



PRODUCT GUIDE

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Inspiration comes from Innovation

**We
think**

"product is a work of art"and deploy it to
all management process.



WalthMac Measurement & Control Technology Co., Ltd.

is honored as a National High-tech Enterprise with industry leading technology, creative spirit and innovative inspiration.

Our company has been specializing in researching and producing the online measurement& control equipments used in plastic processing industry, including: Gravimetric Control System, Online Ultrasonic Thickness Measuring System, Gravimetric Blender, Material Conveying System, etc.

The production and processing base locates in the Kechuang Industrial Park, Mianyang City of Sichuan Province. Meanwhile, the engineering and technical R & D centers were established both in Chengdu and Mianyang. The marketing and service agencies are throughout the domestic and worldwide.

We Provide

- Online Ultrasonic Thickness Measuring System for Plastic Pipe
- Gravimetric Control System
- Online Material Blending System
- Material Conveying System

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THINK
We
Provide
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GraviMac Series– Online Gravimetric Control System

A Quality Control System Based on Weight

The strong points of this system

- Shorten start-up time
- Saving raw materials
- Stabilize production process, improve product quality
- Reduce the ability and quality requirements for workers

The applications

The production process control for plastic pipes, film, etc.

The function

The system is installed to connect with raw material feeding inlet of extruder. Through the calculation of weight per meter and measurement of the extrusion output, system controls the two factors automatically to achieve constant meter weight and / or extrusion output, running at set values.

Precision error

<0.3 ~ 0.5% (Differs from the different raw materials and machines)

What can be set and controlled by GraviMac system:

- The output of extruder (Unit: kg/hr, Control the output by controlling RPM of extruder)
- Weight per meter (Unit: kg/m; need linear speed input; Control the weight per-meter by controlling the linear speed and extrusion speed)
- Statistical function (Statistics for the raw material and length consumption of duty shift)
- Out-of-tolerance alarm
- Control the status of input and output.

Definition of Meter Weight & Gravimetric Control System

Meter weight is the weight per meter of product. The dimension tolerance of product is stipulated by the relative ISO and national standards. As a result, the range of meter weight is limited. Mostly the constant meter weight is a parameter to judge products qualified or unqualified.

Gravimetric Control System keeps the meter weight of products constant within the range of set value via measurement and automatic control to extrusion line.

Defects of traditional extrusion line without Gravimetric Control System

Traditional extrusion production system (Without the gravimetric control system):

Usually, the meter weight of product during the startup process is uncertain. In order to meet the quality requirements, the workers have to adjust the production line for several times. It causes lots of material waste and time lost (the large size pipe is particularly obvious.)

The product thickness (e.g. pipe wall thickness) in process is affected by many uncertain factors such as unstable properties of material (e.g. recycled material), melt flow rate changes for raw material modification, stability of extruders, not well developed processes, unconstant feeding, even the grid voltage fluctuation. Finally, these factors are easily to lead the fluctuation of meter weight along with many potential quality risks occurred.

When the extruder is switched on, in order to make qualified products with reasonable material in short time, it mainly depends on:

- The experience, skill and luck of operators on production line.

Advantages while Gravimetric Control System equipped with

- Meter weight data can be obtained soon after startup: make the “unknown” empirical production become “known” precise, so as to make valid and visible production adjustment.
- Shorter startup time: once the products on line (e.g. pipe) are connected with puller as normal, meter weight is automatically adjusted into the qualified range by Gravimetric Control System. The experience and skill of operator is not so important any longer.
- Monitoring entire process line: the product meter weight in the whole production process can be monitored and collected by the system real time. If deviations occurred, it should immediately adjust the extruder or the puller to achieve the stable meter and keep it running within the set value.
- Product deviation alarm: product quality defects will be effectively prevented by the prompt reminder of quality risk alarm information.

Parameters controlled to be constant by Gravimetric Control System

- Extruder throughput
- Meter weight
- Gravimetric Control System can simultaneously control the extrusion throughput and meter weight and keep them constant. It is usually used for the extruder with unstable extrusion throughput caused by various factors.

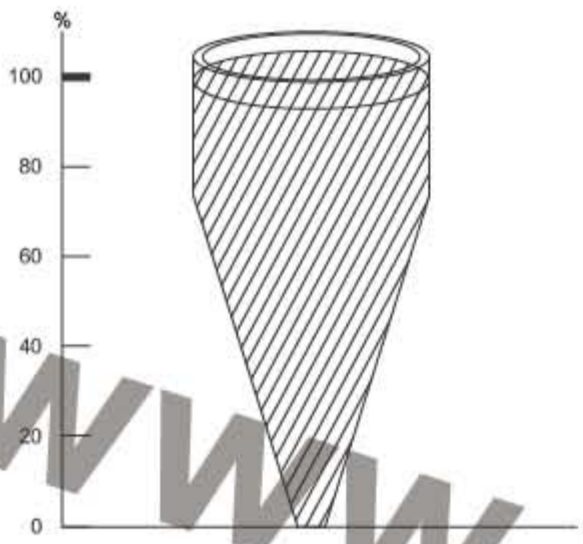




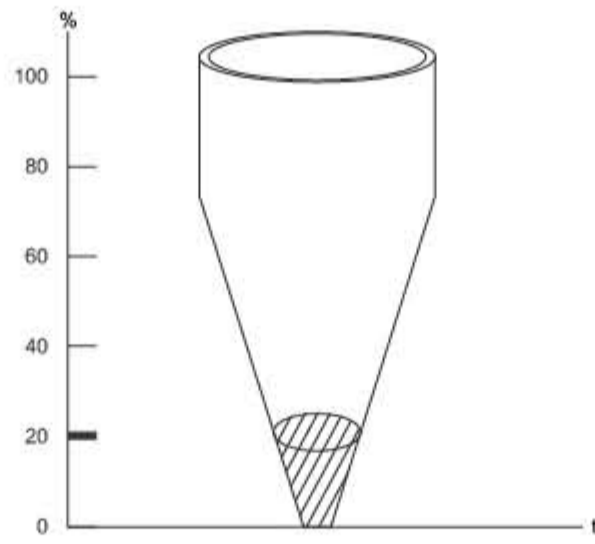
Advantages of WalthMac GraviMac System & the Reasons to Choose

