

Pipe Manufacturing Equipment HEGLER VIII/1

Corrugators and Downstream Equipment for the Production of Material Saving Pipes (MSP)



Profiting from more than 60 years of experience in the production of Material Saving Pipes (MSP) and pipe manufacturing equipment,

HEGLER are in a position to offer and supply a vast range of sophisticated and field-proven corrugators and downstream equipment.

HEGLER

Material Saving Pipes
of Plastics



HEGLER Vacuum Forming Process – The Real Concept which Leads to Innovative Products

The production of structured wall pipes is based on the idea of shaping a thermoplastic hose by means of a pressure difference in a circulating calibration unit. This idea has led to the so-called corrugator principle which was originally developed for the production of corrugated pipes.

The pressure difference between the circulating calibration unit, the so-called mould blocks, and the thermoplastic melt can either be caused by a positive pressure from the inside and/or a vacuum from the outside.

The shaping by vacuum which offers many advantages was developed by HEGLER at the end of the 1950's and a patent was applied for in 1960. The principle of corrugated pipe production by means of the HEGLER vacuum forming process is illustrated in the opposite sketch.

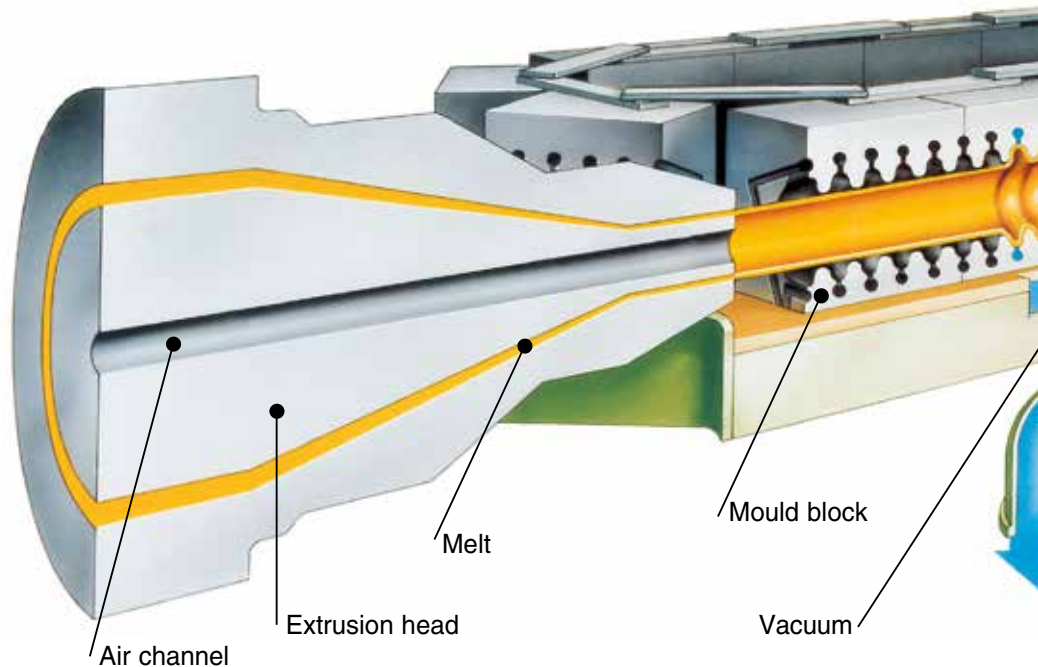
In this process the mould blocks which shape the pipe geometry are led on a machine table in extrusion direction. The mould blocks are provided with a system of vacuum and coolant channels through which the coolant is supplied and which

are connected to vacuum pumps through the machine table. The pipe shaped by means of the vacuum is cooled along the working path i.e. the distance where the mould blocks are guided in parallel, and leaves the corrugator in an inherently stable condition at the end of the working path.

