



**TECNOMATIC**

**Single-Screw Extruders**



**TECNOMATIC**

# APPLICATIONS

Designed to fit the customers needs and their pipe production the Tecnomatic's extrusion machines are the ideal solution to manufacture pipes with a range from 5 to 2600 mm. They are employed for the extrusion of many materials and for different applications: PE 63, PE 80, PE 100 smooth water & Gas pipes, Irrigation, telecommunication, PE or PP Corrugated non-pressure sewage and cable protection, reinforced pipes or steel-coated and plastic pipes.

## **HDPE**

Large bore pipes up to 2600 mm  
Water & gas high-pressure pipes  
Pipes for conduits and mining  
Corrugated pipes for cable conduits,  
drainage and sewage  
Telecommunication and micro-duct pipes  
Multi-layers or steel pipes coating

## **LDPE, LLDPE**

Irrigation and agriculture pipes

## **PP**

Hot & cold water sanitary pipes  
Corrugated drainage and sewage pipes  
Large diameters pipes for chemical industries

## **PE-X**

Mono or multi layers pipes with  
oxygen barrier (EVOH) and aluminium  
for hot water application

## **PVC**

Pressure and non-pressure application  
Gardening, wire reinforced,  
food & beverage, marine hoses

## **ABS, PC, PA, PPS**

Technical polymers pipes and hoses



Single-screw extruders

# A large selection of models and processing length for all pipe production requirement



“Technological innovation is at the heart of our projects”

All our models are inspired by passion for extrusion and technology, which produce a wide range of extruders designed to fulfil the requirements of the pipe manufacturer, assuring high productivity and good melt homogeneity with particular care for energy and noise reduction.

The high performance model ZEPHYR, in L/D 40 represents the state of the art of the gamma. Offered in gearless or traditional version the ZEPHYR series ensures outstanding performance with optimized power consumption. The extruders VEGA and ZEUS (gearless) in

L/D 37 are both a long tested solution with an excellent cost-performance ratio. ATLAS in L/D 30 a well suited machine for co-extrusion purpose or special material application.

The series MIZAR in L/D 24 to process granulated PVC and the universal extruder ARES in L/D 25, for small output and several technical polymers, are completing the extruders range by Tecnomatic.

All extruders are offered with touch-screen control panels, user-friendly management software and CE certified components.

“Constant research and forward thinking development to ensure relevant innovative extrusion solutions combined with excellent customer service, passion and knowledge of the pipe industry.”