- It is suitable for all the extrusion production lines and all control modes in the world.
- With higher standard: we produce according to the concept of "Product is a work of art"
- Higher control precision and response speed by the adoption of dedicated algorithm.
- High system stability: we are well aware that no need for service is the best service, and the stability of product has been put on the first place of our design and improvement.
- Continuous upgrading: Innovative power and perfect pursuing for products help us do the incessant upgrading for products. Based on the strong R & D capabilities of our two R & D centers, we promise to provide users free lifetime upgrading service of product software.
- Worry-free after-sales service: we have many offices and agents in domestic and overseas market, which will provide you quick and effective service.
- Higher cost-effective and longer payback period of product investment: all parts with the highest standard technology are adopted to ensure a longer life, and the product rapid response speed will help customers save more costs.
- Extrusion system from several excellent extrusion equipment manufacturers integrated this system.
- Products have been exported to many countries and regions.

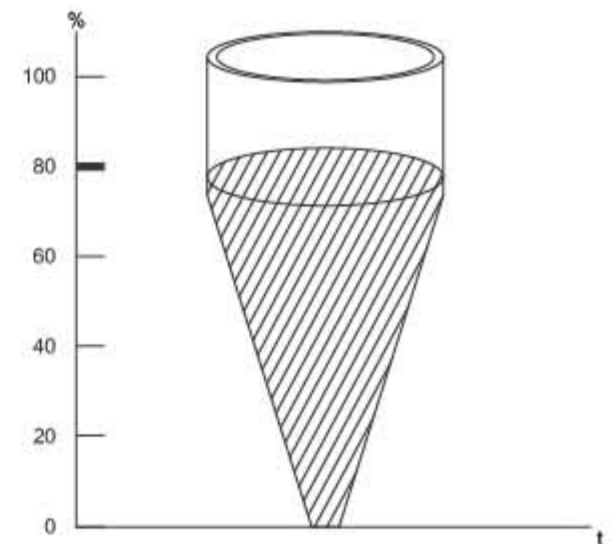
How does the system work?



The starting-up material status

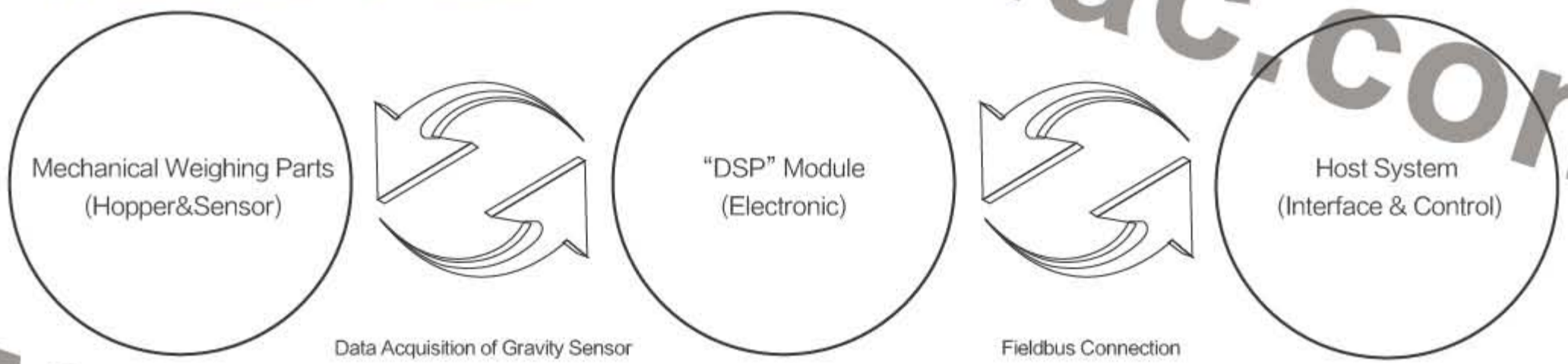


Along with the consumption of raw material, real time meter weight and extrusion output are measured.

