

# Solutions for Cast Film

Ensure unsurpassed product quality and performance when you partner with the industry's leader in flat die manufacturing and technology.

## Benefits

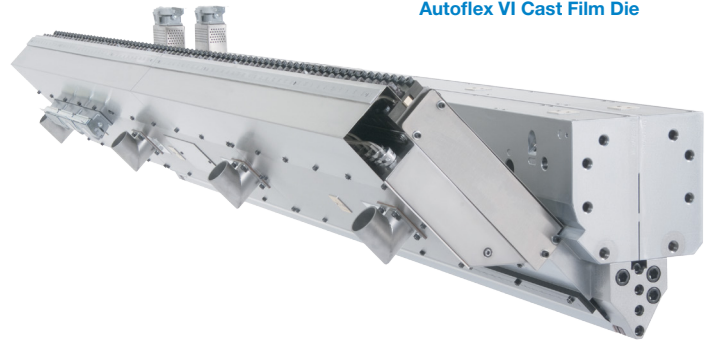
- **Achieve optimal product quality** with customized manifolds designed specifically for your production requirements
- **Reduce material usage and easily changeover products** through a variety of available product features, including automatic or manual adjustments and deckling
- **Spend less time purging and changing colors** between product runs due to the streamlined diminishing volume flow channel
- **Reduce resin costs** by precisely controlling the gauge profile
- **Improve cross-directional product uniformity** by up to 25% and reduce gel formation
- **Reduce downtime for routine maintenance** with ancillary equipment designed for added safety and convenience during 'split and clean' procedures

Nordson, a leading international supplier of extrusion die technology, provides a broad line of custom-engineered flat extrusion dies and related system components for the production of cast film.

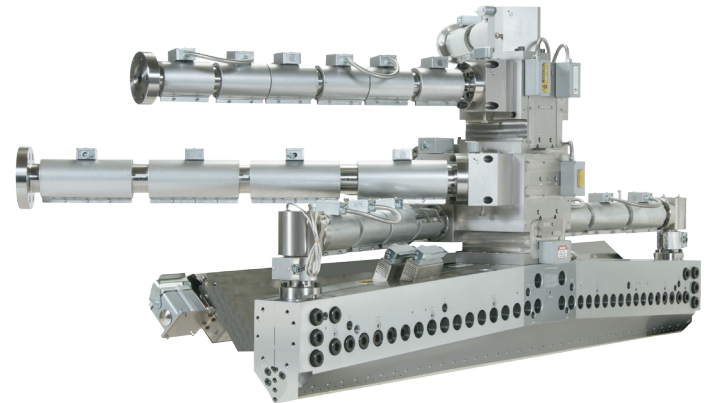
Whether your specific application requires a standard EDI Ultraflex™ die, the uniquely shaped Contour® die or a multi-manifold die, Nordson's highly skilled team will work with you to design an innovative solution to meet your needs.

- **EDI Contour® dies** are designed with a sculpted configuration, which offsets the differences in die body deflection across the width of the die - differences that cause gauge variations and clamshelling in traditional coathanger dies.
- **EDI multi-manifold dies** are designed to accommodate dissimilar viscosity materials and partial coverage requirements.

Autoflex VI Cast Film Die



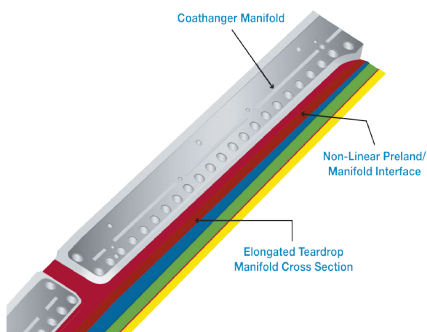
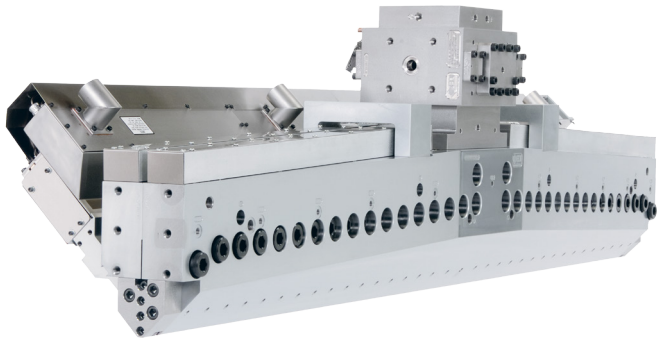
Autoflex VI-R Contour® Cast Film Die



## Features

- **Automatic or manual gauge control**
- **Multi-manifold or single cavity coextrusion dies**
- **Contour® design as proven option**
- **Unequaled construction and flow surface design**
- **Variety of finish and plating techniques**
- **Unique heating and insulation package**
- **Optional deckle systems**
- **Easily adaptable to interface with existing equipment**
- **Full System Solution: Dual Chamber Vacuum Boxes, Ultraflow™ Coextrusion Feedblocks, and UltraSplit On-line Die Separation Device**