**Water cooled AC 3-phase asynchronous motor.**  
Outstanding power consumption levels and low noise operation (< 74 Db)

1

**Spiral grooved bush (SGB) for intake zone.**  
To enhance output and ensuring minor friction.

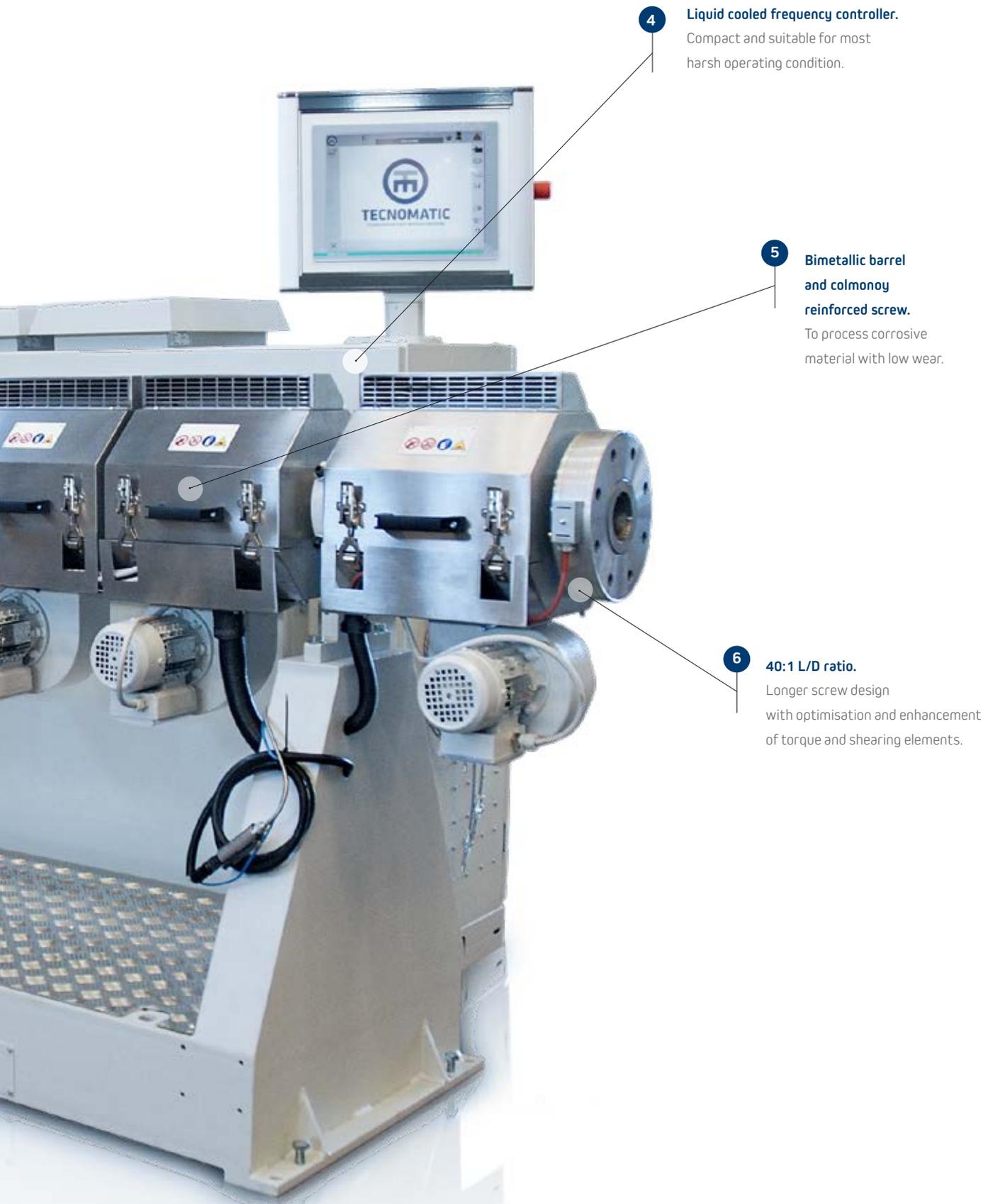
2

**Robust and small footprint frame.**  
Space saving and vibration free.

3



# About



4

**Liquid cooled frequency controller.**

Compact and suitable for most harsh operating condition.

5

**Bimetallic barrel and colmonoy reinforced screw.**

To process corrosive material with low wear.

6

**40:1 L/D ratio.**

Longer screw design with optimisation and enhancement of torque and shearing elements.



EXTRUDER	ZEPHYR 45	ZEPHYR 60	ZEPHYR 75	ZEPHYR 90
Screw length L/D	40	40	40	40
Output PE (max) Kg/h	500	800	1200	1700
Output PP (max) Kg/h	400	650	900	1300
Motor	Torque*	Torque*	Water-cooled	Water-cooled
Gearbox	No	No	Two steps**	Two steps**
Heating zones	5	5	5	5

\* Zephyr 45 & 60 are available also in traditional gearbox version.

\*\* With Z shape.

# zephyr

## The most performing extruders of the range product

### Your benefits at a glance

Optimal energy consumption.  
Excellent relation investment/performance.  
Improved and constant specific output.  
Noise Level < 74 dB.  
Max back pressure at 500 bar.  
Maintenance free (no oil, no filters).  
Maximum output at 1700kg/h.

The new extruder series in L/D 40 boasts an array of advanced technical solutions which make them unique models designed for pipe producers looking for even more focused energy saving machines, offering extreme output performance at lower melt temperatures. The innovation spans the entire series and includes new spiral grooved bush, screw and motors.

