Admix Batching Equipment Overview

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Operations Manager : Chris Ramos

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Flow Measurement Products
About Manu Electronics

• Manu Electronics Pty Ltd founded in 1965.

• From bottle dispenser manufacturer in the 1960’s to digital equipment manufacturer from the 1970’s now also microprocessor technology from the 2000’s

• specialises in design/manufacture of process control and measurement instrumentation, primarily for concrete construction chemical additives industry.

• Jan 2000 - moved to new 600m² office and manufacturing facilities at 41 Carter Road Brookvale NSW.

• June 2001 - ManuFlo®™ worldwide trademark
Key Staff

Tony Manu  Director
  • Company founder
  • Product Design / R&D

Alex Manu  General Manager
  • Technical support
  • Quotes, Sales, Projects

Chris Ramos  Operations Manager
  • Documentation, Website
  • Technical support

Vicki .M.  Office Administration / Accounts

Wilson Alba  Technical Support

Felix Palabino  Production Manager
ManuFlo products are:

- **used in over 95% of all pre-mix concrete production plants** throughout Australia/NZ

- **exported** to regions including the Asia/Pacific, South America, Europe and the Middle-East

- Used in varied measurement applications including concrete admixtures, shotcrete, chemical, mining, irrigation, food, tradewaste, water and water-usage studies.

**Global Admixture manufacturer / supplier companies use ManuFlo products** for measurement and batching of liquids in their production facilities, distribution network and final dispensing at their customers’ premix concrete production plant.

Selected distributors and end users use ManuFlo products for numerous applications worldwide.

ManuFlo has a **global pricelist in AUD$** with quantity discounts, maintaining pricing parity for its products to all its admixture supplier customers.
ManuFlo Advantages

- Economically priced products.
- Global pricelist.
- Free on-going product and application support.
- Instant personal service and phone support.
- Simple to use, proven products with overdose or failure safety features.
- Direct delivery flow measurement is simpler than weighing and/or bottle systems.
- Stock and spare parts available on call.
- Up-to-date information at websites www.manuelectronics.com.au
  www.manuflo.com
  with Data Sheets, Installation and Troubleshooting Guides and User Manuals.
- Company with over 46 years history.
- Ongoing R&D program.
- Equipment training available.
Load/Weigh Cells vs Flowmeters for Batching

Load Cell

Weigh Cell

Transducers for the measurement of force or weight.

Flowmeters
(e.g. MES positive displacement or AMM electromagnetic)

Directly measure the flow of liquid.
## Load/Weigh Cells vs Flowmeters for Batching

<table>
<thead>
<tr>
<th>Feature</th>
<th>Load/Weigh-Cell</th>
<th>Flowmeter (positive displacement)</th>
<th>Flowmeter advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>usage</strong></td>
<td>Not widely used in Australia.</td>
<td>Wide use in Australia.</td>
<td>More support.</td>
</tr>
<tr>
<td><strong>application</strong></td>
<td>In general, well suited for applications where dry materials are being measured.</td>
<td>* well suited for applications needing simultaneous liquid batching. * and where precise measurement over a broad range of flow conditions is needed.</td>
<td>Application throughput, versatility.</td>
</tr>
<tr>
<td><strong>accuracy affected by</strong></td>
<td>* fluid instability (splashing or agitation).  * poor mechanical isolation from other devices (pumps, conveyors).  * simultaneous flows into a batch vessel (leaky valves, bad sequencing).  * physical changes (e.g. build-up on exterior).  * varying specific gravity of liquids.</td>
<td>* liquids containing large solids, but small impurities can pass (use filter).  * chamber wear (can replace)  * high vibration (use rubber dampeners, or use reed switch version)  * (Magflows are an alternative)</td>
<td>Easier to maintain accuracy.</td>
</tr>
<tr>
<td><strong>delivery</strong></td>
<td>* the mechanical system must reach a stable condition for accurate measurement.  * possible double handling.</td>
<td>* for faster delivery, can pump faster or use bigger flowmeters.  * no double handling.</td>
<td>Faster delivery is easier.</td>
</tr>
<tr>
<td><strong>operation throughput</strong></td>
<td>* If admixture first pumped to bottles, then transferred to mix: extends batch cycle time - double handling is slower and inefficient.  * If batch materials added sequentially - results in longer batch time.</td>
<td>* allow simultaneous batching (adding multiple ingredients at the same time).  * batch can be continuously mixed for shotcreting or continuous dosing applications.</td>
<td>Reduced total batch time due to simultaneous batching, increasing the effective capacity of the batch operation.</td>
</tr>
<tr>
<td><strong>installation</strong></td>
<td>* Ensuring that the load cell is isolated from its environment is often accomplished at increased project costs.  * Often, a multi-disciplinary team, including structural, mechanical, and process engineers, is needed to design a quality load cell installation, involving co-ordination time/cost.</td>
<td>Can be installed by local plumber/electrician.</td>
<td>Much lower setup cost.</td>
</tr>
<tr>
<td><strong>maintenance</strong></td>
<td>* Routine system cleaning needed.</td>
<td>* Easy maintenance.</td>
<td>Lower maintenance time and costs</td>
</tr>
<tr>
<td><strong>calibration</strong></td>
<td>* Issues with varying specific gravities of liquids  * calibration can be time consuming,</td>
<td>* measurement of wide range of varying viscosity and specific gravity liquids with minimal calibration variations.</td>
<td>Lower calibration effort.</td>
</tr>
<tr>
<td><strong>interfacing</strong></td>
<td>Analogue output.</td>
<td>Digital output.</td>
<td>No conversion errors.</td>
</tr>
</tbody>
</table>