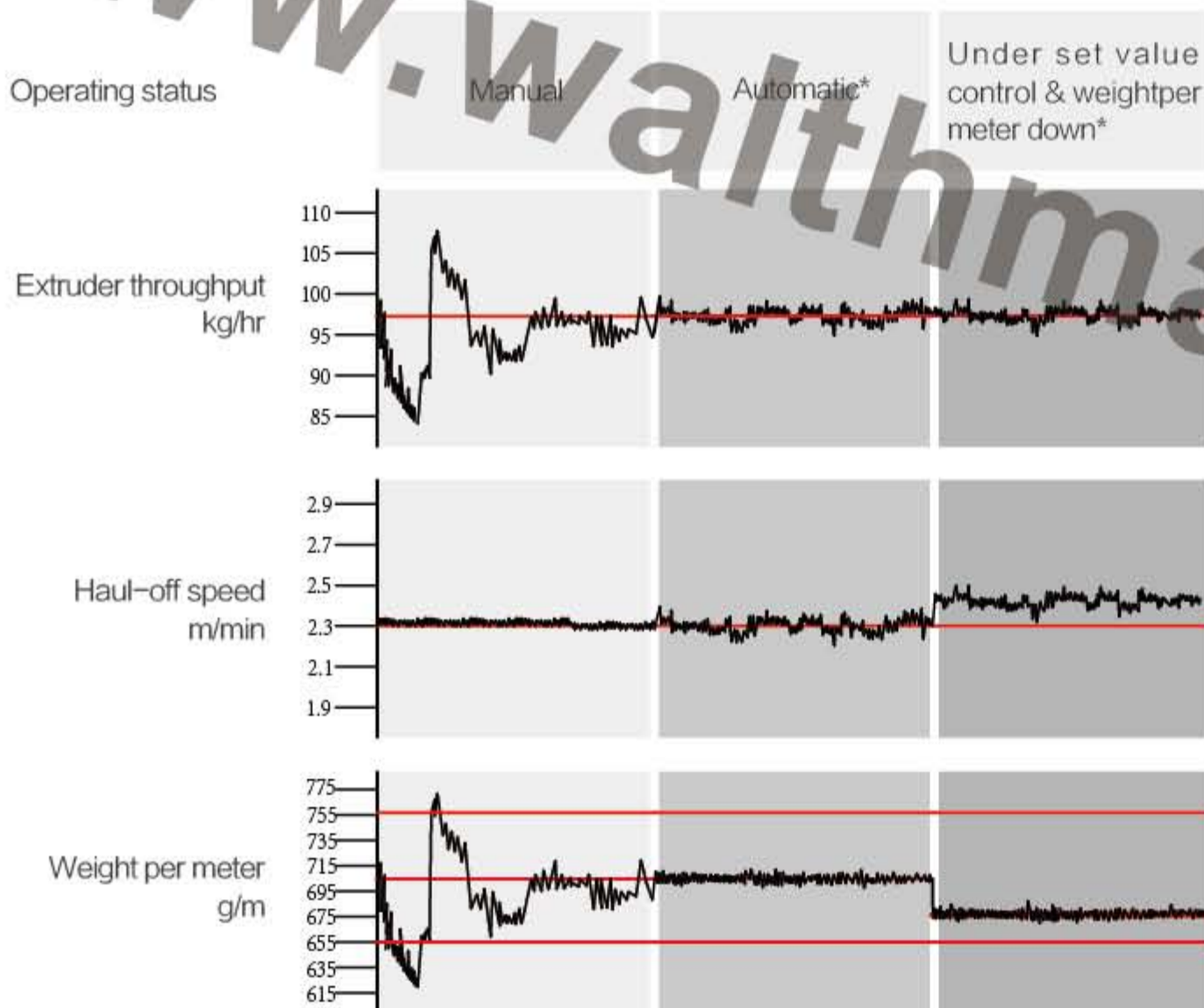


Reloading and another new measuring and control cycle starting.

Techonology of Gravimetric Control System Typical system principle



Real time control trend (e.g. dn50, SDR11, PE pipe)



* The extruder throughput is under control by system already.

GraviMac system structure schematic drawing



Installation description

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Existing production line

Remove the storage hopper

Make an adapter to install the funnel weigher

Install the bracket and storage hopper above funnel weigher

Material Inlet

Cooling tank

Pulser

Meter counter

Heater sectors

Extruder

RPM encoder

New Hopper

Adapter

Hose

A

B

C

Product Configuration

Model	Output	Size
GMS-04	Up to 60	350 × 310 × 620
GMS-06	Up to 200	360 × 350 × 715
GMS-08	Up to 350	395 × 372 × 810
GMS-12	Up to 450	395 × 372 × 880
GMS-20	Up to 700	530 × 468 × 920
GMS-30	Up to 900	530 × 490 × 960
GMS-50	Up to 1200	530 × 551 × 1080
GMS-80	Up to 1600	530 × 582 × 1460

Note: model and size are subject to change without notice.

GraviMac display and control unit (three optional configurations, I, II and OEM)

Fully meet any requirements of production measurement for its easy operation and interface with abundant functions.



I



II

The available materials for GraviMac

- Granular / The Pellet
- The powdery (good flowability)
- The fine powder (good flowing properties)
- Mixture or Untreated material / Fine powder or Small spherical / powdery (good flowing properties)
- Rubber (Granular)

Online Ultrasonic Thickness Measuring System for Plastic Pipe

Model: ULTRAMAC Series

Application Scope: gas pipe, water supply pipe, catheter and medical catheter.

Used for the uninterrupted measuring and monitoring for the change of thickness, outer diameter, eccentricity and out-of-roundness in the whole production process of pipes, therefore, the quality risks can be completely eliminated in production.

The system brings the following benefits

- Lower and completely eliminate the quality risks in the production of plastic pipes and improve product quality
- Shorten the start-up time and reduce rejection ratio
- Function of complete recording and filing of production data
- Automatically generate pipe quality statistics form

The advantages differ from the traditional measurement system

- Accuracy and stability
The measurement data is more stable and accurate by the adoption of automatic capture patent technology and high-precision probe with the best technology.
- Automatic identification and marking of pipes
You can know everything about production and quality anytime without reading production records written by workers in the production process, since our measurement system can monitor and record the whole pipe production process. By the automatic identification and marking function*, the user can easily know about the production and quality conditions. In case that the quality risks of pipes are found, you just need to go to the warehouse and find out the numbered pipes. Even if the problem pipes have been carried to the construction site, we can also find them out, because the recording and filing datas of our system can be traced back to half a month, even half a year ago.
- Convenient for production management:
System measurement data covers the whole production process, and you can easily know about the followings: shutdown time of production line, starting time of production line, quality problem occurring time, etc.
- Quality statistics of single pipe:
Our system can generate a quality statistical report for every pipe to meet the strict quality requirements from high-end customers, and the report can be printed out as an effective evidence for your pipe quality.
- Our remote monitoring software can let you easily know about the production field and the historical production datas. (Optional)
- The patented handheld remote terminal technology helps workers operate the machine remotely. (Optional)

Main functions



Positioning quality problems—by analyzing the historical production curves

Marking function—tracking the pipe movement

Automatically generate a quality statistical report, and the report can be printed out

Printing & marking function is available by the connection of user's matching printer.