#### Focus on energy efficiency.

In the light of rising energy costs, energy efficiency criteria should be a crucial issue across manufacturing industries. Pipe extrusion is highly dependent on electricity and most of the energy usage is in operating the extruder. The Zephyr series has made of this the utmost priority offering extruders with increased screw length and smaller torque and AC water cooled motors, to assure same output of bigger size extruders but with a better energy efficiency.

#### Spiral grooved bush and innovative screw concept.

The new feed bush ensures minor friction, commonly generated by raw material transport, with subsequent increasing of the specific and total throughput. The further development in screw design, with optimisation and enhancement of torque and shearing elements, have improved the output but have also led to process the material at lower melt temperatures.

#### Torque and AC water-cooled motors.

To meet the requirements for production efficiency the machines are equipped with torque or water-cooled motors (in this case with one or two steps gearboxes) and compact water-cooled inverters. These solutions combined with the mechanical features ensure outstanding power consumption levels, low noise operation (< 74 Db), reduction of workload for maintenance, higher efficiency within wide speed and load ranges, and faster dynamic response.

#### Wide range of application, optimized feeding and wear resistant materials.

ZEPHYR extruder is designed to process PE 80 and PE100 materials, but the constant specific output over speed range at low or high pressure, is making it the perfect machine for PP and corrugated pipes too. The linearity of the output at different pressures indicates a properly adjusted intake geometry of the screw and feed bush. The intake reacts with the same behaviour even with different shapes of pellets, which might be different depending on raw material suppliers. Bimetallic barrels, hardened feed bushes and special coating for screws flights ensure perfect wear resistance.



Zephyr 60/40



Torque Version



Gear Version



### Calculation of energy efficiency and cost reduction

The omission of the gearbox increases the system efficiency by approx. 10%.

Calculated with a shaft power of the machine of 100 kW at 7200 operating hours per year and energy costs of € 0.08 per kWh results in an energy costs reduction of approx. € 6600 annually.



EXTRUDER	ZEUS 45	ZEUS 60	ZEUS 75
Screw length L/D	37	37	37
Output PE (max) Kg/h	350	550	950
Output PP (max) Kg/h	220	400	550
Gearbox	No	No	No
Heating zones	5	5	5

# ZEUS

## Ushers in a whole new generation of extruders

### Your benefits at a glance

- No gearbox losses
- Gearbox maintenance no longer necessary
- Direct drive technology
- Less installation space required due to high integrated design approach
- Increased cost-efficiency due to improvement in overall economic and ecological benefits.
- Noise level < 74 Db.
- Excellent rotational accuracy
- High dynamic response (short rise times)

ZEUS is the Tecnomatic's innovative concept which introduces in the pipe extrusion's market a gearless version, able to deliver unprecedented energy saving and unparalleled performance. The omission of gearbox, coupling and belts leads to a more compact engineering design of the machine and considerably reduces the maintenance requirement.



**Torque Motor**



**EPC (Extrusion Process Control)**



**Special Feeding Zone**

### Introducing the torque technology: a cutting cost solution.

Energy, raw materials, space, time ... the scarcer and more expensive the resources are, the highest the necessity to use them as efficiently as possible. One strategy to achieve this is to employ state-of-the-art extruders, with direct drive technology. A more acute awareness of the environment and the rising cost of electricity are the main reasons for the increasing popularity of energy-efficient drive systems in industrial applications.

Thanks to the important developments in the torque motors technology, for reliability and efficiency, this solution was selected in order to assure outstanding saving in the production of plastic pipes.

In ZEUS extruders based on torque motors, you will search in vain for mechanical transmission element such as gearbox. In fact, the force is transmitted exactly to where it is required. The high-poled permanent-magnet-excited synchronous motors are fully integrated into the machine with no mechanical transmission elements such as gears.

