ENGINEERING

Polymer processing is a highly specialized industry. Each company has its own unique formulas, processes, goals and business objectives.

FARREL POMINI is unique, too. Our competence culminates in our expertise developed over many decades in supplying polymer processing systems. We possess highly specialized skills needed to engineer the right equipment for each application. These skills include: mechanical design (3D modeling, finite element analysis, and fluid analysis), electrical design, automation systems design/programming and process engineering.

PRODUCT AREAS INCLUDE:
- COMPACT PROCESSORS
- CONTINUOUS MIXERS
- UNDERWATER PELLETIZERS
- MELT PUMPS
- HOT FEED AND REACTOR FED EXTRUDERS
PRODUCTS

As a global leader in the research, design and manufacturing of continuous mixing systems for the plastics industry, we cover an extensive range of processing applications. FARREL POMINI technology has specialized and proven performance in processing:

- Polyolefin based compounds
- Masterbatches with high levels of mineral fillers, additives and pigments
- Polymer-elastomer blends and applications requiring high intensity mixing while maintaining low processing temperature

FARREL POMINI was established in 2011 to market the continuous mixing equipment of HF MIXING GROUP.

The members companies of FARREL POMINI, Farrel Corporation and Pomini Rubber & Plastics, Srl, have over 100 years of combined experience bringing you the knowledge and expertise needed to help advance your business and its objectives.
CP Series II™
Compact Processor

The CP Series II™ Compact Processor is a highly productive compounder designed specifically for top quality dispersion of highly filled, highly pigmented materials. It contains an independently controlled continuous mixer and an extruder system.

The CP Series II™ is able to process highly abrasive materials outperforming other processors. It is designed to incorporate various types of feeding systems and pellet formation components for versatility making its applications virtually unlimited.

FEATURES:
- Two counter rotating, non-intermeshing rotors; available in various pairings and geometries
- The mixing chamber barrel incorporates numerous features which enhance the CP's processing performance, operation and maintenance
- A hot feed pumping extruder, with minimal residence time, results in a nominal polymer temperature increase
- Individual drive motors for mixer and extruder mean that the mixing function can be optimized independent of the pumping function.
- The control system can be set in an automatic mode or adjusted manually during operation

FCM™
Farrel Continuous Mixer

The FCM™ is available in a range of sizes, design types and options to meet an array of production needs from pilot/laboratory to world scale production.

All ingredients can be fed into the mixer separately or as a pre-blend. Liquids can be fed with the powder and pellets or injected directly into the mixing chamber at selected locations. The chamber can be vented at various locations. High shear rates at adjustable levels are applied to the mixture to melt, disperse, and distribute the ingredients evenly within the polymer matrix.

FEATURES:
- Counter-rotating, non-intermeshing rotors running at synchronous speed. This gives a large free volume for material circulation enabling superior distributive mixing
- Unique rotor geometry, speed and clearances enable superior dispersive mixing
- Mixing intensity can be selected as functions of rotor speed, working volume, thermal conditions and residence time
- Large rotor tip-to-wall clearance minimizes the effect of wear
- Large feed opening allows for high filler loadings and low bulk density materials
- PLC-based controls with a touch screen can expand to include a supervisory system
- Modular components result in easy maintenance and higher productivity
- Energy efficient with low operating costs
the umsd, side discharge continuous mixer, is a highly advanced mixer for high capacity processing of polyethylene, polypropylene and other primary plastics in the petrochemical industry.

the umsd processing line can work as a one-stage or two-stage mixer and can be configured with a farrel melt pump (fmp™), divert valve, screen changer and c-series underwater pelletizer.

the control system adjusts parameters automatically to meet specific energy or discharge pressure set points

multiple temperature control zones

unidrive gearbox with reduction gears and pinion stand to drive both rotors

**LCM**

**Long Continuous Mixer**

The LCM design mixer includes a two-stage mixing chamber in combination with 10 L/D long rotors

**THE PRIMARY MIXING STAGE FEATURES INCLUDE:**

- Dry blending of the polymer with all other ingredients
- Preheating of a dry blend
- Breakdown of larger agglomerates by friction between polymer particles

**THE SECONDARY MIXING STAGE FEATURES INCLUDE:**

- Intensive shear between the rotor tips and chamber wall melts the polymer and provides dispersive mixing to incorporate the other ingredients
- Back mixing, via longitudinal cut-back, pushes the material back and forth along rotors’ axes for distributive mixing
- Uniformity is achieved in the final kneading step by the rolling action between the two rotors. After this step, the material leaves the mixing chamber

**UMSD**

**Side Discharge Continuous Mixer**

The UMSD, Side Discharge Continuous Mixer, is a highly advanced mixer for high capacity processing of polyethylene, polypropylene and other primary plastics in the petrochemical industry.

The UMSD processing line can work as a one-stage or two-stage mixer and can be configured with a Farrel Melt Pump (FMP™), Divert Valve, Screen Changer and C-Series Underwater Pelletizer.