Features

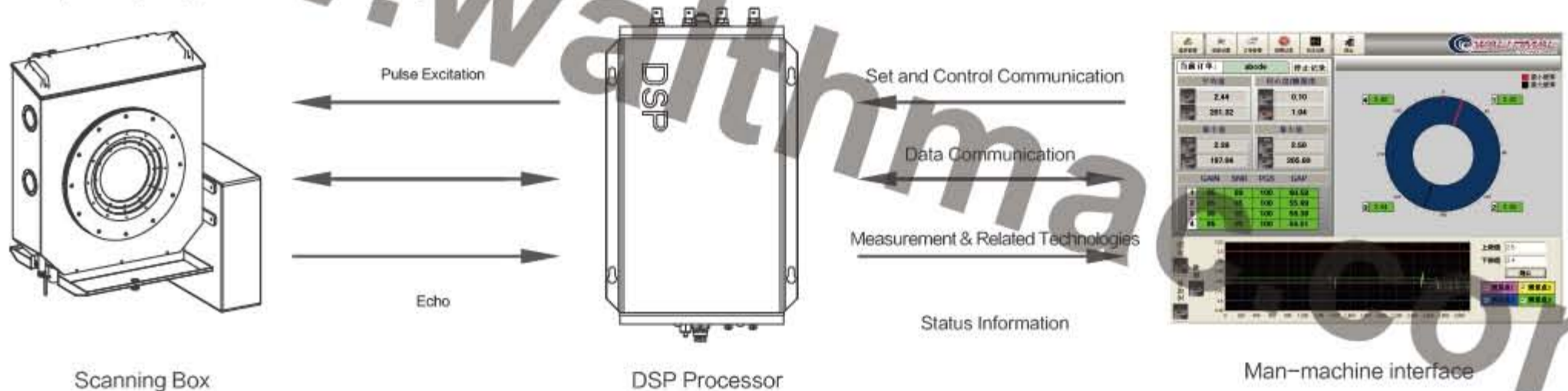
- All core components in top quality
- The highest measurement precision can reach to 0.001mm, the minimum measurable OD: 0.25mm, the maximum measurable OD: 1600mm
- Lower power consumption (< 30W)
- The production measurement historical data recording can be stored for a long time

Optional items

- Automatically numbering for pipes off line and automatic Identification & numbering for waste pipes.
- Auto-generate quality statistical report for every pipe.
- Remote monitoring
- Measurement of multi-layer pipes

System Structure

The measurement system is formed by hardware components such as scanning box, DSP signal processor and industrial personal computer (IPC), like the following figure:

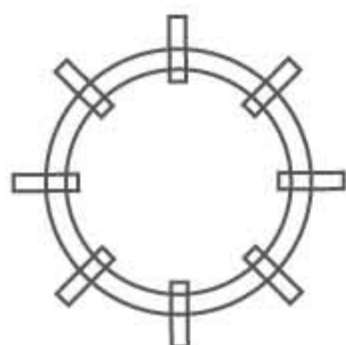
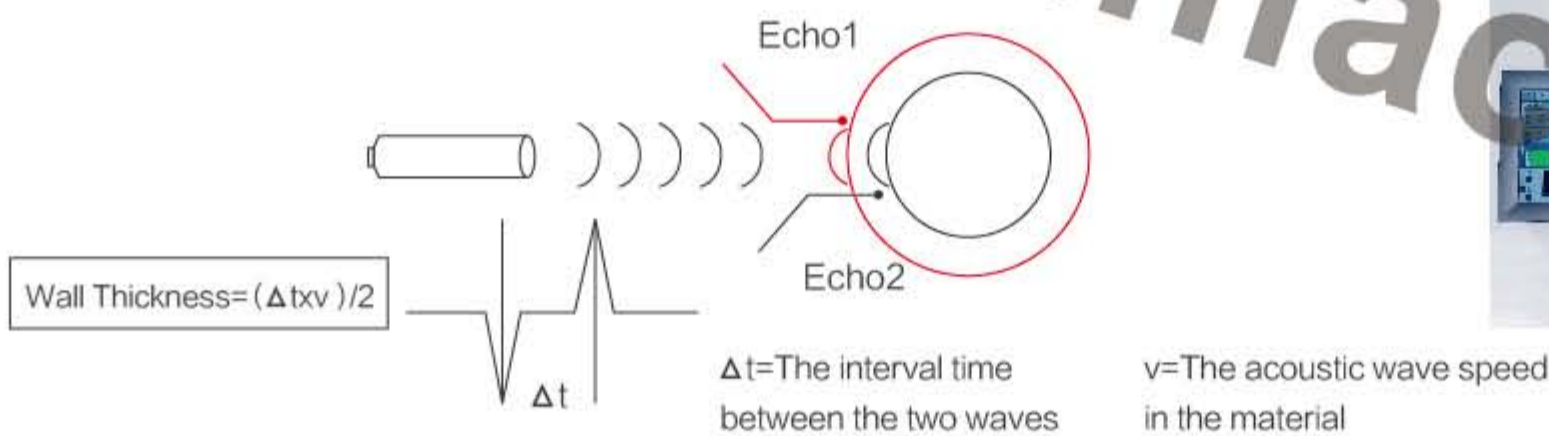


Scanning box

The scanning box is equipped with ultrasonic measuring probe inside and has a probe cooling and purging device. The ultrasonic probes convert DSP signal processing pulse incentive energy into ultrasonic wave and send it out, then convert echo small signals into weak electricity signals and send it back to the DSP signal processor.