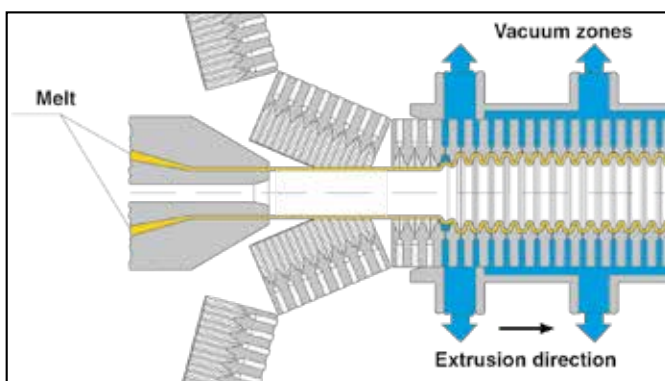
This technique spares the necessity of sealing the inside of the pipe in

extrusion direction. The vacuum forming process allows the production of precisely fitting (integral double-layer) couplers within the mould block chain as well as the shaping of extremely complicated product geometries for special applications.

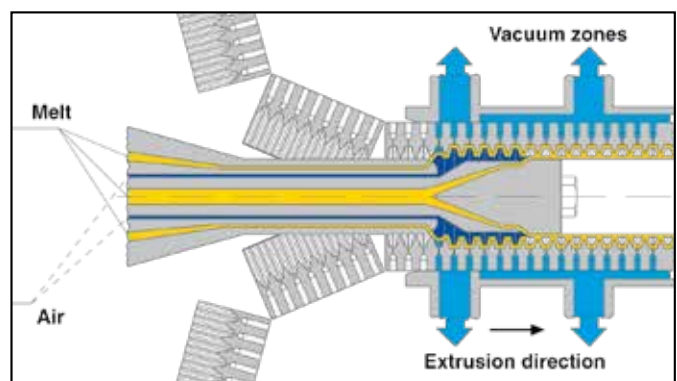
The advantages of the vacuum forming process become particularly



Corrugated Pipe Production



Twin Wall Pipe Production



Vacuum Technology

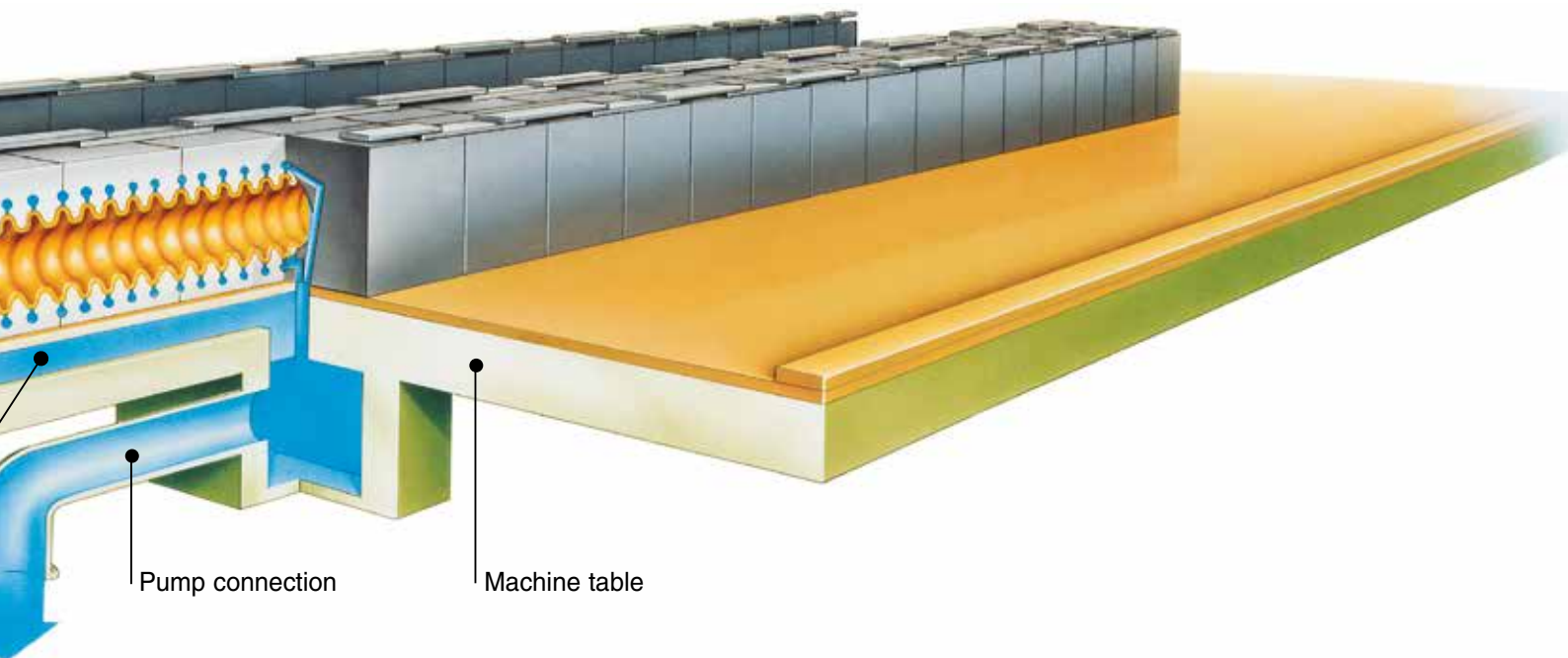
evident in the production of double or twin wall pipes which, worldwide, were first manufactured by HEGLER at the end of the 1960's (first patent application in 1967 already).

