Range of applications

PVC Direct and Conventional

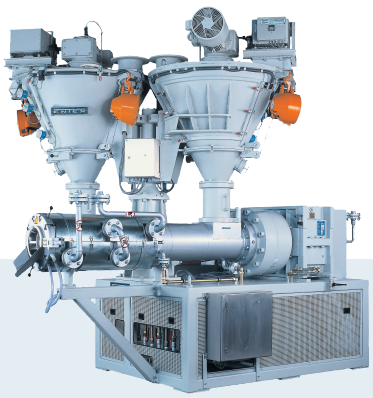
PVC Direct

THE CHALLENGE.

The Planetary Roller Extruder (PRE) offers various features that are decisive for successfully producing and compounding PVC using direct extrusion techniques. It is able to process all formulation components in a single step in a continuous process – eliminating the need for discontinuous steps, achieves excellent material quality through optimised tempering, and reduces the volume of raw material required.

THE SOLUTION: the ENTEX Planetary Roller Extruder.

What makes direct extrusion an attractive option? The conventional PVC production technique is a discontinuous process in which multiple separate steps are necessary. As a result, the materials have to be heated repeatedly, giving them a higher temperature history. This leads to a need for a higher volume of stabilisers and to the creation of temperature hot spots in the melt that are a result of imprecise temperature control in the heating-cooling mixer process. The materials also occupy valuable storage space during the times between each step. With direct PVC extrusion using a Planetary Roller Extruder, all of the raw materials are processed in a single step and fed into the process simultaneously using appropriate dosing and feeding units. The upshot: it is no longer necessary to produce a PVC dry blend beforehand. Thanks to its modularity and scalability, the ENTEX Planetary Roller Extruder can perform every process step required for the production of PVC.



Typical areas of application

- Cling films (food industry)
- Packaging, stickers, labels (packaging industry)
- Trim, cladding (furniture / caravan industry)
- Window profiles, wall coverings (construction industry)
- Floor coverings, flooring (construction industry, interior design)

PVC DIRECT

Benefits of producing and compounding.

Process all formulation components in a single step revolutionary

Direct PVC extrusion using a Planetary Roller Extruder makes it possible to process every formulation component in a single step.

The need to manufacture a PVC dry blend in a heating-cooling mixer – essential for the conventional technique – is eliminated.

This in turn allows expenditures for intermediate storage and transport to be reduced.

Continuous – instead of discontinuous – processing

Direct PVC extrusion using a Planetary Roller Extruder is a continuous process. This makes it possible to maintain consistently high product quality.

Continuous operation also allows labour costs to be reduced.

Excellent material quality thanks to excellent temperature control

Direct PVC extrusion using a Planetary Roller Extruder offers material-friendly processing for all formation components.

The Planetary Roller Extruder's continuous thin-rolling of the material ensures excellent material tempering. This avoids the formation of hot-spots and delivers homogeneous product quality.

Reduced raw material requirements efficient

By processing all formulation components in a single step, direct PVC extrusion using a Planetary Roller Extruder only requires the materials to be heated a single time.

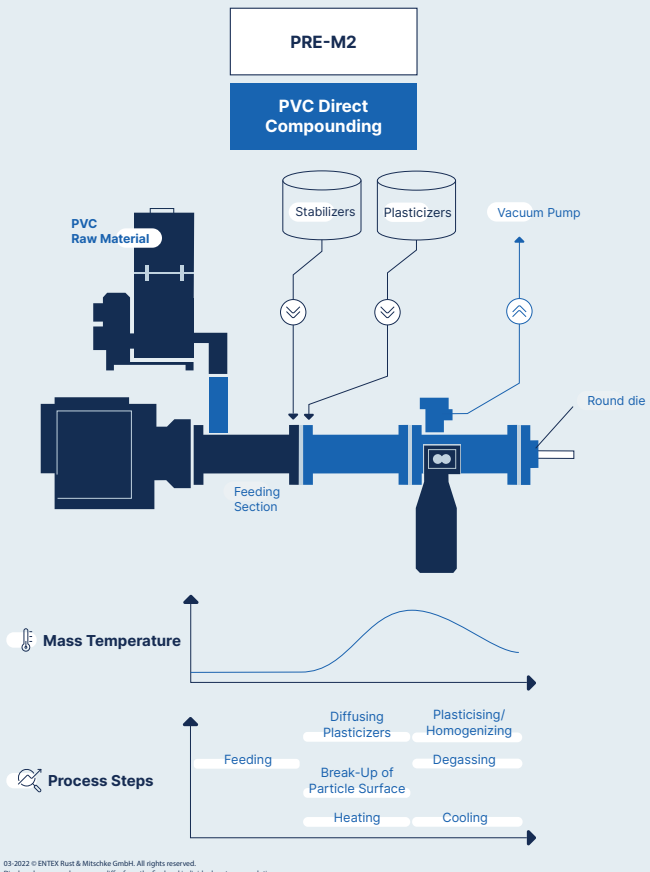
The result: materials are subjected to lower levels of temperature stress, reducing the proportion of stabilisers required.