The measurement principle of probe



Ultrasonic probe distribution structure, as shown

- The built-in fixed ultrasonic transmitter can measure various range of pipe wall thickness.
- The number of ultrasonic probe: 4, 8, 16pcs.
- The IP68 protection grade ultrasonic probes can be directly fixed in the scanning box.
- It can be used for multi-layer pipes thickness measuring with separately display of each layer (optional).

The ultrasonic digital signal processor DSP (the ultrasonic auto-capture technology of USA Patent)

Main functions

- Automatic search:
DSP can quickly find out the right echo and distinguish clutter.
- Automatic setting:
DSP can search the right echo and automatically adjust signal gain according to preset parameters.
- Automatic tracking:
when the product changes, DSP can instantly adjust the capture window so as to track and lock the right echo.
- Highest precision:
The capture and calculation of all echoes by DSP are automatical. These processes like scanning, capturing, adjustment, measurement and calculation always keep consistent with the change of products and setting. Therefore, higher precision of average wall-thickness and concentricity can be realized.
- Without human intervention:
providing unique self-setting technology.

Man-machine interaction (MMI) – display control hardware and software

The DATASE-15H industrial table computer configured with DATASE 1000R ultrasonic measurement control software is used as the tool of data interchange, data acquisition and data storage. It is a high-end 12 or 15-inch TFT color touch LCD screen. The whole machine adopts the ultra-thin and fanless structure, with light weight and good heat dissipation, therefore, it can be used in a continuous operation environment with dusty, high electro-magnetic interference and high ambient temperature. The system has a large-capacity hard disk which can store production data for a long time.



Specifications and technical parameter

Model	Configuration	Model	Configuration
US1012	4 probes, the OD measuring range: 0.25-12mm	ULTRAMAC 450-4T	4 probes, the OD measuring range: 160-450mm
US1024	4 probes, the OD measuring range: 3.75-24mm	ULTRAMAC 450-8T	8 probes, the OD measuring range: 160-450mm
ULTRAMAC 032-4T	4 probes, the OD measuring range: 3.75-32mm	ULTRAMAC 630-4T	4 probes, the OD measuring range: 250-630mm
ULTRAMAC 063-4T	4 probes, the OD measuring range: 3.75-63mm	ULTRAMAC 630-8T	8 probes, the OD measuring range: 250-630mm
ULTRAMAC 063-4T/2 <small>Twin-tube measurement</small>	8 probes, the OD measuring range: 3.75-63mm	ULTRAMAC 800-4T	4 probes, the OD measuring range: 315-800mm
ULTRAMAC125-4T	4 probes, the OD measuring range: 20-125mm	ULTRAMAC 800-8T	8 probes, the OD measuring range: 315-800mm
ULTRAMAC160-4T	4 probes, the OD measuring range: 32-160mm	ULTRAMAC 1000-8T	8 probes, the OD measuring range: 560-1000mm
ULTRAMAC160-8T	8 probes, the OD measuring range: 32-160mm	ULTRAMAC 1000-16T	16 probes, the OD measuring range: 560-1000mm
ULTRAMAC 250-4T	4 probes, the OD measuring range: 90-250mm	ULTRAMAC 1200-8T	8 probes, the OD measuring range: 800-1200mm
ULTRAMAC 250-8T	8 probes, the OD measuring range: 90-250mm	ULTRAMAC 1200-16T	16 probes, the OD measuring range: 800-1200mm
ULTRAMAC 315-4T	4 probes, the OD measuring range: 110-315mm	ULTRAMAC 1600-8T	8 probes, the OD measuring range: 800-1600mm
ULTRAMAC 315-8T	8 probes, the OD measuring range: 110-315mm	ULTRAMAC 1600-16T	16 probes, the OD measuring range: 800-1600mm

Note: Model and size are subject to change without notice.

High Precision Gravimetric Blender Series

Online material blending solution

Aiming at the requirements of online and offline automatic blending, we develop batch type and continuous type metering blending devices with standard model and special application model to meet different customers' demands. Our products are suitable for online and offline metering blending and automatic mixing of materials at different states such as granule, powder and liquid.



WBB Series Gravimetric Batch Blender

Application Field:

plastic films/ cables/ pipes/ production of raw materials/ plastic modification and other industries like chemicals.

Application Scope:

For the online & offline processes with multi, proportional and high precise materials mixing in plastic industry.

System function features

- The standard model can achieve online automatic blending up to 8 components. It reduces human error and labour cost.
- Can be installed at the position of extruder material inlet. The material will enter into extruder directly to avoid layering during secondary conveying.
- By the anti-interference filtering algorithm, the blender can also achieve a high metering precision even if it is installed on the equipment with high mechanical vibration amplitude and frequency.
- Can be used for strong electrostatic adhesion material.
- Self-adapting proportioning control: automatically correct the material charging error and the precision error is less than 0.1%*.
- Underlying hardware and software control guarantees the reliability of operation.

