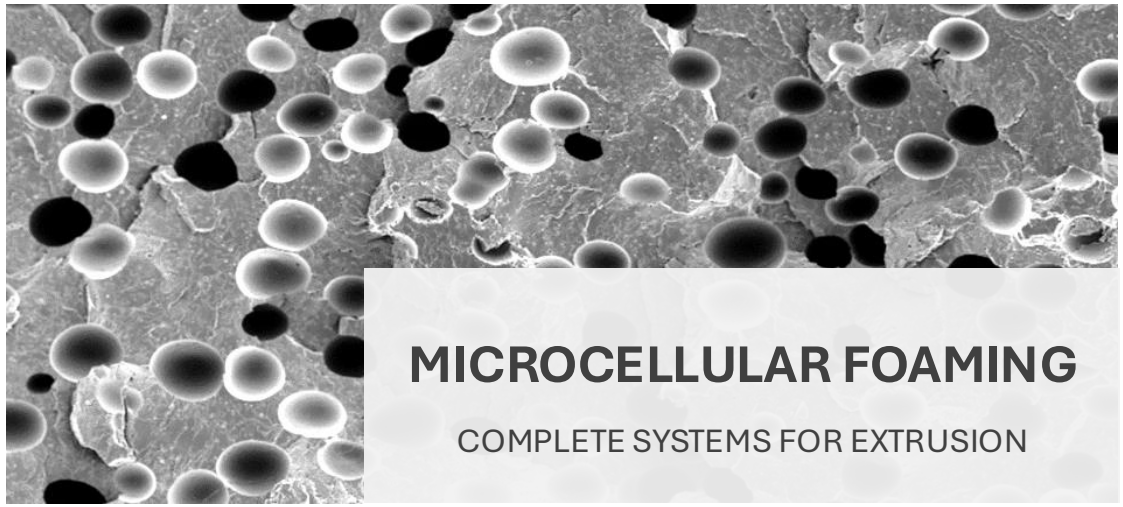
Welcome to

MIXING. FOAMING. COOLING.