**KEY FEATURES INCLUDE:**

- The control system adjusts parameters automatically to meet specific energy or discharge pressure set points
- Externally adjustable mixing intensity
- Multiple temperature control zones
- Unidrive gearbox with reduction gears and pinion stand to drive both rotors
**FMP™ Farrel Melt Pump**

The FMP™ provides melt pressurization with minimal temperature increase and great efficiency due to a positive displacement feature, minimal back flow and limited energy dissipation.

The FMP™ is connected directly to the finishing reactor flange (for “hot melt” discharge) or to a Farrel Continuous Mixer (FCM™) for granular or powder reactor discharge. The Side Discharge FMP™ does not alter the rheological properties of the polymer, assuring consistency in physical characteristics.

**FEATURES:**
- The custom designed inlet flange of the pump housing distributes the polymer melt over two intermeshing gears. The tangential feed pockets force the polymer melt into the tooth cavities and the intermeshing, high precision gears carry the polymer melt along the periphery of the housing bores.
- Where the gears intermesh, the polymer is squeezed from the gear tooth cavities. Because of close tolerances, a high volumetric efficiency can be maintained over wide ranges of pressure and temperature.
- The design includes double helical gears for pulse free operation.
- The gear shaft journals are supported by sleeve bearings, lubricated by polymer melt, tapped from the high pressure discharge.

**Underwater Pelletizer**

Farrel Underwater Pelletizers incorporate numerous innovative processing, mechanical and control features that assure consistent performance, quality pellet output, efficient operation and simplified maintenance.

Choose between the standard electrically powered “C” model or the hydraulically powered “H” model. Both incorporate: a quick opening cutting chamber, hydraulic locking and unlocking, hydraulic opening and closing of the pelletizer and automatic retention of the cutter shaft alignment.

**FEATURES:**
- All pellet plates are custom designed to meet specific processing requirements. The cutting face can be provided with a selection of different hard metal surfacing materials in the form of tiles, nibs, segments or as a solid coating.
- The internal heating configuration is custom-designed based on the application and the available heating medium (steam or other thermal fluid).
- The cutter shaft and knife alignment mechanism allow for precise alignment of the cutter shaft axis to the cutting face of the pellet plate.
- Alignment retention provided by hydraulically activated mechanical clamps that lock the water chamber and the cutter housing assembly to the pellet plate.

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*Image of FMP™ Farrel Melt Pump and Underwater Pelletizer.*
the hot feed extruder is designed to take the material from the Farrel Continuous Mixer (FOM™). The oversized hopper opening insures efficient feeding. The continuous feed of material permits orientation of these extruders either parallel or at right angles to the axis of the Continuous Mixer rotors.

Connecting chutes between the mixer and the extruder are normally included as standard equipment. These chutes have a divert door for redirecting start-up and shutdown material from the FOM™. Chutes also have an access door and observation windows. Standard options include: specially sealed designs suitable for nitrogen purging or vacuum application, illumination of the interior and adaptation for monitoring of material in-feed.

Hot Feed Extruders

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The reactor fed extruders are designed to receive the hot melt stream coming directly from a reactor. The hopper cylinder and its support are designed to carry the weight of a gravity feed vessel.

Seals are incorporated in the rear of the hopper cylinder to minimize leakage of polymer with the screw turning or stationary. Rear vented hopper cylinders are available to aid in degassing the melt.

A special “melt homogenizing” extruder design which modifies LDPE to improve melt flow characteristics and optimal properties can be furnished.

Reactor Fed Extruders

The Reactor Fed Extruders are designed to receive the hot melt stream coming directly from a reactor. The hopper cylinder and its support are designed to carry the weight of a gravity feed vessel.

Seals are incorporated in the rear of the hopper cylinder to minimize leakage of polymer with the screw turning or stationary. Rear vented hopper cylinders are available to aid in degassing the melt.

Injection ports for introducing additives in masterbatch or liquid form can be furnished in hopper and forward cylinders. Mixing screws are often used to enhance the incorporation of these additives.

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A special “melt homogenizing” extruder design which modifies LDPE to improve melt flow characteristics and optimal properties can be furnished.
SERVICE

FARREL POMINI is committed to providing the highest levels of support to our customers worldwide. Your equipment purchase is one element of the comprehensive portfolio of products and services we offer. We can work together to maintain your productivity time and optimize process quality.

- SPARE PARTS
  With a FARREL or POMINI equipment serial number, we can guarantee you receive the right sized part with standard warranties.

- REMANUFACTURING & REBUILDING
  Increase your return on investment by extending the life of installed equipment. Minimize downtime by installing remanufactured replacements for worn or damaged components.

- FIELD SERVICE & TECHNICAL SUPPORT
  Minimize downtime and maximize performance with on-site service, start-up, maintenance and repairs worldwide.

- PROCESS ENGINEERING SERVICES
  A total systems approach to meet your individual process requirements. We offer a range of services from pre-engineering of projects all the way through system installation.

- PROCESS LABORATORY & CUSTOMER DEMONSTRATION FACILITIES
  Located in the US and UK, these facilities provide an excellent opportunity to demonstrate how our machinery performs with customer’s various formulations. Customers can also experiment with numerous rotor configurations and process tools on production sized equipment in our Lab.