*precision calculation based on industry international calculation standard

System Principle

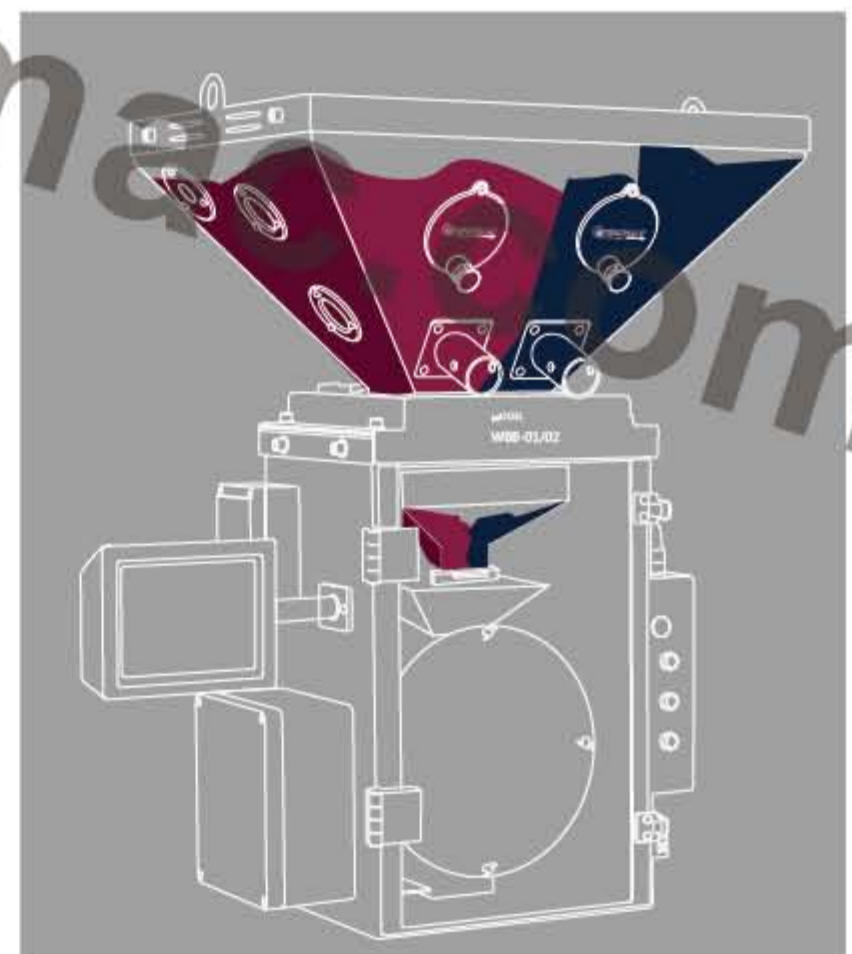
According to the weighing and measuring principle, the precise rate of each component filled can be inspected and controlled. Self-adapting Algorithm is adopted to make sure the feeding precision.

Optional Model & Parameter

Model	Output	Components Number	size
WBB-01	Up to 150	2,4,6,8	660 × 520 × 840
WBB-02	Up to 380	2,4,6,8	820 × 640 × 1040
WBB-04	Up to 660	2,4,6,8	900 × 780 × 1290
WBB-08	Up to 1020	2,4,6,8	1120 × 900 × 1480
WBB-12	Up to 1680	2,4,6,8	1280 × 1010 × 1960

Note: model and size are subject to change without notice.

* On the premise of specific component quantity and measuring method of WalthMac, the actual output is related with raw material and component quantity.



WCB Series–High Precision Gravimetric Continuous Blender

Application Field

plastic films/ cables/ pipes/ production of raw materials/ plastic modification and other industries like chemicals.

Scope of Application

For the online processes with multi, proportional and high precise mixing of materials like pellet, powdery and liquid in plastic industry.

System Principle

The WCB series continuous gravimetric blender is a dynamic feeding system with principle of weight-loss. On the premise of achieving the high precision of components, the feeding speed can be adjusted automatically according to the real output of extruders. The application scope for raw material is enlarged, meanwhile, the metering function of meter weight can be added to control the constancy of meter weight of products.

Function Features

- Unique design. Besides metering mixture of solid materials, the blender is also applied for metering mixture between liquid materials and solid materials, and a larger dosing range of materials is achieved by the adoption of screw feeding.
- Higher response speed and precision. All components are controlled by a servo system to provide excellent performance.
- Higher Mixing Precision. Two mixing modes are provided.
- Operating Friendly. The operating interface of touch screen and dynamic flow ratio model make the operation more direct-viewing and convenient.
- Materials automatically feeding.
- Real time Formula Changing.
- Multi-choice function of meter weight on production line and extrusion output control.
- Reduce the layering phenomena in the secondary conveying process after mixing.
- System dosing precision: $\pm 0.5\%$.
- Blending precision error: $< 0.1\%$.
- Low maintenance cost.
- All core components in top quality.



Optional Model & Parameter

Model	Output*(kg/hr)	Components Number	size (mm)
WCB-180/G	Up to 180	1-4	700 × 700 × 1020
WCB-300/G	Up to 300	1-4	850 × 850 × 1240
WCB-600/G	Up to 600	1-4	950 × 950 × 1560
WCB-1200/G	Up to 1200	1-4	1150 × 1050 × 1680

Note: /G of models means with the meter weight control function

* On the premise of specific component quantity and measuring method of WalthMac, the actual output is related with raw material and component quantity.

WPB High Precision Gravimetric Powder Dosing Feeder

Application Field

Production of raw materials/ plastic modification/ chemicals & plastic films/cables/pipes.

Scope of Application

For the online mixing and dosing processes with calibrating or scaled metering of materials like pellet, powdery and liquid in plastic industry.