PROCESS CONTROL IN FOAM EXTRUSION

DAVE MOLLOY, PROMIX SOLUTIONS LLC | EXTRUSION 2025, BOSTON, MA

PROMIX | COMPANY TECHNOLOGY SEGMENTS



MICROCELLULAR FOAMING

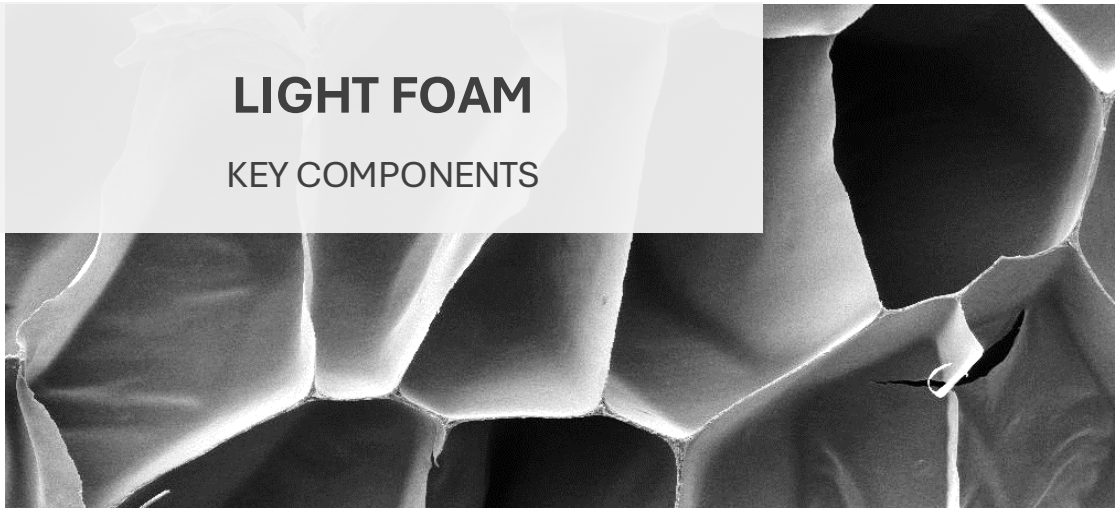
COMPLETE SYSTEMS FOR EXTRUSION

STATIC MIXING

MELT HOMOGENIZATION

MELT COOLING

HEAT EXCHANGE



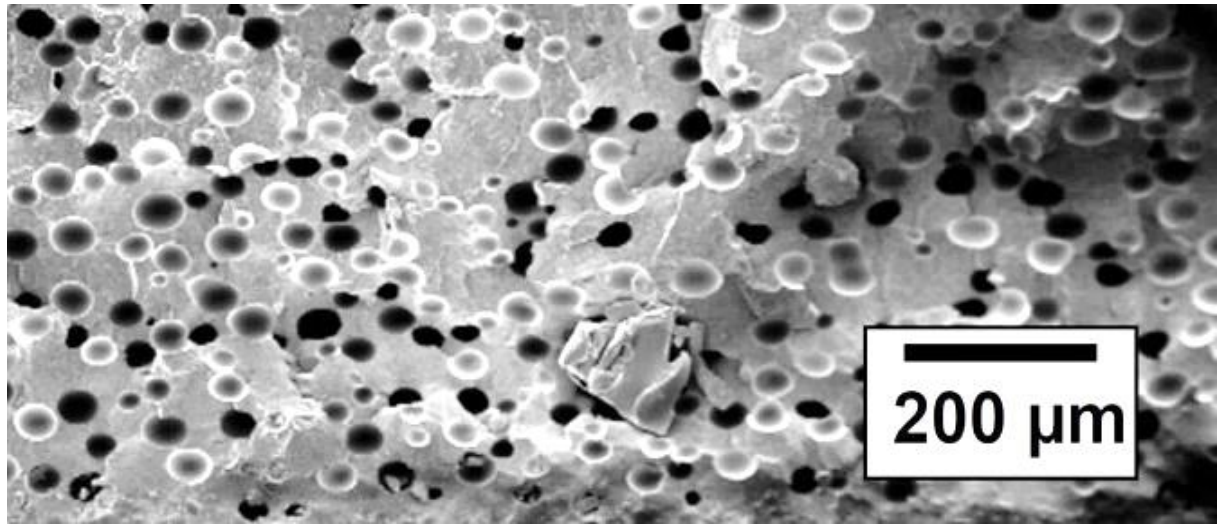
LIGHT FOAM

KEY COMPONENTS

MICROCELLULAR FOAMING | MATERIAL SAVINGS

MICROCELL FOAM SYSTEMS | For any Extrusion Process

- Sheets
- Films
- Profiles
- Pipes, Cables
- Thermoforming & more



BENEFITS

✓ Material cost savings

✓ CO_2 footprint reduction & fully recyclable

✓ Differentiation from competition

- ✓ Weight reduction
- ✓ Noise cancellation
- ✓ Shock absorption & impact damping
- ✓ Thermal insulation
- ✓ Light diffusion optics & visual effects