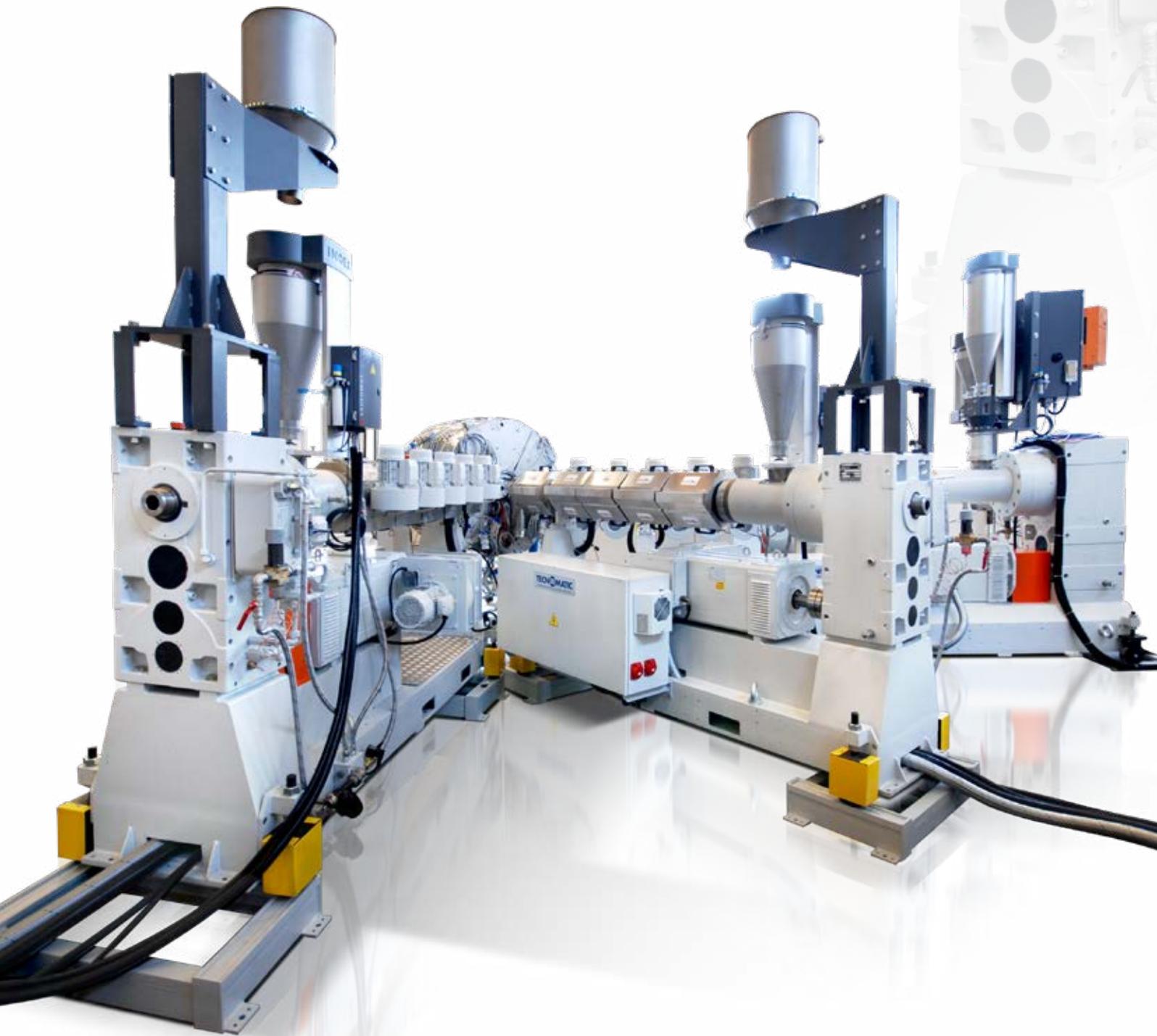
### Compact, high-performance and low-maintenance.

There are many decisive benefits: an extremely compact mechanical design is achieved by directly integrating the motor into the extruders, simplified maintenance, low running noise and significantly reduced frictional losses that increase the efficiency and the dynamic performance of the extruders and consequently of the factories.

The torque motor in combination with a new feeding section and a further optimized screw design is decreasing the power consumption with results up to 14% (compared to a gearbox traditional extruder).