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## EDI Contour® Dies

- Elongated teardrop shaped manifold cross-section, which reduces viscous encapsulation in coextrusion applications
- Non-linear preland/manifold interface, which eliminates or greatly reduces “M” and “W” flow patterns
- Contour® technology provides dimensional and process stability and at the same time achieves uniform film properties, good purging characteristics, and avoids gels and degradation

## Benefits

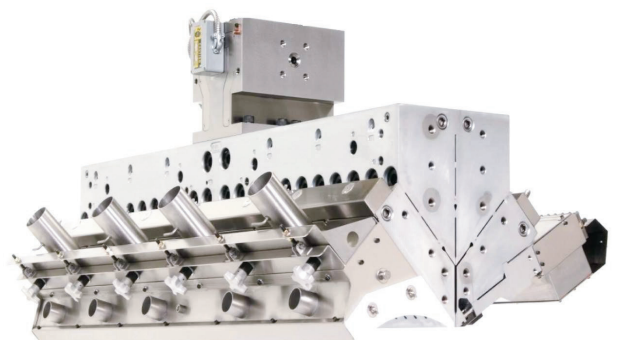
- **Significantly reduce scrapped materials by achieving acceptable product levels quicker than with a standard coathanger manifold die**
- **Improve product quality with lower levels of polymer degradation, especially when compared to straight backline manifold dies**
- **Increase throughput with the shape of the Contour® die body, assuring uniform deflection across the die width**

## EDI Multi-Manifold Coextrusion Dies

- Designed to accommodate dissimilar viscosity materials and partial coverage requirements
- Coextrusion structures with skin layer(s) of less than 10% of total configuration
- Coextrusion structures with melt temperature differentials up to 50°F
- Available options include special lip exit design, complete metric design, special body materials, various platings, and mounting trunnions

## Benefits

- **Optimized manifold designs for increased production efficiency**
- **Improved product quality with precise individual layer distribution**
- **Increase material savings by utilizing the “naked edge” or partial coverage feature, allowing for reduced trim**



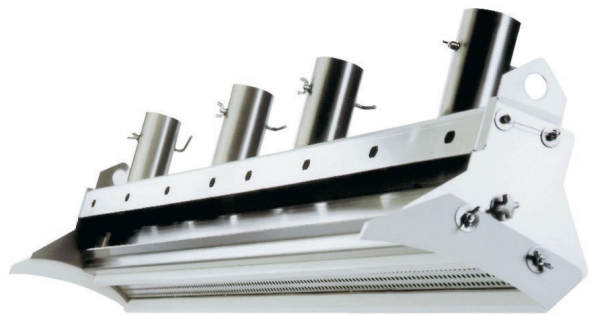
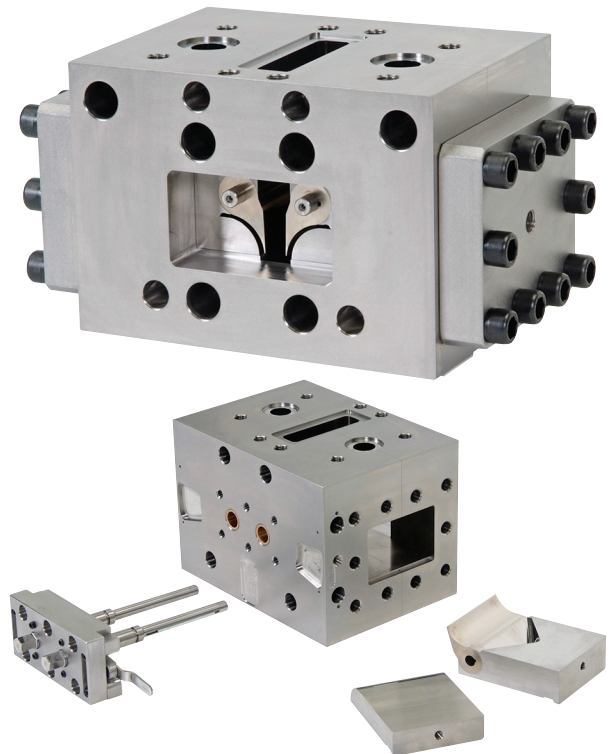
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## EDI Ultraflow™ V Adjustable Coextrusion Feedblock

- Adjustable “combining planes”, located where the melt streams join the central flow channel, can operate in two modes - each with a different advantage in terms of ease and adjustability:
  - *Eliminating feedback adjustment by the operator.* By leaving the adjustable plane in free-floating mode, operators can let the position be determined directly by the equilibrium pressure developed by flow from the extruders.
  - *Optimizing layer-to-layer interfaces.* For polymers whose interaction at the point of confluence poses the possibility of compromising the multilayer structure, the adjustable plane can be moved manually to fine-tune polymer flow.