Promix Microcell Technology | Complete Foaming Systems

PROMIX APPLICATIONS | MICROCELL EXAMPLES

PROMIX Solutions

PACKAGING CONTAINERS

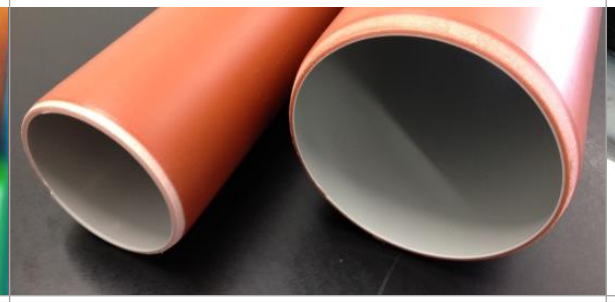
PACKAGING FFS

PACKAGING THERMOFORMING

PACKAGING HOT-FILL

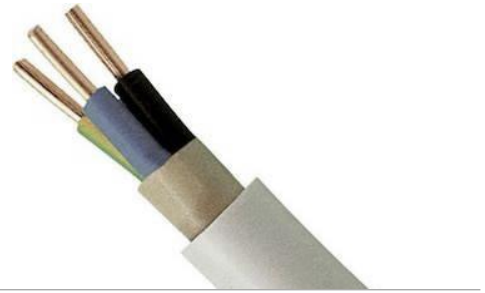
MICRODUCTS FOR FO CABLES

PP FOAMCORE PIPES



SENSOR CABLES

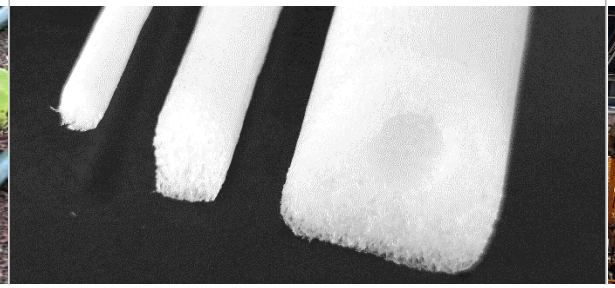
PVC / PE LV CABLES



LDPE/PP SEALS

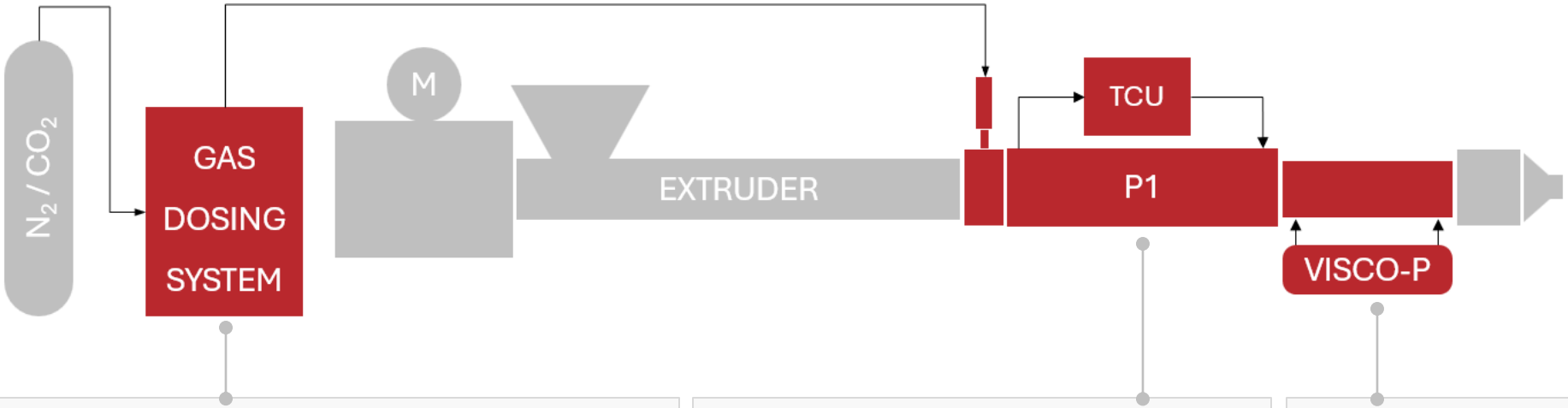
DRIP IRRIGATION PIPES

PE / EVA PROFILES



FIBER PRODUCTION

MICROCELL FOAMING | PROMIX PRODUCTS



Microcell Foam Technology | Gas Dosing Station

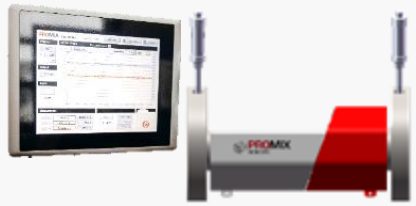
- Highest precision
- Mass-flow controlled unit
- N_2 & CO_2
- Easy & safe operation

