



# EXTRUSION

7/2016

**VA** VERLAG  
Cologne/Germany



**Kunden-  
produktion**  
Customer  
production

**Kunden-  
produkte**  
Customer  
products

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**Geschäftsmodelle  
Business models**

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Produktion**  
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production

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products

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**WA10**

# Advanced Solutions for Pipe Manufacturers aiming at Energy and Performance Efficiency

*Pipe manufacturers have started to think in terms of operation cost efficiency, but without compromising the performance of the pipe extrusion lines. Tecnomatic, which will celebrate its 45 years of experience in the plastic sector, will present at the K 2016 show innovative solutions in pipe extrusion, to assist customers not only by supplying extruders and die-heads but as well providing complete production systems for a business which is getting increasingly demanding.*

*ZEPHYR 45.40 – 500 Kg/h*



At K-show 16' Tecnomatic will introduce a further developed version of its extrusion series ZEPHYR in L/D 40, both in a gearless and a traditional version (with gearbox). ZEPHYR is the most performing extruder of Tecnomatic's product range, it boasts an array of advanced technical solutions which makes 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 extruder and includes new spiral grooved bush, screw and motors. Pipe extrusion is highly dependent on electricity and most of the energy usage is in operating the extruder. The Zephyr series has made 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.

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 optimization and enhancement of torque and shearing elements, have improved the output but have also led to process the material at lower melt temperatures. 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.

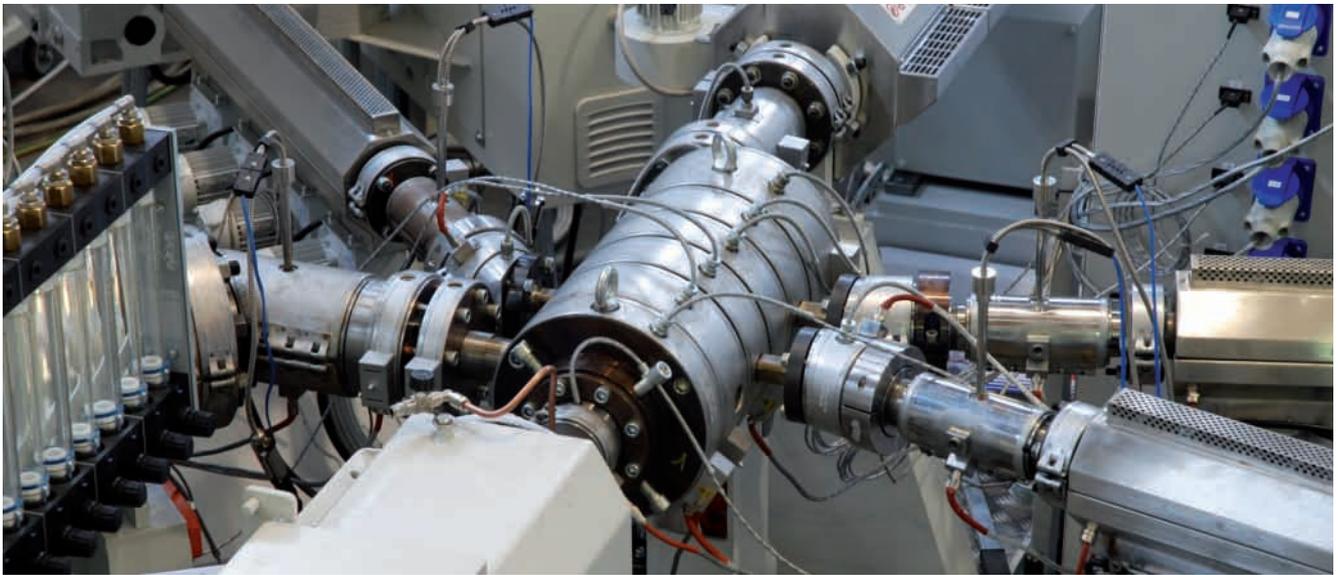
A comparison between a gearless extruder in size 60.37 and new Zephyr 60.40 is clearly showing the advantages in the adoption of this last solution. (Table)

