP -70% PE	50% PE
Line speed, max.	2500 m/min (*)	2500 m/min (*)

(*) with Tandem Wire Drawing Machine

Coaxial cables insulation line

Ideal solution for the production Mini and micro-coaxial cable cables with different thermoplastic materials (PE, PVC, FEP).

LINE CONFIGURATION

LIN	E ELEMENT	DESCRIPTION
1	Pay Off	Cantilever SCT 800 SCT 1000
2	Dancer	Dancer DNCO or DNCV series
3	Pre-Heater	On request
4	Extruders	Foam: LCE60/32D - LCE 80/32D (PE-PVC) LCEF 60/32D - LCEF 80/32D (FEP) Skin: LCE 35/25D (PE-PVC) – LCEF 35/25D (FEP)
5	Dosing system	Optional – volumetric
6	Nitrogen injection	On request
7	Head	Coex 3 or Coex 4
8	Cooling troughs	Telescopic hot sections, straight cold multipass (with integrated motorized capstan)
9	Outlet Capstan	Belt Capstan TCP series (if not integrated in cooling trough)
10	Take Up	Double automatic ADA630 ADA1250



- **Standard**: Solid PE and Physical PE Foam expansion up to 85%; Coex 2 (Foam/Skin) or Coex 3 (Skin/Foam/Skin)
- FEP: Solid FEP or Physical FEP foam and Solid PE and Physical PE Foam; Coex 2 (Foam/Skin) or Coex 3 (Skin/Foam/Skin)

	Micro Coaxial	Mini Coaxial
Conductor material	Soft Copper Copper clad aluminum Copper clad steel	Soft Copper Copper clad aluminum Copper clad steel
Conductor Ø	0.32÷1.2mm	0.7÷2.8mm
Insulated cable max Ø	5mm	12mm
Insulation material	PE, FEP	PE
Expansion level max	55% FEP -70% PE	80%
Line Speed max	2400 m/min PE Foam 1200 m/min FEP	300 m/min



Extruders



Elav LCE Extruders are used to provide the **insulation** and **sheathing** of electrical conductors and cables with constant focus on process optimization and **energy efficiency**.

LCE Extruders are designed for processing a wide range of materials such as PE (LDPE/MDPE/ HDPE), XLPE, XLPE Liquid Silane, PP, PVC, HFFR, PU, TPE with optimized screw geometry, carried out with Computer simulations and with the cooperation of the main compound manufacturers

All extruders are equipped with **Infra-Red heating** system to increase energy efficiency and process reliability.

Extruders

Special alloys are applied if extruder processing involve corrosive or abrasive materials. Nitrided steel high performance extrusion screw ensure a long service life.

Each extruder can be supplied with a multi **material gravimetric dosing system** (OPTIONAL) to improve process control and material consumption, especially for co-extrusion lines.

ТҮРЕ	DIAMETER	L/D RATIO	kg/h LDPE	kg/h HDPE	kg/h PP	kg/h PVC
LCE35(1)	35	25	25-32	27-35	24-30	35-50
LCE45 (1)	45	25-30	40-50	45-55	38-48	55-80
LCE60	60	25-30-32	90-120	100-135	85-115	130-190
LCE80	80	25-30-32	180-230	200-250	170-220	260-360
LCE100	100	25-30	280-340	310-380	250-320	400-550
LCE120	120	25-30	380-450	420-500	360-430	550-700
LCE160	160	25-30	550-650	620-720	520-620	800-1050

STANDARD EXTRUDERS

ТҮРЕ	AC MOTOR	HEATING POWER (400V)	TEMP. CONTROL. SCREW	GRAVIMETRIC DOSING
LCE35	9kW - 57Nm	6kW	N.A.	Opt.
LCE45	37kW-236Nm	9-12kW	Opt.	Opt.
LCE60	76kW - 484Nm	20-25kW	Opt.	Opt.
LCE80	130kW-828Nm	30-37kW	Opt.	Opt.
LCE100	175kW-1114Nm	40-50kW	Opt.	Opt.
LCE120	230kW-1464Nm	45-54kW	Opt.	Opt.
LCE150	319kW-2031Nm	80-gokW	Opt.	Opt.