P1 | Cooling Mixer

- Melt cooling & mixing
- Precise T control

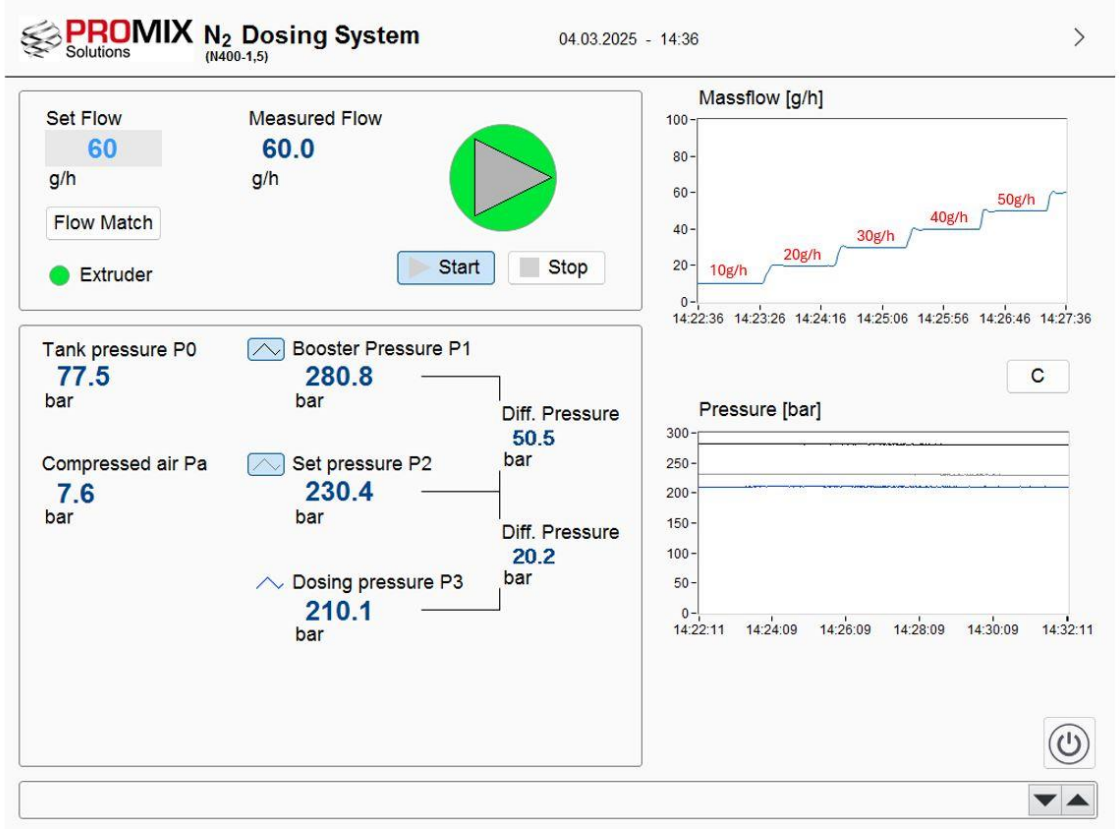
Visco-P | Inline Viscometer

- Continuous quality control
- Recycled & highly filled

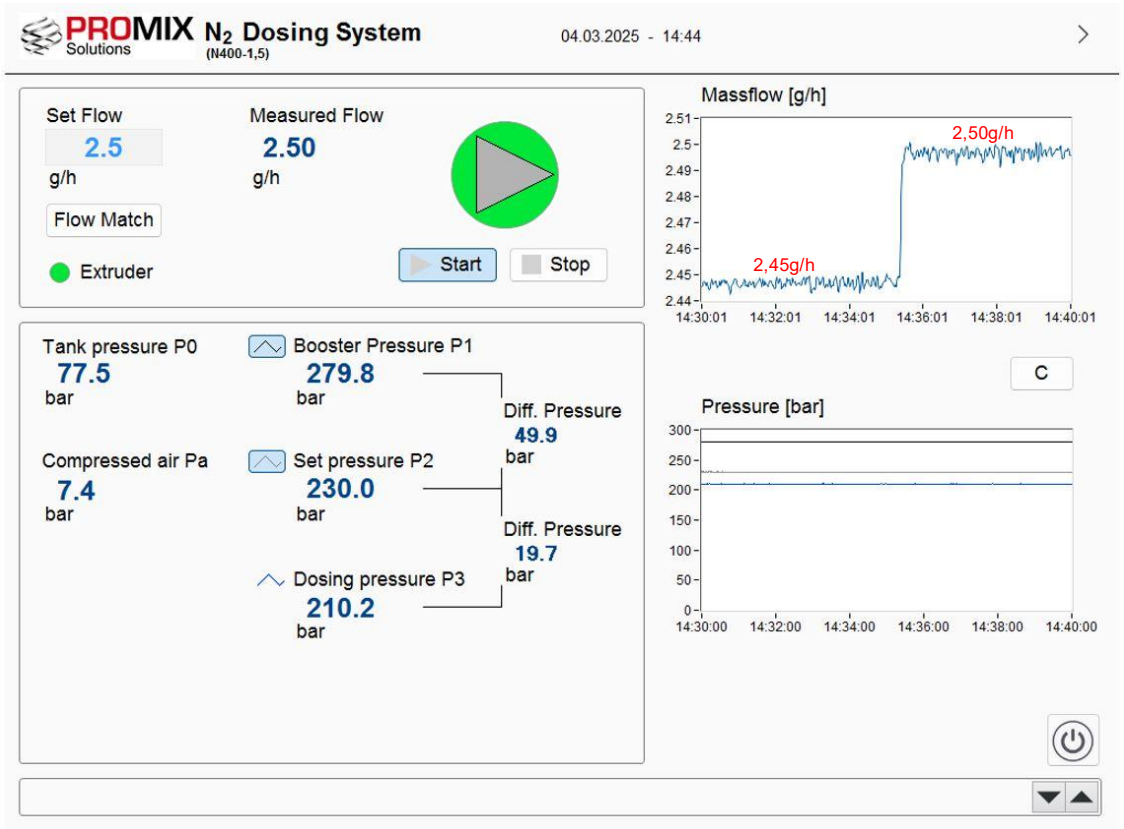


MICROCELL FOAMING | GAS DOSING STATIONS

FAST RESPONSE| Changes in steps from10g/h to 60g/h

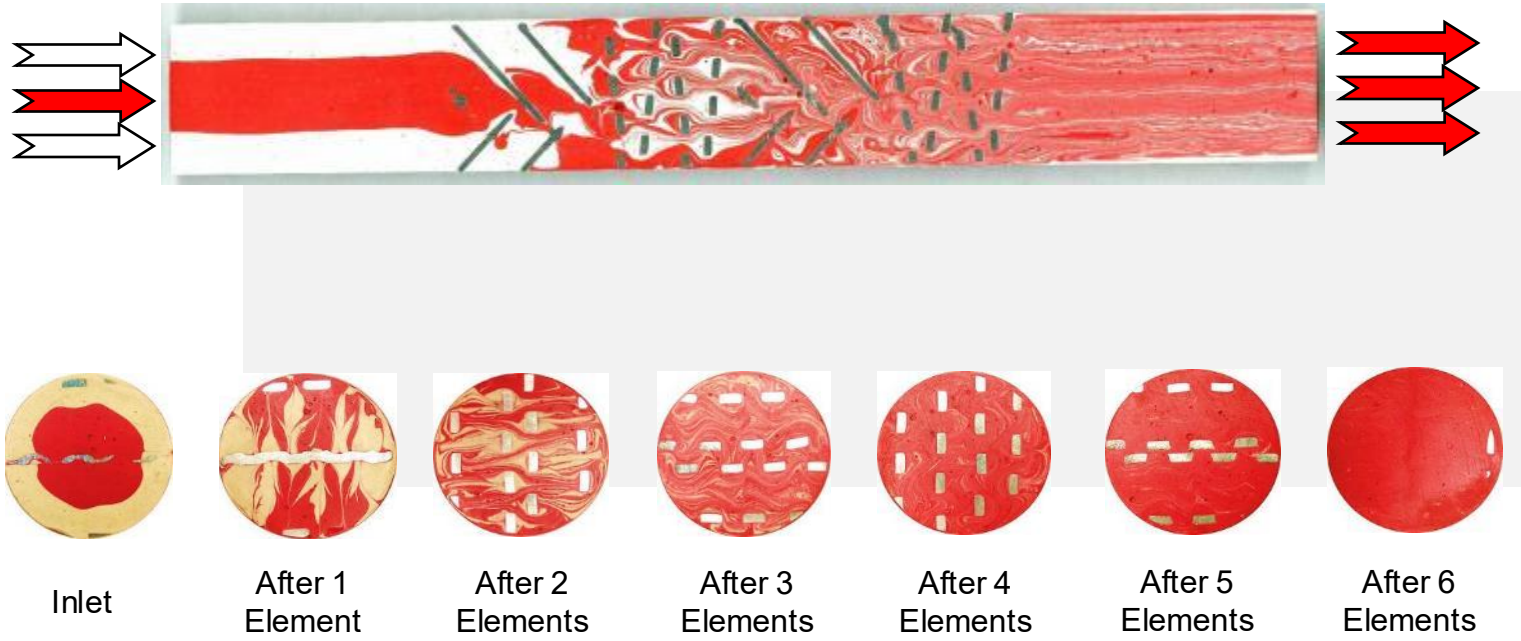


HIGHEST PRECISION| Change from 2.45g/h to 2.50g/h



MELT BLENDER | MELT HOMOGENIZATION

Melt homogenization using static mixers



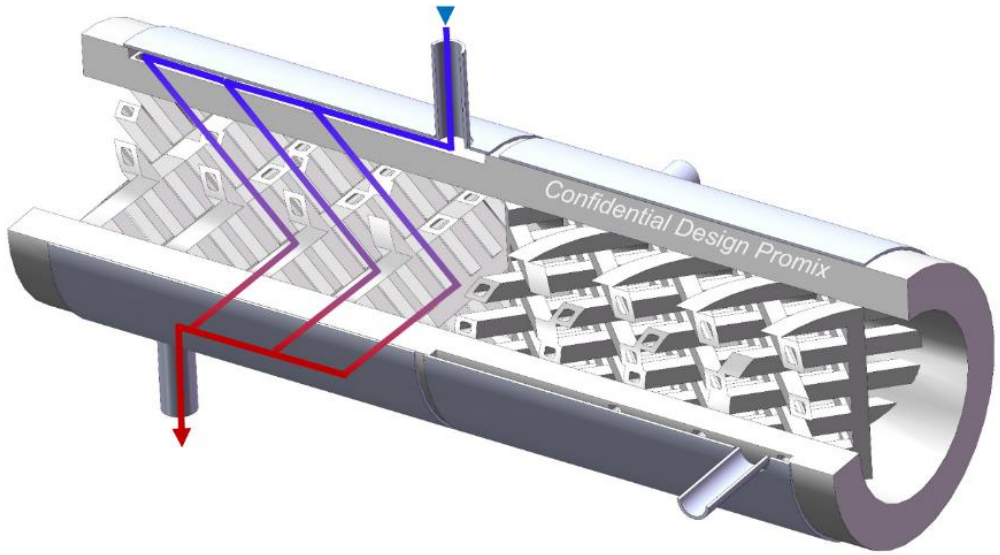
TECHNOLOGIES | MELT COOLING

Picture: Sulzer

Common limitations are

- Poor residence time distribution
- Mechanically weak
- Risk of fouling / blocking / freezing
- Low mixing effect / poor self cleaning

P1 MIXING COOLER | MELT COOLING



Key advantages for Microcell Foaming

- Simultaneous mixing and cooling
- Mixing effect supports heat exchange
- Excellent melt / product homogenization
- Defined melt temperature before die supports best possible cell structures

P1 MIXING COOLER | MELT COOLING

P1 is the synthesis of a very effective mixer with a high-performance cooler.