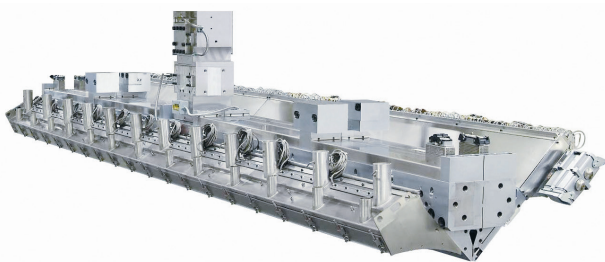
### Benefits

- **Eliminates downtime by making possible “on-the-fly” product changeovers, as well as exceedingly precise tuning of individual layers**
- **Provides effective adjustability, without sacrificing streamlining**



## EDI Dual Chamber Vacuum Boxes

- All stainless steel construction ensures the Dual Chamber Vacuum Box is easy to clean and maintain.
- Easily mounts to the die, reducing space requirements, as well as the air gap between the die and roll. Insulation between the die and box is provided.
- Blower systems can include optional variable speed control to minimize set-up time.
- The presweep chamber strips away any entrained air from the roll surface and the primary chamber positions and stabilizes the web.



### Benefits

- **Capital machinery savings by eliminating the need for additional process machinery, such as an air knife and edge pinning devices.**
- **Removal of entrained air and faster film cooling allows for faster, more stable production runs.**
- **Polymer comes straight out of the lip with minimal drag at the lip exit, which creates less build-up and means longer runs between cleaning the lips.**

# Solutions for Cast Film

## Case Study: EDI Contour® Die

While benefits from the EDI Contour® die will vary with each application, in commercial-scale trial runs by a global film manufacturer working with Nordson, the die achieved considerably narrower gauge tolerances in comparison with a coathanger die, making possible material savings with a calculated annual value of US\$200,000.00 (see table to right).

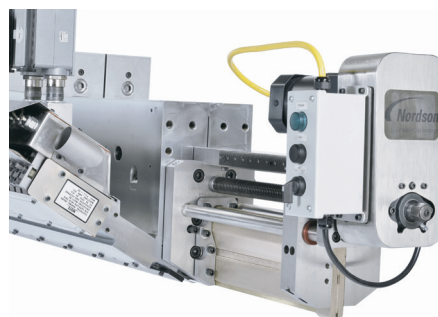
The new-generation Contour® die retains these advantages while saving up to two days of downtime for width changes because it incorporates an internal deckle for making changes in product width.

What does this mean to extrusion processors? With resin savings made possible by precisely controlling the gauge profile, the Contour® die will pay for itself in less than a year. Processors will also benefit from enhanced productivity resulting from increased yields of saleable film and reductions in scrapped material.

## Case Study: Contour® Die versus Traditional 'Coathanger' Die

Basic Parameters	
Target gauge, mil	3.600
Net hourly throughput, lb.	1,800
Extruder utilization, %	93
Annual yield, 1,000,000 lb	14.664
Average resin cost, \$/lb.	1.30
Die Performance Compared	
Traditional die: 3-sigma gauge variation, mil	0.080
Calculated minimum thickness, mil	3.520
Contour Die: 3-sigma gauge variation, mil	0.033
Calculated minimum thickness, mil	3.567
Total possible savings with Contour Die, mil	0.047
Level of savings deemed acceptable, %	90
Final calculated minimum thickness with Contour Die, mil	3.558
Potential Annual Savings with Contour Die	
Rate of savings (with improved film quality), %	1.047
Increased yield (fewer lb./sq.ft.), lb.	153,567
Savings in material cost, \$	199,637

Source: Nordson EXTRUSION DIES INDUSTRIES, LLC



## Nordson Corporation

Nordson Corporation engineers, manufactures and markets differentiated products and systems used for the precision dispensing of adhesives, coatings, sealants, biomaterials, polymers, plastics and other materials, fluid management, test and inspection, UV curing and plasma surface treatment, all supported by application expertise and direct global sales and service. Nordson serves a wide variety of consumer non-durable, durable and technology end markets including packaging, nonwovens, electronics, medical, appliances, energy, transportation, construction, and general product assembly and finishing. Founded in 1954 and headquartered in Westlake, Ohio, the company has operations and support offices in more than 30 countries. Visit Nordson on the web at <http://www.nordson.com>, @Nordson\_Corp, or [www.facebook.com/nordson](http://www.facebook.com/nordson).

## Nordson Polymer Processing Systems

Nordson Polymer Processing Systems provides customers with engineered components to melt, homogenize, filter, meter, and give shape to plastic and fluid coating materials. Nordson Corporation leverages the collective plastics industry experience from a series of strategic acquisitions to offer a uniquely broad portfolio of industry-leading technologies. Nordson delivers a full range of precision melt stream products — from screws and barrels for extrusion and injection molding — to filtration systems, pumps, and valves — to the extrusion dies and pelletizing systems to meet the constantly evolving needs of the polymer industry.

**Nordson Extrusion Dies Industries, LLC**  
911 Kurth Road  
Chippewa Falls, WI 54729 USA  
+1.715.726.1201 Phone

**Belgium**  
+32.3.711.1997 Phone

**China**  
+86.21.57850918 Phone

**Japan**  
+81.3.5762.2770 Phone

[www.nordsonpolymerprocessing.com](http://www.nordsonpolymerprocessing.com) | [info@nordsonpolymerprocessing.com](mailto:info@nordsonpolymerprocessing.com)

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