

LIQUID METERING SYSTEMS

Specifically
designed for
thermoplastic
processes



LIQUID METERING SYSTEMS

SYSTEM DESCRIPTION

FlexCart™ metering units & PlanetPak™ containers form the main equipment components of Avient's proprietary liquid metering systems designed to optimise delivery of Avient liquid colors and additives in the thermoplastic processing industry. The FlexCart range is a flexible, multi-functional portfolio of metering units specifically designed to work in conjunction with PlanetPak sustainable containers.

FlexCart metering units are designed with flexibility and functionality at the core of their design. The flexibility of the portfolio covers a wide range of configurations with sizes to accommodate different customer requirements. The control functionality has also been developed to support numerous user applications.

PlanetPak containers are an effective method of packaging Avient liquid colors and additives, designed for ease of handling, reduced storage space, sustainability and optimal yield.



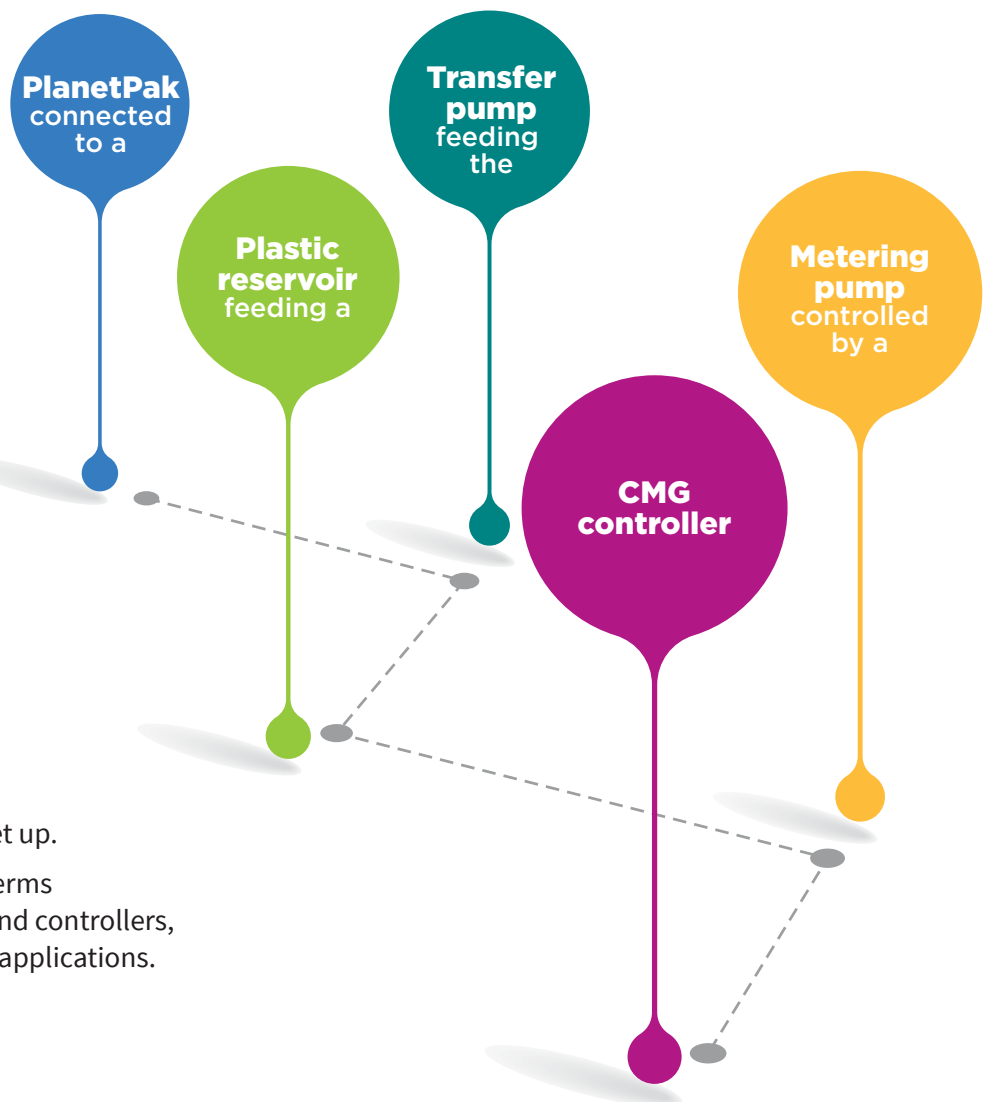
HOW DOES THE SYSTEM WORK?

FlexCart units work as compact mobile metering systems, designed to be easy to use. An overview of the system components is to the right.

Once connected, the CMG controller tracks the input signal from the host machine and allows the FlexCart to accurately meter the required color or additive for the process.

The reservoir cassette is a key operating element of the FlexCart unit, allowing the user to quickly changeover colors in a matter of minutes. This achieves both the ease of running continuously and reduces lost time associated with set up.