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Promix P1

VISCO-P | INLINE VISCOMETER

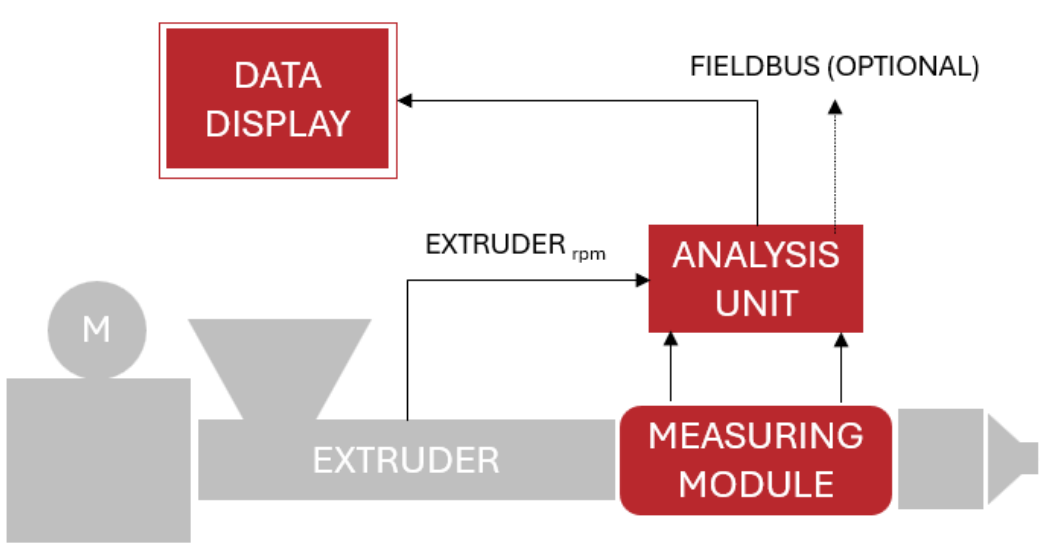
When is an inline viscometer required?

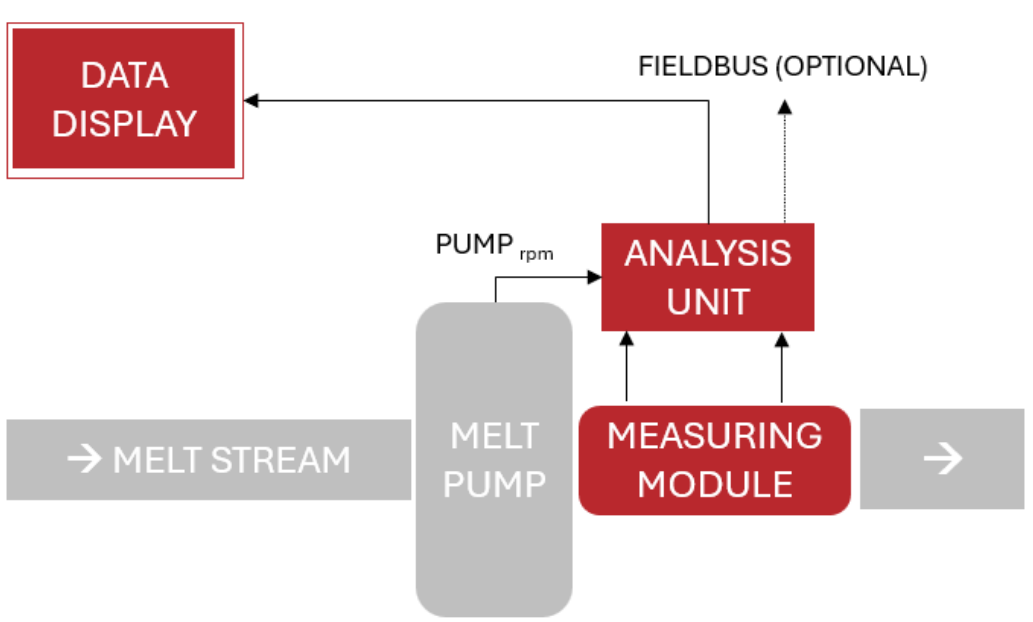
- Recycling material – Raw material management
- Sensitive Processes – Reactive compounding / extrusion
- Unstable Processes – Control / stability
- Efficiency – Reduced scrap by immediate alarms
- Claim handling – Clear batch assignment