## Extruder Comparison in % (ZEPHIR 60.40 vs. ZEUS 60.37)

|   |       |
|---|-------|
| Max. screw speed (RPM)                  | 0%    |
| Max. Output*                            | +42 % |
| Installed power (Kw)                    | +24 % |
| Energy consumption** at 550 kg/h (Kw/h) | -13 % |

\* Zeus 60.37 at 500 kg/h, Zephyr 60.40 at 800 kg/h

\*\* Below 140 KW/h/Kg for extruder Zephyr 60.40 at 500 kg/h



*ATHENA MULTI 5-40, for Pe-x and Pe-rt*

ZEPHYR extruders are offered in four screws diameter with maximum output at 1.700 kg/h.

Further to the extruders Tecnomatic will also display multilayer die-heads of the VENUS and ATHENA series. The VENUS MULTI 250 QUATTRO for the production of PE pipes up to 250 mm in 4 layers, with PAC system (Pipe Air Cooling), and ATHENA 5-40; an innovation to grant higher performance to the market of Pe-x and Pe-rt pipe.

ATHENA heads are made with the addition of radial modules as the number of layers to be produced. The radial distributors do not have any dead zones or edges where material could stop and grant an easy cleaning and rapid assembling/disassembling operation. Radial spirals allow low-pressure losses and high flexibility in terms of layers structure (thick or thin layers) and number of layers, while their short flow path leads to reduced residence time and rapid material and color changes.

In a market, which is always more and more looking for highly innovative development, with respect to the growing improvement of material properties, single-layer pipes are not always

able to fulfil the necessary requirements. Tecnomatic has well interpreted these customer needs and has developed, on the basis of the VENUS concept, a full range of die-heads for the production of 2, 3 or 4 layers polyolefin pipes even in big size. A project in 1.200 mm three layers, carried out in 2013, is the milestone of the multilayer production made by Tecnomatic.

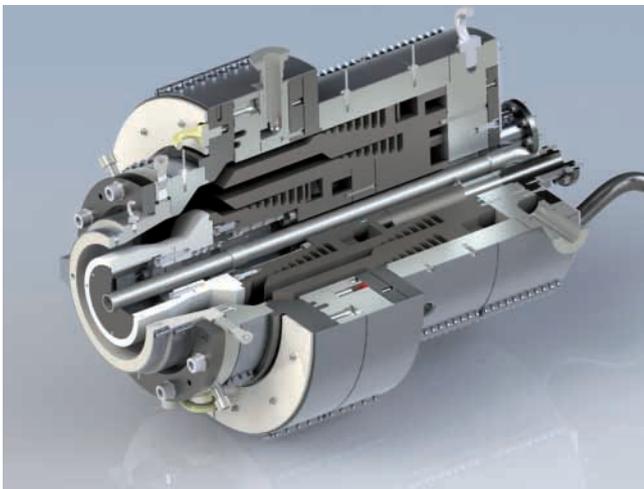
The heart of the VENUS MULTI consists of innovative flow channels geometry, which has been calculated in consideration of the current raw material PE 100 CR and PP. This geometry assures the same behaviour for pressure and distribution of the melt in all the pipe heads also at very high output rate.

The new feeding system of the spiral channels, as well as for the matching ranges and the small die sets contributes to reduce pressure. This influences remarkably energy consumption during extrusion considering that approximately 5 to 10% of the extruder power is necessary for the pumping capacity. Lower pressure also results in a lower increase of the melt temperature and with lower residence times assuring improved pipe's characteristics with regard to OIT (oxidation resistance) values, extra weight and thermal and shear stresses reduction.

VENUS MULTI die-heads can be endowed with two innovative option units:

- The Pipe Air Cooling (PAC) – an efficient system to reduce cooling length and improve pipe quality.
- The Venus Coex-Unit – a radial spiral technology for additional (external) layer application.

#### *VENUS MULTI 250 QUATTRO – 4 layers*



**2016** *Hall 16, Booth D05*

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