A range of options are available in terms of FlexCart equipment, packaging and controllers, in order to suit different processing applications.



WHICH SYSTEM TO USE?

These questions will help define the appropriate combination of modular components:

- What type of process - extrusion/molding?
- What is the normal polymer throughput?
- Are data management facilities needed?
- Is gravimetric capability required?
- What is the normal liquid addition rate?
- What size of packaging is normally used?

BENEFITS OF THE SYSTEM?

The combined system offers added value to processing through:

- Modular, compact and customizable
- PlanetPak sustainable packaging
- Continuous & discontinuous operation
- Typically 99%+ recovery of additive/color
- Comprehensive control functionality

OPTIONS AVAILABLE

A range of base units are available for different applications, which can be combined with a full range of options for controllers and pumping.



FlexCart



FlexCart Mini



FlexCart Micro



FlexCart Nano



FlexCart M.I.



FlexCart Reservoir Cassette

- Key component of the FlexCart range providing the ability to change colors in minutes
- A ten-liter container housed in a removable cassette, with built in tube storage facility



Peristaltic Pump

- Ideal for use on shorter production runs & frequent color changes
- Re-usable with replaceable tubing
- Typically used for injection molding



Progressing Cavity Pump

- Suited to longer production runs & continuous operation
- Accurate, interchangeable & available in five sizes
- Typically used in extrusion



CMG Controllers

- CMG3000 - A robust, straightforward analogue control of metering
- CMG5000 - Expanded functions, touch screen, networking & data export
- CMG6000 - As for CMG5000 plus control of HP melt injection pumps & melt pressure transducers
- FlexG - CMG3000 + load cell system for loss in weight functionality



Gyroscopic Mixing & Recirculating

- Gyroscopic mixing designed for the patented PlanetPak design
- FlexCart Re-Circ Dual paddle mixer designed for larger FlexCart units to rejuvenate materials
- Systems designed to maintain liquid colors and additives in prime condition

PLANETPAK CONTAINERS

The FlexCart range is designed to work with different packaging options, but the optimum system uses the proprietary technology of the PlanetPak range.

WHAT ARE THEY?

The PlanetPak containers center on a robust design that offers both sustainable principles and outstanding yield. The packaging is designed to effectively contain and transport Avient liquid colors and additives.

THE DESIGN

The basis of a PlanetPak is a robust polyethylene liner with a proprietary collapsing design, encompassed by a cardboard outer shell. The polyethylene liner has a non-drip valve outlet that connects seamlessly to the FlexCart metering system and the outer shell is designed to fit onto the FlexCart carriage.

PlanetPak containers are available in a range of sizes either for use with the FlexCart or as standalone packaging for customers' orders. The size range includes:



PLANETPAK SIZE RANGE	1L	3L	5L	15L	25L
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KEY ATTRIBUTES

- Customers can expect to get 99%+ yield of liquid contents from a PlanetPak
- The square footprint allows effective and efficient transportation & storage
- The liner and outer shell can be separated easily and compressed for efficient recycling
- The polythene liner remains sealed at all times, eliminating the risk of spills and contamination
- Tamper evident and UN rated for safe transportation of classified goods
- Food contact approved use



MAKING THE RIGHT CHOICE

Here are the options which should be considered for an informed choice of combinations:

(Note: LN = 3, 5 & 10L molded container PC = Progressing Cavity Pump Peri = Peristaltic Pump)

ATTRIBUTE	FLEXCART	FLEXCART MINI	FLEXCART MICRO	FLEXCART NANO	FLEXCART M.I.
Footprint (LxW cm)	86 x 71	98 x 38	60 x 35	55 x 30	86 x 80
Typical max. throughput (kg/hr)	1000	625	250	50	120
Max. metering rate (cc/s)	10	10	10	1.8	1.25
Continuous use	Yes	Yes	No	No	Yes
Transfer pumps	PC/Peri	Peri	NA	NA	PC
Metering pumps	PC/Peri	PC/Peri	PC/Peri	Peri	PC
Interchangeable cassette	Yes	Yes	Yes	No	Yes
Typical PlanetPak delivery unit	25L	25L	NA	1L	25L
Other delivery packaging	IBC/LN	Drum/LN	LN	LN	NA

Choosing a progressive cavity pump for transfer or metering

PC PUMP RATE (cc/rev)	0.09	0.28	0.87	2.6	5.2
RECOMMENDED OUTPUT RANGE (g/min)	0.9 to 9	2.8 to 28	8.7 to 87	26 to 260	53 to 520
PC PUMP MAX (g/min)	18	56	174	520	1040

Choosing the controller

CONTROLLER	CMG 3000	FlexG	CMG 5000	CMG 6000
Application	Injection Molding Extrusion	Injection Molding Extrusion	Injection Molding Extrusion	Injection Molding Extrusion Melt Injection
Volumetric/gravimetric	V	V (weight data)	V/G	V/G
Data export/network	No	Yes	Yes	Yes
Touch screen	No	Yes	Yes	Yes
Multiple log-in levels	No	No	Yes	Yes
FlexCart	Model S	Optional	Yes	No
Mini	Model S	No	Yes	No
Micro	Yes	No	Yes	No
Nano	Yes	No	No	No
Melt Injection	No	No	No	Yes