VISCO-P | INLINE VISCOMETER

Strengths & Applications	Resulting Benefits
High-accuracy inline viscometer	▶ Real-time quality control of the process
Viscosity of the full melt stream	▶ Indicating raw material & process deviations
Promix measuring module	▶ Additional melt homogenization
IV monitoring for PET applications	▶ Raw material dosing optimization
No risk of blocking, deposits or degradation	▶ Recycling, filled & shear-sensitive materials
Short installation length	▶ Easy retrofit to any extrusion line

VISCO-P | INLINE VISCOMETER

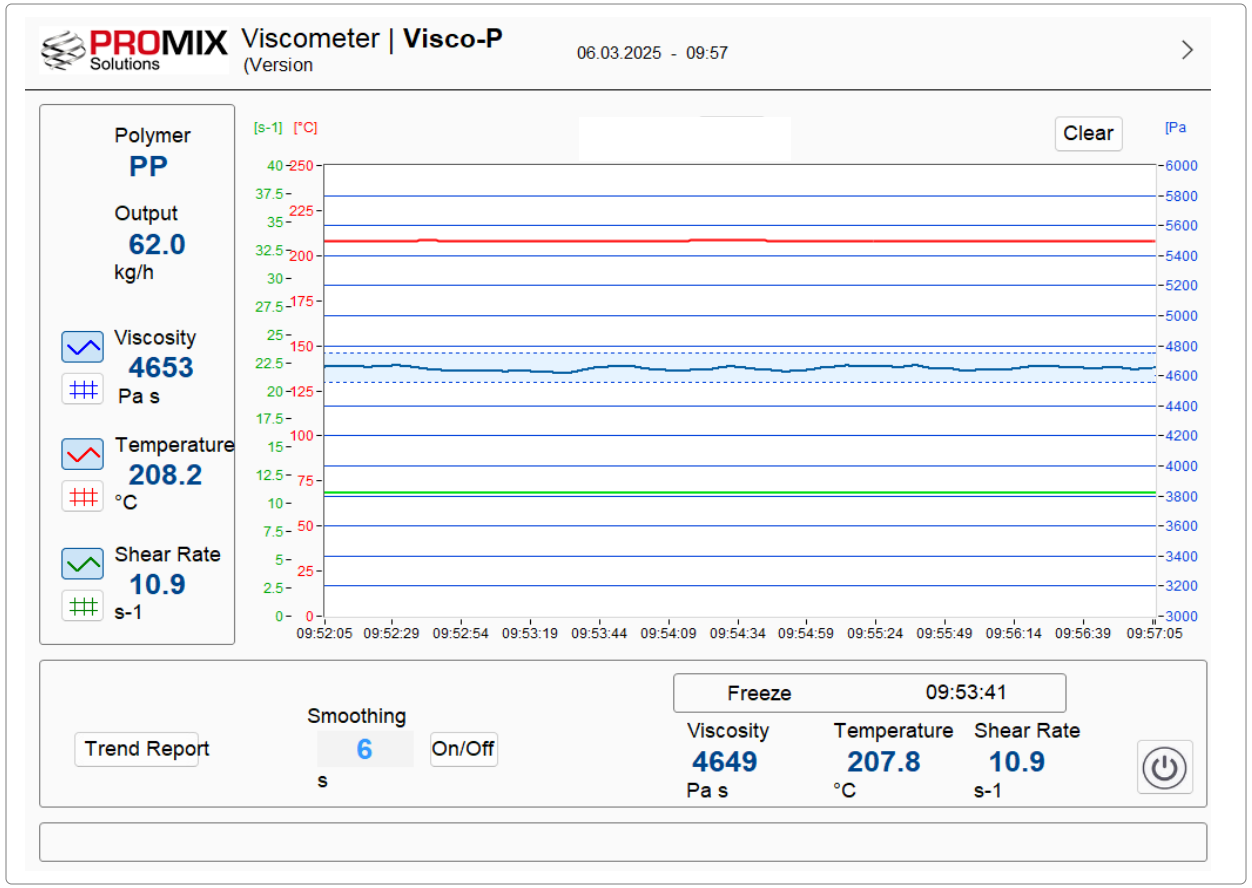


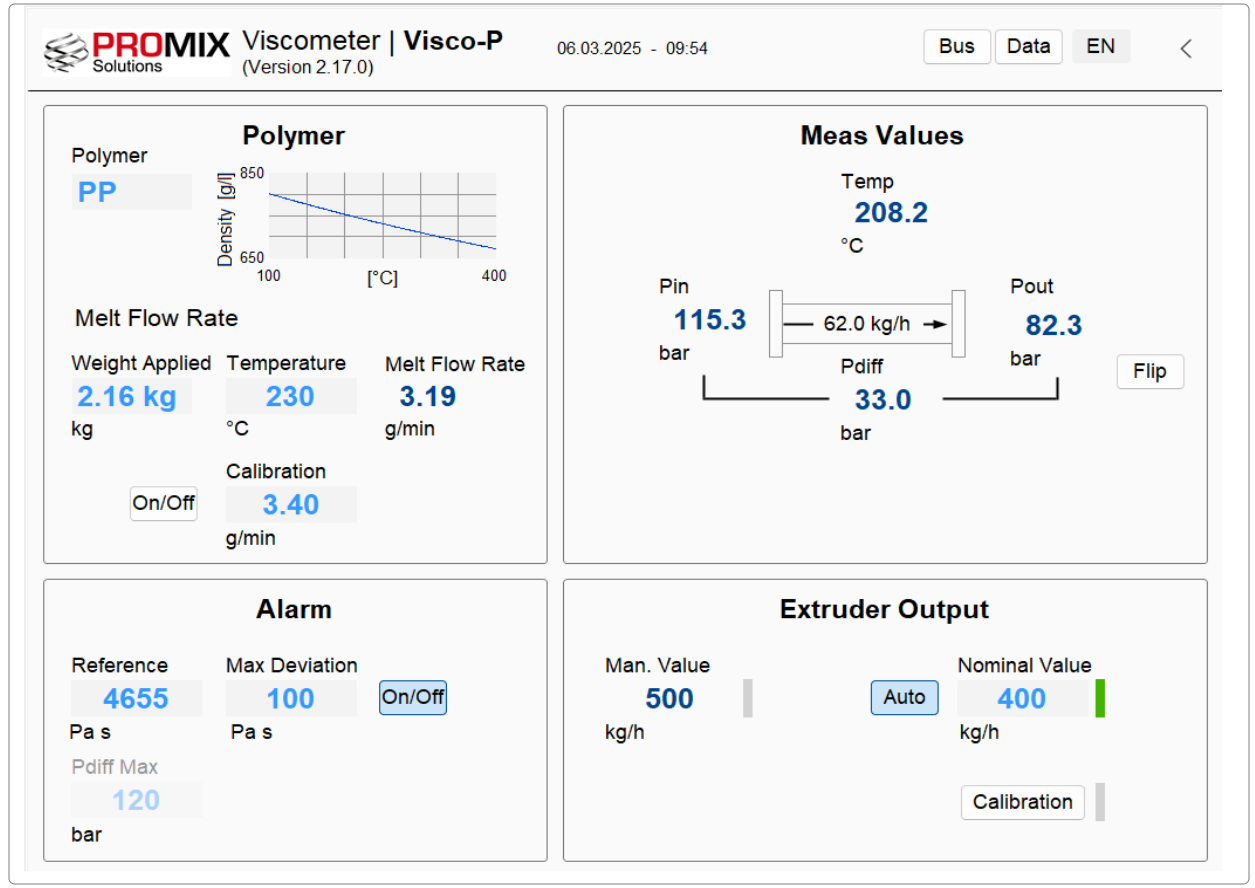


Visco-P | In-Line Viscometer Components in different Process Set-Ups