To enhance the process control, to reduce energy usage, and to assure its technical edge, AC liquid cooled drives complete the technical configuration of Zeus extruders and assure high performance levels in continuous operation. Liquid cooled drives offer the ultimate solution for gearless drive and high power motors with minimized space requirements and severe environmental conditions.

Modules for monitoring energy consumption, in combination with gravimetric weight system, allow the perfect control over power and material consumption.



**EXTRUDER**

**VEGA 45**

**VEGA 60**

**VEGA 75**

**VEGA 90**

**VEGA 120**

Screw diameter L/D	37	37	37	37	37
Output PE (max) Kg/h	300	500	750	1000	1500
Output PP (max) Kg/h	220	400	550	750	1100
Heating zone	5	5	5	5	5

# vega

## The perfect synthesis of technology and reliability

### Your benefits at a glance

Different screw geometries for a wide range of application.  
Output linearity at different rpm and high back pressures.  
Low energy consumption AC motors.  
High performance with competitive price.  
Excellent plasticizing and homogeneity.  
Stable thermoregulation of the barrel at different speed.  
Low noise.

The VEGA series perfectly fit a wide range of pipe extrusion application. Reliable and tested in many standard or outperforming lines maximized and set new boundaries in pipe production. Designed for PE high performance extrusion, they are also well suited for the market of the corrugated pipes both PP and PE materials.



Asynchronous AC Motor



Vega 120



Water Cooled Feeding Zone

### A state of the art technology for all components.

VEGA is the result of years of experience manufacturing extruders and of a constant effort to develop each part of them.

A constantly updated **screw design**, matched with the water cooled straight feed bush, ensure excellent production values with optimal plasticizing, even at high output rate. The specific output has been further increased and it maintains constant across the whole screw speed range or even at high backpressures values.

The machines are equipped with **synchronous AC motors** specifically designed to be used in applications at high dynamic performances with variable speeds. The selected motors are mechanical sturdy to withstand high overloads while a highly effective insulation avoid a gradual deterioration caused by operation at high frequencies.

The **inverter control** is further granting stable rotation even at very low speed (by means of closed-ring circuit through the use of incremental encoders), protection against shortcuts (over and under voltage) and EMC filters to eliminate noise and interferences.

### Compact and solid mechanic

Italian **gearboxes** characterised by single block cast iron frame, for large oil capacity cooled by an independent unit, and high performance bearing unit (up to 500 bars) fit out the transmission system of the VEGA series. A solid frame with small footprint and motors placed below the extruder barrel ensure a limited space impact.

### A user-friendly control system

A swivelling operator terminal manages the extruder. The **industrial PC** for supervision and process control allows the possibility to oversee production lots with statistical production reports and data transfer. The system is provided with teleservice functionality. Remote operation or maintenance service can be executed via a direct modem connection, supplied as standard with each Tecnomatic extruder.

The main managed parameters are:

- Thermoregulation.
- Extruder functionality.
- Alarm system management.
- Melt pressure & temperature display.
- Weekly programming.
- Extruder maintenance & diagnostic program.
- Download of process reports.
- Display of graphs for thermoregulation, melt pressure & temp, screw speed, motor absorption.
- Production recipes management.
- Up-stream and down-stream integration and synchronization.
- Co-extruders or corrugator synchronization and control.
- Remote tele-assistance via high-speed modem.
- Display to a remote computer (option).
- Modules for energy consumption control (option).



**EXTRUDER**

**ATLAS 30    ATLAS 35    ATLAS 45    ATLAS 60    ATLAS 75    ATLAS 90    ATLAS 120**

Screw length (L/D)	30	30	30	30	30	30	30
Output PE (max) Kg/h	45	80	200	330	450	700	1050
Output PP (max) Kg/h	35	50	170	280	350	500	650
Heating zones	4	4	4	4	4	4	4

# atlas

## Economical and versatile

### Main technical features

Compact design, solid frame, small footprint.  
30:1 L/D ratio.  
AC or Dc motors.  
Mixing barrier screw and water cooled grooved feed bush.  
Multi-purpose screw.  
Touch screen control with tele-service.  
High performance gearbox.