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Bottles vs Flowmetering/ME2000 & Batch Controllers

<table>
<thead>
<tr>
<th>Feature</th>
<th>Bottle</th>
<th>Flowmeter</th>
<th>Flowmeter advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>usage</td>
<td>• chemical passes through Batch Room - must be mounted within sight and reach of the batch operator. • can have accidental spillage</td>
<td>• can be mounted outside Batch Room. • cleaner Batch Room.</td>
<td>• cleaner to use.</td>
</tr>
<tr>
<td>Installation space</td>
<td>• bulky. • heavy.</td>
<td>• compact. • relatively light.</td>
<td>• less space to install.</td>
</tr>
<tr>
<td>support equipment</td>
<td>• to fill and discharge, needs other 2 pumps or air pressure.</td>
<td>• only need 1 pump and/or solenoid. • air not needed.</td>
<td>• less support equipment.</td>
</tr>
<tr>
<td>delivery</td>
<td>• fill cycle required.</td>
<td>• direct delivery via 1 operation. • half the time to dispense.</td>
<td>• fast, direct injection of chemical.</td>
</tr>
<tr>
<td>batch size</td>
<td>• limited by bottle size.</td>
<td>• unlimited.</td>
<td>• no restriction on batch size.</td>
</tr>
<tr>
<td>maintenance</td>
<td>• must wash out daily.</td>
<td>• virtually no maintenance.</td>
<td>• less maintenance.</td>
</tr>
</tbody>
</table>

- Slow discharge time, Double handling.
- Messy, Large & cumbersome, Extra maintenance, Expensive
- Risk: bottles are pressurized - can explode.
- Quick exhaust valves can fail – not completely safe or foolproof.

- Replace your bottles now, save ongoing maintenance costs:
  ManuFlo recommends using ME2008 or ME995 (which incorporate safety features) with MES or MM flowmeters in lieu of bottles.
  New technology wins new customers!!
Why settle for this, when all this can be replaced with the one ME2008 or ME995s?
Interfacing with ME2000/2008

Flowmeter measures flow

Up to 8 flowmeters

ME2000 / ME2008 Microprocessor interface batch safety unit.

Batching computer sets/records batch

Eliminates Bottle Requirement

In use in Australia, NZ, Pacific, HK, Nth China

Quantity set by: Computer/PLC
Delivery controlled by: MES2000/Computer/PLC

Safest form of Admix batching in computer controlled plants

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• The ME2000 and ME2008 are microprocessor-based **batch safety interface units** for management of flowmetering admixture liquids in the concrete production industries.

• Designed at the request and requirement of suppliers/ producers/users of construction chemical products.

• A sophisticated **safety management** watches for any malfunction in the flowmeter or batch Computer during the batch cycle. If a fault is detected, the ME2000/2008 will override and shutdown the faulty channel, and will alarm with a message on the display.
Manual Batching

Quantity determined by: operator
Delivery controlled by: operator
Internal battery powered meter

Example for Admixture

- Admix Storage Tank
- Pump
- Flowmeter with display (e.g. MES20LCD5DP)
- Valve
Semi-Automatic Batching

Quantity set by: operator
Delivery controlled by: Batch Controller
Earlier models used since 1972!!
Automatic Batching via computers

Batch Controller
controls batch delivery

ME2008, ME2000
Microprocessor interface batch safety unit.