In the production of twin wall pipes, a corrugated pipe is manufactured as described above and then provided with a smooth inner layer in a coextrusion process.

After the welding of outer and inner layer at melt temperature, the completely shaped twin wall pipe is continuously maintained and controlled in the mould blocks by means of the vacuum.

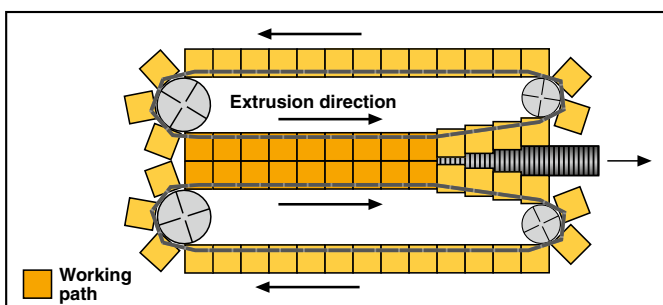
The direct and intensive contact of the outer layer of the twin wall

pipe and the mould block surface allows a quick and efficient transfer of the specific heat stored in the melt into the temperature-controlled mould blocks from where it is led off via the coolant. High production speeds and narrow product tolerances result.



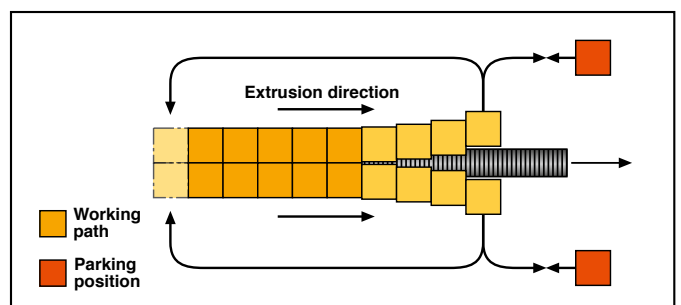
Endless Chain Method

With the endless chain method the mould blocks are moved in pairs along the working path in extrusion direction and guided back to the beginning of the working path via guide rollers. This allows continuous production. The effective working path comes up to about 35% of the total length of the mould block chain.



Block Moving Method

With the mould block moving method there is only one additional mould block pair to the number of mould blocks necessary for the shaping of the pipe in the working path. Each mould block pair is returned from the exit end of the corrugator to the beginning of it. With this system socket mould block pairs can be inserted at any point in the working path when pipe with integral double-layer coupler is to be produced.



HEGLER High Performance Corrugators

State of the Art



Production of twin wall storm sewer pipes with double-layer integral socket
Fig. above: HP 1200 with one conveying bridge; Fig. below: HP 700 with two conveying bridges

HEGLER offer corrugators for the production of all known MSP in the common sizes within a diameter range from 4mm to 1800mm. Almost all thermoplastic materials can be processed on HEGLER equipment with the following advantages:

- economic production
- high production speed
- high output capacity
- long durability of corrugators and mould blocks.