System Principle

The WPB high precision Powder Feeding/ Dosing Machine is a dynamic system with the principle of weight-loss. The dosing volume can be controlled and modified automatically to keep it constant. For multi components dosing, the each volume can be adjusted automatically according with the real output of extruders. The application scope for raw material is enlarged, meanwhile, the metering function of meter weight can be added to control the constancy of meter weight of products.

Function Features

- Unique design. Besides metering mixture of solid materials, the blender is also applied for metering mixture of powdery materials.
- Servo control and screw feeding adopted, much bigger material application scope is available, as well as higher precision rate and response speed.
- Anti-bridge structure is suitable for bridging powder materials.
- Touch screen operating interface and dynamic flow ratio model make the operation more direct-viewing and convenient.
- Automatic feeding for material.
- Parts of system contacting with material are made of stainless steel.
- Real time changing of formula and throughput.
- System feeding/dosing precision: $\pm 0.5\%$.
- Low maintenance cost.
- All core components are in top quality.
- Meter weight and extrusion output control function of production line can be chosen for multi-component dosing.

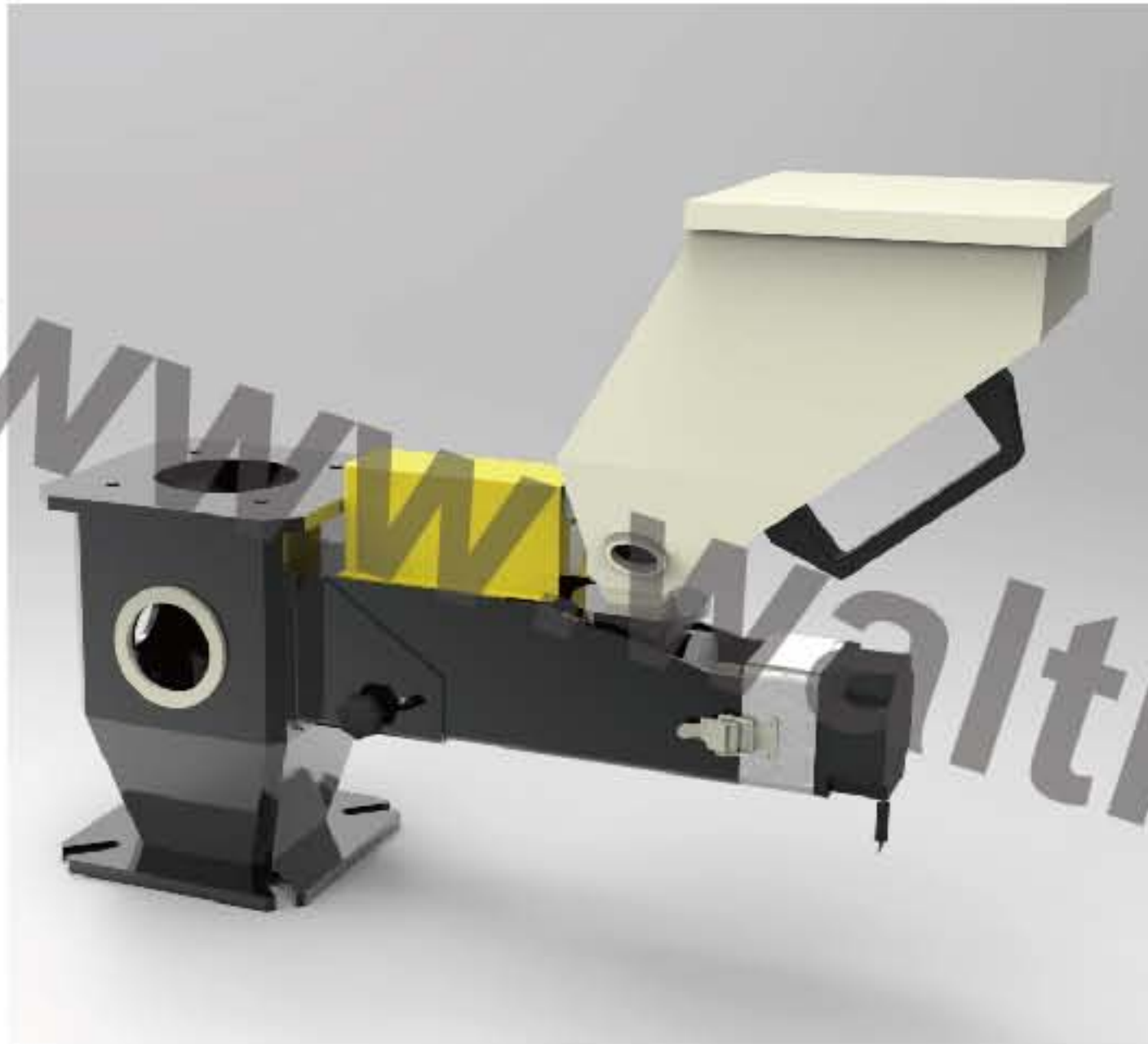
Optional Model & Parameter

Model	Output (dm ³ /hr)	size (mm)
WPB-T20	0.8-228	586*320*850
WPB-T38	1.4-432	680*460*850
WPB-T50	1.8-532	750*580*1230
WPB-T60	2.1-639	870*670*1460

* On the premise of specific component quantity and measuring method of WalthMac, the actual output is related with raw material and component quantity.



Loss-in-Weight Side Feeder (Masterbatch & Additive Feeder)



Application Field

Plastic films/ cables/ pipes/ production of materials/ plastic modification and other industrials like chemicals.