ATLAS represent a reliable solution for many applications and it has been successfully installed in many countries around the world. It perfectly adapt as co-extruders for multi-layer pipes as well to fulfil the customer needs for continuous innovation and special requirements. The extruders are offered in many motors, screws, and custom fit solutions.



Atlas 120



Extruders and Co-Extruders Configuration



Atlas 35

### ATLAS is a fully tested solution for all pipe application.

Introduced several years ago it was the first Tecnomatic extruder to adopt a mixing barrier screw and grooved feed bush technology. Characterized by a solid steel supporting structure, is manufactured in several versions with different gear ratios, driving powers and torques. The concept at the base was developed to fit the user with an ideal situation, with a multi-purpose machine able to grant a high level of versatility processing a broad selection of raw materials with a wide range of throughput rates. Even today, the excellent price/quality-to-performance ratio, of these models for universal use, makes them the perfect choice for many applications and

markets.

Precision, robustness and technical reliability is proven by over ten years' sales worldwide, in standard or toughest environments conditions, in the pipe industries and in special application that demands flexible and versatile machines.

**ATLAS CO-EX is a compact machine**, easy to integrate in any production line for co-extrusion of stripes, thin inner & outer layer, bonding agents, oxygen barriers. The co-extruders can work independently with PLC control or can be synchronized and integrated into the main extruder control system.

### ATLAS CO-EX technical features

PLC touch screen control system.  
Height and tilt adjustment for easy connection.  
Smooth intake zone type.  
Single flight screw.  
Worm or two shaft gearbox.  
Inverter controlled AC motor.  
Equipped with 4 heating/cooling zone +1 available.

# mizar

## Main technical features

- Relay controls.
- Solid and compact frame.
- Control system with touch screen industrial PC.
- Smooth or grooved intake zone type.
- Purposely developed screw.
- AC powered three-phase motors, with forced ventilation.
- Vertical type gearbox with hardened and tempered gears.

## All that matters for pvc and small tubes

MIZAR series is the standard offer for the extrusion of soft and rigid PVC and for co-extrusion use. These extruders are designed to meet all requirements for the production of spiraled, gardening pipes with fabric braid reinforcement, wire reinforcement or no reinforcement at all (e.g. food and beverage hose, potable water hose, marine hoses, wash down hoses etc etc.) and electrical corrugated pipes.



EXTRUDER	MIZAR 20	MIZAR 25	MIZAR 30	MIZAR 45	MIZAR 60	MIZAR 75	MIZAR 90
Screw length (L/D)	24	24	24	24	24	24	24
Output PE (max) Kg/h	2	4	12	80	130	230	340
Output P-PVC (max) Kg/h	4	8	25	110	190	290	350
Output U-PVC (max) Kg/h	-	-	-	90	150	240	290
Heating zones	2+1	3+1	3+1	4	4	4	4

# ares

## The multi purpose project

### Main technical features

Relay controls (it can operate as slave or master extruder).  
High torque drive, suitable also for U-pvc.  
Small air cooled AC motor.  
3 steps gearbox.  
New design for intake zone with tempering channel system.  
Heating cooling system with ceramic heaters and copper fins.

### It is suitable to process:

PE  
PP-R & PP-H  
U-PVC & P-PVC  
and technical polymers as,  
ABS, PC, PA, PPS.

ARES is a complete new designed multi-purpose extruder for a low investment rate. It is an ideal solution for low output pipe application, single wall corrugated pipes as well as co-extruder for multilayer pipe extrusion.



Ares 60

### MATERIALS

### ARES 60

### ARES 80

PE 100, PE 80	80-100	Kg/h	160-200	Kg/h
PP-R	60-90	Kg/h	120-180	Kg/h
PP-H	50-60	Kg/h	100-120	Kg/h
PS, ABS, ASA Styrene polymers	70-130	Kg/h	140-260	Kg/h
U-PVC	80-110	Kg/h	160-220	Kg/h
P-PVC	70-90	Kg/h	140-180	Kg/h
PA 6-11-12	50-60	Kg/h	100-120	Kg/h

## SINGLE-SCREW EXTRUDERS



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