ME5IC i/f Card
i/o scaling
and comms i/f

Quantity set by : Computer/PLC
Delivery controlled by : Batch Controller/MES2000/Computer/PLC

Batching computer
sets/records batch

UIC Interface Card
pulse/voltage scaling

Flowmeter
measures flow

or AMM Flowmeter

Admix Storage Tank

via interface plug e.g. -MC2
With **UIC** interface card

The **UIC Universal Interface Card** provides: signal **scaling** and an **isolation interface** to pulse flowmeter outputs, and re-transmits to PLC/computer inputs. Models available:
- **UIC/A2** = 24-240vac switching or **UIC/D** = 5-30vdc switching.

**MES Flowmeter** measures flow

**UIC Interface Card**
- pulse/voltage scaling

**Admix Storage Tank**

**Batching computer**
- sets/records batch

or **AMM Flowmeter**

Quantity set by: Computer/PLC

Delivery controlled by: Computer/PLC

- usually used for **bottle systems in Asia** with Computers
MES Series Flowmeters

- Available in sizes 20, 25, 32, 40 and 50mm.
- Pulse, Digital LCD, Mechanical display and combo options
- Nutating Disc operation allows a long operational life.

MES-series flowmeters are the most commonly used devise for measurement of admixtures.
## MES flowmeter sizes - specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>MES20</th>
<th>MES25</th>
<th>MES32</th>
<th>MES40</th>
<th>MES50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>20mm (3/4&quot;)</td>
<td>25mm (1&quot;)</td>
<td>32mm (1 1/4&quot;)</td>
<td>40mm (1 1/2&quot;)</td>
<td>50mm (2&quot;)</td>
</tr>
<tr>
<td>Transistor NPN pulse output rate (pulses per Litre)</td>
<td>1000</td>
<td>555</td>
<td>261</td>
<td>116</td>
<td>64</td>
</tr>
<tr>
<td>Reed Switch pulse output rate (pulses per Litre)</td>
<td>61</td>
<td>34</td>
<td>16</td>
<td>7.2</td>
<td>3.9</td>
</tr>
<tr>
<td>Start flow @ ±5% (Litres/min)</td>
<td>0.6</td>
<td>1.1</td>
<td>1.5</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Minimum accurate flow @ ±1.5% (Litres/min)</td>
<td>1.5</td>
<td>2.7</td>
<td>3.8</td>
<td>7.5</td>
<td>9.5</td>
</tr>
<tr>
<td>Nominal flow (Litres/min)</td>
<td>45</td>
<td>65</td>
<td>125</td>
<td>200</td>
<td>360</td>
</tr>
<tr>
<td>Maximum flow (Litres/min)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admixture (Specific Gravity 1.4)</td>
<td>54</td>
<td>80</td>
<td>132</td>
<td>268</td>
<td>428</td>
</tr>
<tr>
<td>Admixture (Specific Gravity 1.1)</td>
<td>68</td>
<td>102</td>
<td>168</td>
<td>340</td>
<td>545</td>
</tr>
<tr>
<td>Water (Specific Gravity 1.0)</td>
<td>75</td>
<td>112</td>
<td>185</td>
<td>375</td>
<td>600</td>
</tr>
<tr>
<td>Accuracy (Repeatability)</td>
<td>± 1.5% (± 0.2%)</td>
<td>± 1.5% (± 0.2%)</td>
<td>± 1.5% (± 0.2%)</td>
<td>± 1.5% (± 0.2%)</td>
<td>± 1.5% (± 0.2%)</td>
</tr>
<tr>
<td>Voltage Supply</td>
<td>5 - 25 VDC</td>
<td>5 - 25 VDC</td>
<td>5 - 25 VDC</td>
<td>5 - 25 VDC</td>
<td>5 - 25 VDC</td>
</tr>
<tr>
<td>Supply Current (proportional to supply voltage)</td>
<td>5 - 25 mA</td>
<td>5 - 25 mA</td>
<td>5 - 25 mA</td>
<td>5 - 25 mA</td>
<td>5 - 25 mA</td>
</tr>
<tr>
<td>Weight (# including connectors)</td>
<td>1.8 kg</td>
<td>2.6 kg</td>
<td>6 kg</td>
<td>17 kg #</td>
<td>21 kg #</td>
</tr>
<tr>
<td>Connection type</td>
<td>¾&quot; BSP (male)</td>
<td>1&quot; BSP (male)</td>
<td>1 ¼&quot; BSP (male) (flanged)</td>
<td>1 ½&quot; (flanged)</td>
<td>2&quot;</td>
</tr>
<tr>
<td>Max. working pressure</td>
<td>1160 kPa</td>
<td>1160 kPa</td>
<td>1160 kPa</td>
<td>1034 kPa</td>
<td>1034 kPa</td>
</tr>
<tr>
<td>Headloss at nominal flow</td>
<td>25 kPa (3m)</td>
<td>25 kPa (3m)</td>
<td>25 kPa (3m)</td>
<td>25 kPa (3m)</td>
<td>25 kPa (3m)</td>
</tr>
<tr>
<td>Max. liquid temperature</td>
<td>50°C</td>
<td>50°C</td>
<td>50°C</td>
<td>50°C</td>
<td>50°C</td>
</tr>
</tbody>
</table>