SPECIAL EXTRUDERS

ТҮРЕ	DIAMETER	L/D RATIO	MATERIAL	HEATING POWER (400V)	GRAVIMETRIC DOSING
LCE35F	35	25	Fluropolymers (FEP)	10kW	Opt.
LCE35F	45	32	Fluropolymers (FEP)	18kW	Opt.
LCE60F	60	32	Fluropolymers (FEP)	35kW	Opt.
LCE80F	80	32	Fluropolymers (FEP)	50kW	Opt.







Expressly developed for Silane injection, Elav[®] **Si-Jet** is the ideal solution for **cable insulation** based on **liquid silane crosslinking technology**.

The system is made of a **highly reliable** unit which offers high-level dosing **accuracy** and controllability. Facilitating a safe and efficient dosing, important aspects for maintaining the product consistency and quality, the Si-Jet system is designed to reduce the installation and commissioning time and to guarantee **ease of maintainance**.

The Si-Jet is provided with a double check on Silane dosing, performed by a combination of **gravimetric dosing** (i.e. load cells) and **mass flow meter**, that guarantee **high accuracy** and **repeatability**, even at very low addition rates: when an incoherent measure is detected an alarm is triggered in order to alert the operator to stop the production and **avoid wasting of materials**.

The control of the Si-Jet system is deputed to a PLC unit that can be easily interfaced to existing lines by means of Profibus/Profinet connections.

Thanks to a combination of **static and dynamic mixing techniques**, supported by an injection system integrated into the dynamic mixer used to wet all granules regularly, Si-Jet system is able to homogeneously feed solid and liquid materials directly into the extruder. This represents a real alternative to using compounds and a way to maximize earnings reducing the costs of raw materials.

Si-Jet can be used to dose almost any liquid, including any cross-linking agent, since all parts in direct contact with the material are made of stainless steel AISI 316 and PTFE and any potentially flammable liquid is managed in inhert atmosphere (Nitrogen).

Applications	Silane, cross linking agents, inorganic liquids, organic liquids, oils.
Special features	All parts in direct contact with the material are made of stainless steel AISI 316 and PTFE, inert atmosphere by mean of Nitrogen.
Advantages	High accuracy and repeatability, double dosing check, wide range of applications, compact design.
Dosing accuracy	+/- 0.1 of mean value.
Control	By mean of PLC: it can be interfaced by mean of Profinet/Profibus connections.
Power supply	230VAC – 50/60Hz (other options upon request).
Dimensions	Two modules "back to back" 1000Lx1400Hx400W mm, other configurations upon request.

Pay off



Elav provides a wide range of **pay off** and **take ups** to meet the different needs in cable manufacturing processes.

Our pay-off and take-up are designed to provide maximum stability even in case of large reels, easy usage and with a variety of safety features to guarantee the safety of operators during all production phases.

All motorized machines are equipped with AC Vector or Synchronous Brushless motor to offer an **accurate control especially for cable distribution**.

Operators are supported by an intuitive HMI to manage the machines.

MODEL	ТҮРЕ	REEL DIAMETER RANGE	BARREL	MAX REEL WIDTH	MAX. REEL WEIGHT	OPTION
SDF630	Flyer (Defilè)	400 ÷ 630	200	475	600	Motorized
SDF1250	Flyer (Defilè)	630 ÷ 1250	250(315)	950	4000	Motorized
SCT800	Cantilever	400 ÷ 800	200	600	1000	Self Traversing
SCT1000	Cantilever	800 ÷ 1000	400	750	2000	Self Traversing
SSM1600	Sliding Arms	1000 ÷ 1600	500	1200	8000	
SSM2000	Sliding Arms	1600 ÷ 2000	800	1500	14000	
SPT1600	Portal	1000 ÷ 1600	500	1200	8000	
SPT2000	Portal	1250 ÷ 2000	630	1500	14000	
SPT2800	Portal	1250 ÷ 2800	630	2200	18000	