HEGLER High Performance Corrugators

Size Range of Corrugators

Model	OD Size Range (mm)	Max. Speed (m/min)	Output (kg/h)	
			PVC	PE/PP
HP 35	4 - 35	40	250	150
HP 65	16 - 65	30	250	200
HP 125	32 - 125	27	600	500
HP 200	75 - 200	23	700	600
HP 250	90 - 250	20	750	650
HP 330	110 - 330	12	850	750
HP 700	250 - 700	2	1000	900
HP 1200	450 - 1200	1,5	---	1100
HP 1800*	800 - 1800	1,0	---	1200

The output capacity of a corrugator is dependent on the product and the processed raw material. Some reference data can be taken from the opposite table. In the production of larger pipe sizes outputs of more than 1,000kg/h can be achieved.

* in preparation

Endless chain method

Block moving method

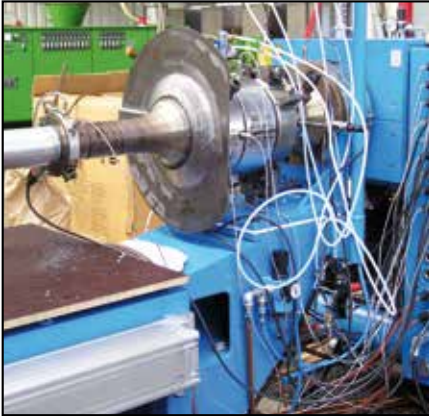


Production of PVC twin wall pipes

HEGLER Pipe Manufacturing Equipment

Individual Components

Extrusion Head:



The HEGLER range of equipment starts from the adaptor to the extruder. We offer external and internal extrusion heads for the production of corrugated pipes. Our coextrusion heads for twin wall pipes are designed according to the latest findings and with due regard to the rheological melt data. In many cases it is possible to produce several pipe sizes with one extrusion head by changing only a few die parts in a very simple way.

Corrugator:

The choice of the corrugator should be based on the specifications in the table.

HEGLER vacuum corrugators stand out for the following features:

- high production speeds
- excellent productivity
- independent shaping of each individual corrugation
- temperature-controlled cooling circuits
- rapid change from one size to another
- autocentering mould block guiding system which is free of wear and tear
- self-sealing vacuum system without any vacuum losses even after long use
- high longevity of the corrugators.



Mould Blocks:



The mould blocks and pipe geometries are developed by the aid of computers and tailored to the customers' requests, due regard being paid to the relevant standards, specifications and the agreed quality requirements.

The mould blocks are produced with high precision and are either made from steel or, in a sandwich construction, from aluminum and steel. They contain a number of vacuum and coolant channels. This and the fact that the mould blocks are temperature-controlled result in the following (product) advantages:

- excellent pipe surface quality
- low pipe size tolerances
- low pipe ovality and
- high longevity of the mould blocks, even under extreme loads as in 4-shift operation.

We recommend to use a separate mould block set for each pipe size. Carrier mould blocks with inserts to

reduce the capital cost are possible, but as generally known, they entail reductions in pipe quality as the carrier blocks are most sensitive to wear. In some cases multi-strand extrusion can help to limit the capital cost.

Due to the fact that the HEGLER technology is working with drilled instead of cast vacuum and coolant channels constant productivity and product quality are ensured – proper cleaning of mould blocks provided.

This characterizes the HEGLER mould block design and allows us to provide a three-year performance guarantee for this system.



Additional Components:

Further components of an extrusion line are e.g. after coolers, caterpillar conveyors/haul-offs, planetary saws, packing stations and coilers. For many of these units HEGLER have initiated own developments in order to meet the requirements of MSP. Standard solutions customary for solid wall pipes can often not be used for the production of MSP.

Automation concepts and concepts for the monitoring of working conditions to ensure trouble-free and labour-reducing production are available.



HEGLER Pipe Technology

More than 60 Years Make the Difference



Head office and Oerlenbach plant

Advantages of the HEGLER Corrugator Technology

- German technology
- Long service life
- Pre-acceptance testing under production conditions
- Numerous patents on pipe systems, processes and devices
- Own corrugated and twin wall pipe production at several locations in Europe (about 65 extrusion lines)

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