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other flowmeters – Electromagnetic Flowmeters

As an alternative to MES-series PD flowmeters introducing the AMM-series Electromagnetic flowmeters. No moving parts, no blockages, virtually maintenance free.

- Ideal for high volume batch plant applications
- Ideal for Cold to Hot climatic variation conditions
- Ideal for Very viscous / thick liquids

AMM series:- Admix Minimag Magflow

- Very compact. Light weight.
- Very economical. All PVDF/Stainless316 construction.
- BSP (male) threaded connection ends with barrel union connectors
- Sizes:
  * AMM15: 15mm connection (10mm bore), 1000 pulses/Litre, 1.0 - 50 L/min $975.00
  * AMM20: 20mm connection (15mm bore), 1000 pulses/Litre, 2.0 - 110 L/min $985.00
  * AMM25: 25mm connection (20mm bore), 500 pulses/Litre, 3.0 - 210 L/min $995.00
- 15 and 20mm sizes direct change over with MES20’s.
- For liquid conductivity $ \geq 20 \mu S/cm$.
- -10 to +40°C fluid range, IP65 protection.
- +12VDC or optional 24VDC powered.

New Product !!
Value Pricing !!

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other flowmeters – **Electromagnetic Flowmeters**

No moving parts. No Blockages. Virtually maintenance free.

**PMS series**
- Ideal for aggressive batching applications e.g. colour oxides
- Sizes: 15 – 200mm.
- Series flowrange: 0.5 – 16667 Litres/min.
- Displays Flowrate and resetable total.
- Pulse & 4-20mA output.
- For liquid conductivity $\geq 5\mu$S/cm.
- AC or DC powered.

Available in Integral or Remote options.
Admix Shotcrete Flowmeters

**PMS15-D**
- Ideal for shotcrete chemical applications.
- 15mm electromagnetic flowmeter. (upto 200mm)
- Obstructionless bore – nothing to block.
- Pulse & 4-20mA output.
- LCD backlit display shows
  Flowrate and optionally resetable Total.
- ANSI-150 flanged, PTFE liner, for sizes ≥15mm;
  Wafer, PFA liner, for sizes <15mm.
- Hastelloy-C4 electrodes.
- IP65 sensor and transmitter.
  Sensor potable to IP68 protection.
- Flowrange @ ±2% accuracy:
  0.5 – 106 Litres/min.
- For liquid conductivity ≥ 5µS/cm.
- 18 – 30 VDC / VAC powered
  (also available as 90 - 250 vac version).
Admix Shotcrete Flowmeters

AMM15
• For shotcrete applications.
• Very compact. Light weight. IP67.
• 10mm bore,
  15mm BSP (male) threaded ends.
• Flowrange: 1.0 - 50 Litres/min.
• 1000 pulses/Litre.
• For liquid conductivity ≥ 20µS/cm.
• Other sizes available.

FRT303 Indicator
• LCD shows Flowrate, resetable Total and Grand Total.
• Programmable.
• DC or AC powered
• Pulse & 4-20mA outputs
• IP65 enclosure.

MES20LCD5DP series for Shotcrete chemicals only
• 20mm resetable flowmeter.
• Ideal for batching.
• 5-digit LCD shows total Litres to 1 decimal place.
• Closing lid resets Litres count.
• Flowrange @ ±1.5% accuracy: 1.5 - 75 Litres/min.
• Nutating-disc type replaceable measuring chamber.
• Internal Lithium battery powered
• Options:
  * Ryton aggressive chemical resistant measuring chamber;
  * Teflon-coated body.
  * also available as MES20LCD5DP-F flowrate version.