Precision extrusion

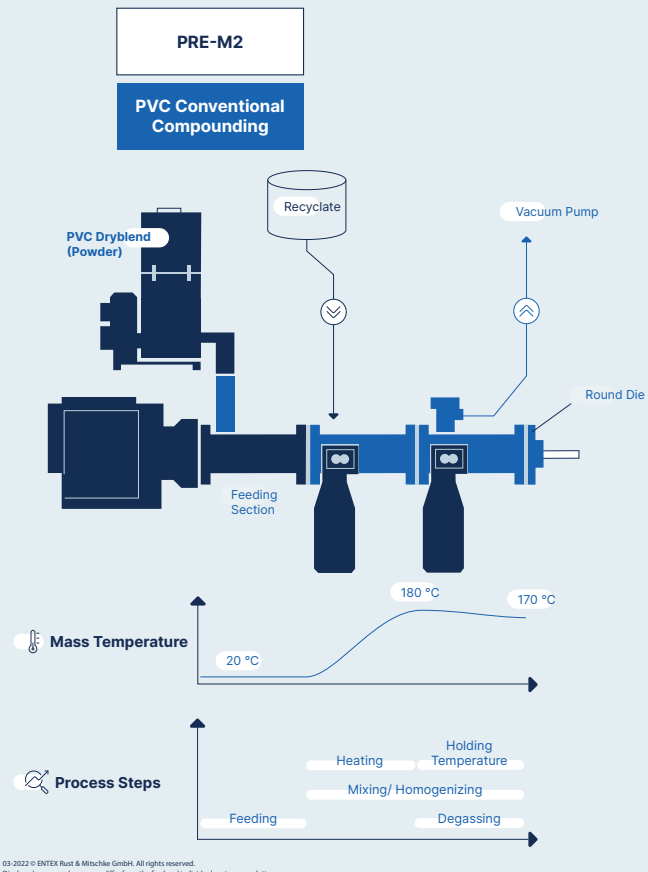
A system concept that delivers.

This system's combination of a targeted, process-oriented feed of various fluids and solid materials in defined process zones with mechanical configurability and efficient tempering allows it to conduct gentle, low-shear compounding to produce extrudates with outstanding homogeneity. Every single step in the process can be controlled individually.

PRE-M2
PVC Direct.



PRE-M2
PVC Conventional.



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Range of applications

PVC Direct and Conventional

PVC Conventional

THE CHALLENGE.

The Planetary Roller Extruder offers various features that are decisive for successfully producing and compounding PVC using conventional extrusion techniques.

It is a flexible system featuring diverse processing possibilities that can gently process PVC, offers efficient self-cleaning and high-performance degassing, and can directly process edge trim film.

THE SOLUTION: the ENTEX Planetary Roller Extruder.

With both rigid PVC (without plasticisers) and soft PVC (with plasticisers), the first step before processing begins involves preparing a PVC dry blend in a heating-cooling mixer.

This dry blend consists of PVC powder and additives, as well as plasticisers for soft PVC. In the next step, the PVC dry blend can be processed in the ENTEX Planetary Roller Extruder by melting, homogenising, mixing and extruding it. Thanks to its modularity and scalability, the ENTEX Planetary Roller Extruder can perform every process required for the production of PVC.

Typical areas of application

- Cling films (food industry)
- Packaging, stickers, labels (packaging industry)
- Trim, cladding (furniture / caravan industry)
- Window profiles, wall coverings (construction industry)
- Floor coverings, flooring (construction industry, interior design)

PVC CONVENTIONAL

Benefits of producing and compounding.

Material-friendly processing of PVC using a Planetary Roller Extruder

When processed in the Planetary Roller Extruder, PVC dry blends are continuously rolled out in thin layers while the temperature of the melt is precisely controlled – making this a very material-friendly process. This also avoids the formation of hot spots, resulting in homogeneous product quality.

Efficient self-cleaning unique

As a result of the 45° helical-toothed machine components (central spindle, planetary spindles, roller cylinders), the melt is continuously rolled out and conveyed in the extrusion direction in the Planetary Roller Extruder. The Planetary Roller Extruder is also self-cleaning to a large extent. The PVC in the Planetary Roller Extruder is continuously in motion as it is extruded. The powerful self-cleaning effect ensures that there are no 'dead zones' in which stationary PVC can suffer thermal degradation and cracking. PVC burners are not required. It is also possible to use different formulations (e.g. colour formulations) one after the other on a single machine configuration with fast changeover times while keeping scrap to a minimum.

A flexible system

Both rigid PVC and soft PVC formulations can be processed using the Planetary Roller Extruder. If necessary, it is possible to mix in other additives such as fillers, colourants, and reworked/recycled materials (recyclates) in the form of granulates, flakes or edge trim.

HIGH THROUGHPUT

IMPROVED PRODUCT QUALITY

Edge trim film can be processed directly

Edge trim film can be fed directly into the Planetary Roller Extruder through a side feeder with vacuum suction.
Suitable side feeder screw conveyors are chosen to cut the film into smaller, easily extruded pieces as it is sucked up and fed into the Planetary Roller Extruder. Here, the material is re-melted and fed back into the compounding process.

The biggest advantage of processing edge strips in film form is that the material does not have to be granulated beforehand.

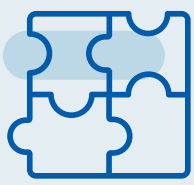
As a result, it does not have to be subjected to mechanical or thermal stress yet again, resulting in significantly higher product quality.

Outstanding degassing

When processing PVC it is sometimes necessary to remove the entrained air, volatile components or aromatic compounds from the melt by degassing. Thin-rolling ensures ongoing replacement of the melt surface and the continuous generation of a large phase-boundary interface.
The undesired compounds can then be removed from the process zone of the Planetary Roller Extruder by simultaneously applying a vacuum.

Depending on the specific application, this can be done with a specially adapted side feeder fitted to Planetary Roller Extruder or with a feed screw flange-mounted to the Planetary Roller Extruder downstream using a vacuum dome.

The melt can also be granulated directly or run through a profile die.



SIMPLIFIED PROCESS CHANGES

A SECURE INVESTMENT