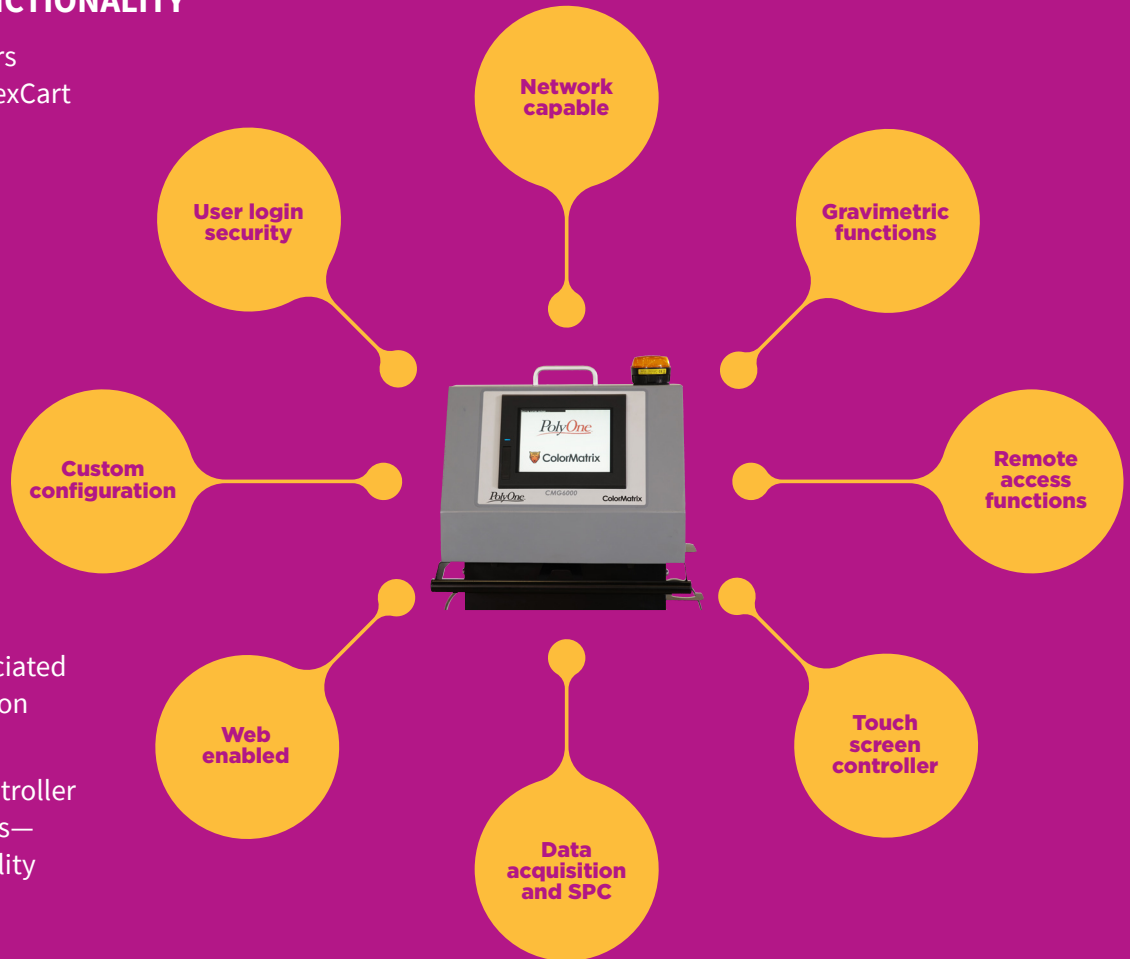
CONTROLLER FUNCTIONALITY

The range of controllers designed to run the FlexCart units range includes:

- CMG3000
- CMG5000
- CMG6000
- Flex-G

The functionality of the controller systems is designed with flexibility and customer requirements at its core. The choice of controller and associated functions will depend on user needs.

There is a FlexCart controller to suit all requirements—examples of functionality are shown here.



FURTHER USEFUL INFORMATION



In addition to the standard operating manuals for the equipment, installation and operation videos can be accessed on the Avient YouTube channel—look for:

- ColorMatrix FlexCart Micro
- ColorMatrix FlexCart G
- ColorMatrix FlexCart Mini
- ColorMatrix FlexCart V2
- ColorMatrix FlexCart Priming + Extrusion
- ColorMatrix FlexCart Priming + Calibration

Avient can provide support and assistance on every aspect of liquid color and additive processing. Our teams are available through your local commercial contact, directly at +1.844.4AVIENT, or visit www.avient.com.

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