SCS-AMM15
Complete package wired with S/S box

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Grout & Transfer Flowmeters

MFS25

- 25mm electromagnetic flowmeter.
- Ideal for Water Grout applications.
- Obstructionless bore – nothing to block.
- LCD backlit display shows Flowrate & reset Total., Pulse & 4-20mA output.
- ANSI-150 flanged.
- Teflon liner. Hastelloy-C electrodes.
- IP65 sensor and transmitter. Sensor potable to IP68 protection.
- Flowrange 1.5 – 300 Litres/min.@ ±2% acc. For liquid conductivity ≥ 5µS/cm.
- 90-250vac or 11-40VDC/ac powered.
Continuous Dosing

Manually operated - visual

- Instantaneous Flowrate display e.g. MES20LCD5DP-F

PLC operated

- Dosing pump or control valve requirement dependant on installation setup

PLC Batching computer

- Use a range of flowmeters for manual or instruments with 4-20mA output for PLC / computer control. Bore sizes to suit flowrate application range.

RMS004 4mm diameter or other magflows

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Flowmeters for Admix Production

For the batching & blending in production plant

For the tank farm and admix truck loading point

Packout portable trolley for filling IBCs

Or via PLC controlled options

Locations include:- Dubai, Egypt, Saudi Arabia, Bahrain, Indonesia, Malaysia, Philippines, Vietnam, Thailand, Laos, Burma, China, Mongolia, HK, Australia, NZ, Chile.
TMP – Admix Truck Mounted Batching Printer System

• Batch Controller and Printer for automatic ticketing.
• Ideal for admixture delivery trucks or loading and discharge locations where custody transfer docket is required.
• Prints Batch ID, quantity, time and date.
• Paper easily changed.
• Rugged IP64 hinged enclosure, with key lock.
• contains wired and mounted ME3000-SC Batch Controller and APM-n93XS printer.

The TMP interfaces to other equipment on the truck:
• controls pump and/or solenoid; and
• receives pulses from flowmeter.
ME6008M Batch Monitor Printer Driver Unit

Provides multi-channel batch log/printout for manual premix concrete batch plants.

Monitors/prints up to 8 channels of admixture or water.
- Provides an automatic QA end-of-batch printout, for use in concrete batch plants (with ME995 controllers).
- Internally logs at least 500 batch events, downloadable to your laptop/PC
  now via optional front-access DB9 RS232 connector (comes with RS232-to-USB adapter).
- All records are time stamped from the unit’s Real Time Clock, and have a Batch Number ID, time and date.
  Simply parallel flowmeter pulses and connect to the ME6008M, which then connects to a serial printer or PC.
  Grand Totals and the Batch History can also be printed(or dumped to a PC) on demand.
- Fully programmable, and the user can set parameters including K-Factors (PPL).
  Simple to install - same size as the ME995-series Batch Controllers, with same cutout.

New features:
- Extra RS232 connector on front, for easy access to download log to laptop.
- Units (mL or L) indicated in printout.
ME6008M to upgrade your ME2008 to add Batch Log/Print capability!

Provides multi-channel batch log/printout for ME2000/ME2008 units in batch plants, providing an independent batch record.
ME8020 - Remote Tank level Monitoring System

**Via** 1/ Flowmeters or 2/ Ultrasonic Level Sensors

**Site Equipment**
- ADMIX TANK
- Flowmeter(s)
- Monitored pulse inputs
- Control signals (if required)
- Site Batching Control

**Remote site**
- Ultrasonic Sensor
- Laptop
- SMS Control
- SMS Alarm Paging

**North Depot**
- Tank 1 Low, Th, 08:04:33

**SMS-Capable Mobile Phone(s)**
- Only a standard “land-line” modem is required if CellVisor is to poll each site.
- Alternatively, one GSM modem is required to receive unsolicited SMS alarms from all sites.
- CellVisor can run in the “background” and does not require a dedicated PC.
- Software customized for your application

**Office PC**
- 3G or GSM Modem
- CellVisor software
- OR
  - Landline Modem

**Simply parallel the existing output from ManuFlo (or other) flowmeters on site.**
ManuFlo website


Leading manufacturer and supplier of construction admixture and water Flowmeters and Control products since 1970.

or

call ManuFlo

for
application advice,
product recommendations,
calibrations,
equipment servicing.