PAY OFF

Take up

TAKE UP

MODEL	ТҮРЕ	REEL DIAMETER RANGE	BARREL	MAX REEL WIDTH	MAX. REEL WEIGHT	OPTION
ACT800	Cantilever	400 ÷ 800	200	600	800	Self Traversing
ACT1000	Cantilever	800 ÷ 1000	400	750	1600	Self Traversing
ASM1600	Sliding Arms	1000 ÷ 1600	500	1200	5000	
ASM2000	Sliding Arms	1600 ÷ 2000	800	1500	8000	
APT1600	Portal	1000 ÷ 1600	500	1200	5000	
APT2000	Portal	1250 ÷ 2000	630	1500	8000	
APT2800	Portal	1250 ÷ 2800	630	2200	18000	
ADA630	Automatic double	400 ÷ 630	200	475	300	Automatic reel loading/unloading
ADA1250	Automatic double	800 ÷ 1250	400	950	2000	Automatic reel loading/unloading



PULLING ELEMENTS

MODEL	ТҮРЕ	CAPSTAN DIAMETER	MAX SPEED	PULL	OPTION
TCP350	Belt Capstan	350	1500 m/min	2001	
TCP600	Belt Capstan	600(680)	1500 m/min	1500m/min	Intake
TCP800	Belt Capstan	800 (850)	1500 m/min	900N @	load cell
TCP1000	Belt Capstan	1000	1500 m/min	500m/min	
ZTCP800	Tension lowering capstan for S-Z	800	500 m/min	700N @500 m∕ min.	

MODEL	ТҮРЕ	GRIPPING LENGHT	SPEED RANGE	PULL N	OPTION
TCT400	Pulling caternillar	400	0 - 150	4000 - 4000	
101400		400	150 -500	4000 – 1200	
TCTROO	Dulling actornillar	800	0-125	8000-8000	
101800	Putting caterpittar	800	125-400	8000-2500	
TCT4000			0-60	11500-11500	Load cell
1011200	Pulling caterpillar	1200	60-200	11500-3500	
TCT2000	Dulling actornillar	2000	0-30	19000-19000	
1012000	Putting caterpittar	2000	30-100	19000-6000	
ZTCT1000	Torsion Block Caterpillar for S-Z	1000	500	1000	



ACCUMULATORS

MODEL	ТҮРЕ	PULLEY DIAME- TER	MAX SPEED	ACTUATOR	OPTION
ACH300M	Horizontal accumulator	300	50-100-150	AC Motor	Load cell
ACH600M	Horizontal accumulator	600	50-100-150	AC Motor	Load cell
ACH800M	Horizontal accumulator	800	50-100-150	AC Motor	Load cell
ACH1000M	Horizontal accumulator	1000	50-100	AC Motor	Load cell
ACH300P	Horizontal accumulator	300	4-6	Pneumatic	
ACV300M	Vertical accumulator	300	From 25 to 80 m	AC Motor	
ACV600M	Vertical accumulator	600	From 25 to 80 m	AC Motor	

DANCERS

MODEL	ТҮРЕ	PULLEY DIAMETER	SPEED M/MIN	ACTUATOR	OPTION
DNCV100	Vertical Dancer	100	1200-2400	Pneumatic	Load cell
DNCV200	Vertical Dancer	200			
DNCV300	Vertical Dancer	300			
DNCO60	Oscillation dancer	60	1200-2400	Pneumatic	Load cell
DNCO100	Oscillation dancer	100			
DNCO200	Oscillation dancer	200			
DNCO300	Oscillation dancer	300			



The Power of Sinergy



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