VISCO-P | INLINE VISCOMETER

- GUI / Screenshots

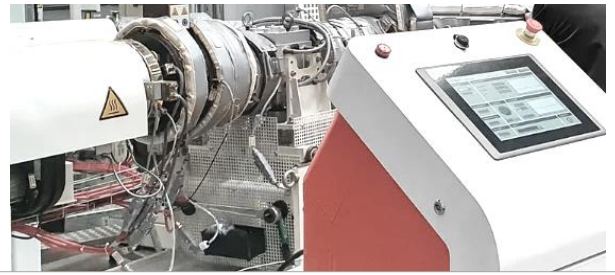




PROMIX SOLUTIONS | PRODUCT RANGE

Process technology for **MIXING. FOAMING. COOLING** in the plastics industry

MICROCELL FOAMING | **Systems**



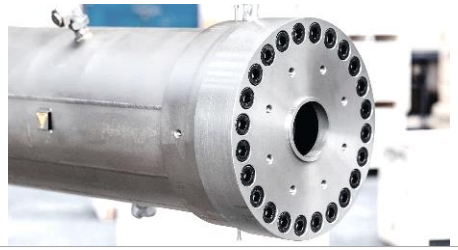
MICROCELL FOAMING | **Gas Dosing Stations**

COOLING MIXER | **P1**

PROCESS CONTROL | Inline Viscometer

NUCLEATION ADDITIVE | Procell MB

HEAT EXCHANGE | P1



EXTRUSION | Melt Blenders

LIGHT FOAM COMPONENTS | Q1 Annular Die

INJECTION MOLDING | Mixing Nozzles

THANK YOU

MIXING.
FOAMING.
COOLING.

www.promix-solutions.com

P1 MIXING COOLER | MELT COOLING