SEPTEMBER/OCTOBER 2023

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# Designing and Manufacturing Extrusion Heads for Large Cables

**Eurotek Srl**
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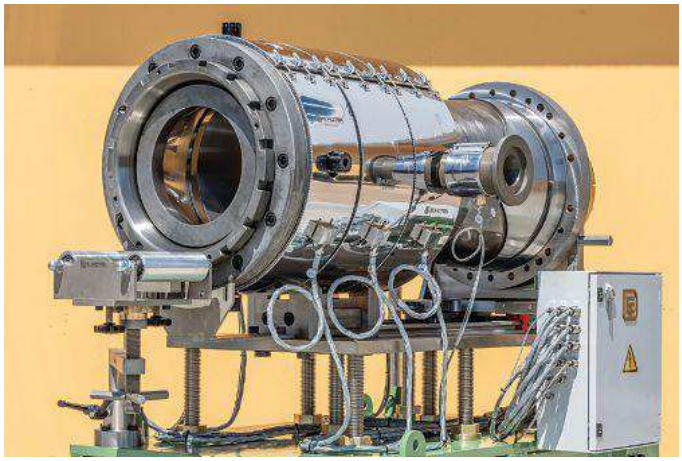
**www.eurotek-italy.it**

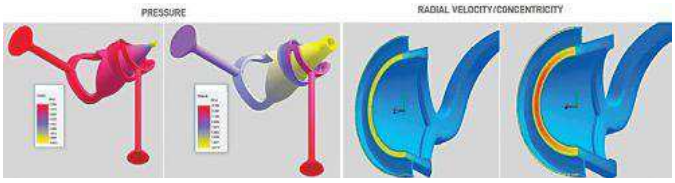
## Brand-new device is the company's largest model ever made.

**Eurotek** continues to design and manufacture extrusion heads for large cables. The ECMR420-MB is a brand-new device. It is the largest head model ever made by Eurotek being 1200 mm in length, 700 mm in external diameter and weighing 2.5 tons.



With 30 years of expertise and continually cutting-edge and innovative design studies on extrusion heads, this new ECMR420-MB model is an additional proof of Eurotek's reliability for the production of high-voltage cables.

The flow simulation allows us to visualize the material/compound's behavior at any step in the process. This allows us to monitor and rectify the pressure values in advance, decrease potential stagnation zones and optimize the compound distribution in compliance with the line specifications.



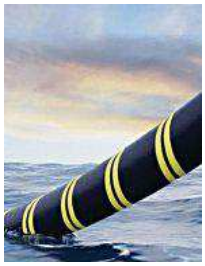

The ECMR420-MB is used to extrude sheaths for dynamic HV submarine power cables with a voltage rating of up to 400 kV. These submarine power cables are designed for use in deep waters with floating wind generators.

The die has a 420 mm maximum opening. This size head is required due to the constantly increasing need for renewable energy, which is an important component of the global energy transition that requires ever-higher efficiency standards for connections, energy and communications cables. Additionally, different polymers can be handled utilizing this innovative new extrusion head, and the resulting cables can work at larger depths.

The extrusion head has excellent heating uniformity and high heating power band heaters, which reduce energy consumption by 20% when compared to conventional systems,

Extrusion Head model **ECMR420-MB**

| **Specification** | |
|---|---|
| Minimum core Ø | 80 mm |
| Maximum core Ø | 350 mm |
| Minimum die Ø | 100 mm |
| Maximum tube die Ø | 420 mm |
| Maximum pressure | 450 bar |
| Weight | 2500 Kg |
| Layer types | 1.0 single layer |
| **Application** | |
| Field of application | insulation, jacketing |
| Materials | LDPE, LLDPE, HDPE |
| **Special characteristics** | |
| Centering types | manual |
| Heating zones | 5 |
| **Options** | |
| Extruder connections | connection flanges for any type of extruder |
| By-pass | manual, hydraulic |
| Distributors | special distributor design according to polymer to be processed |
| Accessories | vacuum adaptor, head operating and cleaning accessories, rotative arm, electrical box |
| Head support | head trolley |



considering its dimensions and saving necessities.

In order to better control the ECMR420-MB's operating temperatures as well as to optimize energy efficiency, the heaters are separated into three external zones and one inside the distributor.

The steels utilized to manufacture this extrusion head are highly specific for the end application. In fact, high-quality Cr-Ni-Mo alloys have been utilized in the construction, which are corrosion-resistant and have a high polishability. Through the proper heat treatments, these steels ensure homogenous hardness, and the friction coefficient is reduced using particular coatings.

The ECMR420-MB extrusion head model, as with every other model of the ECMR series, makes use of manual centering from the head front in order to improve the concentricity of the finished product.

And along with the centering screws, micro-adjustment bushings are placed to allow the extrusion system operator to confirm and repeat the correct alignment of the die in successive production operations, reducing downtime. These high concentricity systems produce cables having constant minimum thicknesses, which minimizes waste and raw materials usage.

In terms of adjustments, the head can control the space between the tip and die (gum space) making the working method flexible (tube, semi-tube and semi-compression) as well as modulate the pressures based on the compound and the application.

The distributor channels as well as the tools chamber, are designed and shaped to process LDPE, LLDPE and HDPE, in this way reducing the compound's residence time inside the extrusion head.

As the sheath extrusion process necessitates the use of vacuum inside the head, the ECMR420-MB has a connector that can be opened in two halves to ease the assembly process on the cable while working.

The handling trolley is designed to assist the operator during the installation, production, component cleaning and maintenance phases. It has a dual extraction system:

- The system's linear ball-bearing guideway system, which has been designed for heavy loads, facilitates the axial movement of the distributor kit despite its weight of 780 kg.
- The rotative arm mechanism helps with the handling, tool cleaning and head front maintenance. The rotative arm mechanism also helps the operator to handle the parts with minimal effort.

And to wire all of the heaters and thermocouples, the support trolley is provided with an electrical box on a rotating arm, which is positioned near the extrusion line's main switchboard (**Figure 7**).

The planning stage is essential. The Eurotek technical staff's knowledge, study and expertise enabled the company to come up with solutions. And the improvement in the performance of Eutotek's extrusion heads far outweighs the amount of hours spent researching and evaluating the project to the last inch.

The ideal solution emerges from the technicians' brainstorming and interaction with industry experts, allowing the company to expand its well-known experience.

Additionally, Eurotek places a high value on the after-sales support provided to its customers. It is a crucial service for the company and also a chance for Eurotek to develop and advance as well as a chance to test itself and guarantee effectiveness and outstanding results. Eurotek firmly believes in working as a team with its customers as well as making ongoing investments in research and development and its ability to create.

You can find additional technical information and technical product specifications as well as information on the company's services at the Eurotek Srl website.

*www.eurotek-italy.it* **WCTI**

***Company Profile:***

***Eurotek Srl*** *defines itself as a group of technological craftsmen offering solutions with attention to details, precision products with high-quality standards using cutting-edge equipment and advanced/innovative design techniques. Eurotek has the goal of not only to represent excellence in the field of extrusion heads, but to help the development of its territory at an economic and employment level. The company has grown and changed overtime, but has not forgotten the values on which it was founded, and particularly the importance of welcoming every new member into the Eurotek family and combing individuals skills to work together to achieve a common goal.* ***www.eurotek-italy.it***