Scope of Application

For high precision scaled dosing of accessories (such as masterbatch, powder and additives)

System Principle

Based on the weight-loss principle, the feeding screw pushes the raw material within high precision dynamically as set value. Plastic accessories can be scaled-down or up to be coordinate with variation of main raw material. System is driven by servo motor and controlled by closed-loop. The algorithm of dynamically correcting error is adopted to improve the feeding precision for all kinds shape and performance material.

Function Features

- High precision weight-loss metering system
- Fast response speed and closed-loop controlled servo system
- Screw feeding
- For different kinds of raw material
- Self-adapting proportioning control; self-correcting feeding error; with error less than $\pm 0.5\%$
- More reliable with underlying hardware and software control
- Optional standard adapters

Optional Model & Parameter

Model	Output * (dm ³ /h)	Size (mm)
GD-1	0.8-228	650*200*500
GD-2	1.4-432	750*300*550
GD-3	1.8-532	800*400*600

* On the premise of specific component quantity and measuring method of WalthMac, the actual output is related with raw material and component quantity.

Vacuum Autoloader



Application Field

Plastic films/ cables/ pipes/ production of materials/ plastic modification and other industrials like chemicals.

Scope of Application

Suitable for the material conveying from remote storage hopper or silo to the machine in production process.

System Principle

While the material status and volume level are sensed by sensor of Vacuum Autoloader, central vacuum conveying system creates vacuum to suck raw material into for production.

Function Features

- Visual stainless steel hopper
- Automatically feeding controlled by material level sensor
- Quick release device to highly improve transporting volume
- Sensor to monitor working status

Optional Model & Parameter

Model	Output *(kg/hr)	Size (mm)
VD-004L	200	380*430*300
VD-006L	300	380*430*400
VD-012L	700	380*430*600
VD-020L	1400	380*430*800
VD-040L	3000	450*450*800

* On the premise of specific measuring method of WalthMac, the actual output is related with raw material and component quantity.

MTS Material Conveying System

For the first step of factory automation, MTS centralized material conveying system achieves material concentrated storage and supply instead of separated transportation one by one. The cost of energy and labour is reduced effectively and an expected standard, tidy and ordered production site comes true.

System application

The MTS system can provide many sets of equipments controlled with one conveying device for multi extruders centralized conveying of multi components. The workshop is separated from raw material transportation to reduce the dust and noise.



Advantages

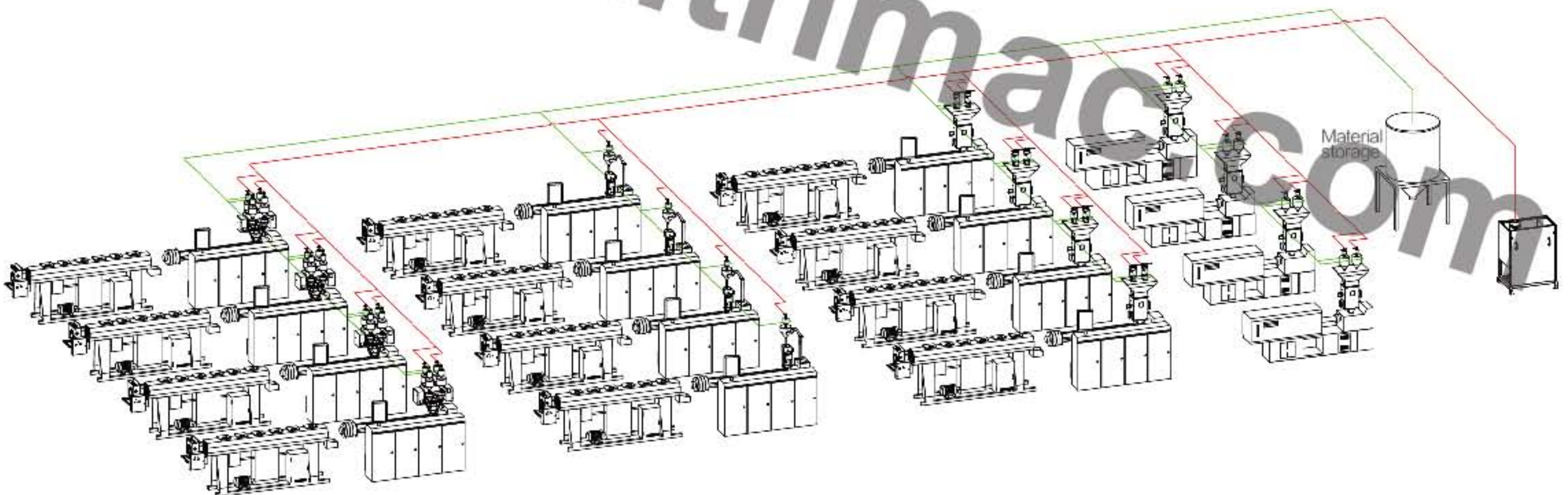
- The whole conveying process of the system works in a fully-enclosed condition to prevent secondary pollution in the transport.
- Automatic centralized dedusting devices effectively prevent pipe from blocking.
- Realizing remote and higher occasion conveying.
- Effectively reducing the workshop noise.
- Lower energy consumption and labor cost.
- Automatic loading/filling and detection of material lacking.
- Stable and reliable performance assured by imported core components.
- Company image effectively improved for the high-level automation.

Optional model and parameter

Model	Output(kg/hr)	Profile(mm)
MTS-500-ACE	Up to 500	1200*700*2000 *1
MTS-900-ACE	Up to 900	1200*700*2000 *1
MTS-1500-ACE	Up to 1500	1300*820*2000 *1
MTS-2000-ACE	Up to 2000	1800*950*2000 *2
MTS-3000-ACE	Up to 3000	2000*1100*2000 *2
MTS-5000-ACE	Up to 5000	2100*1200*2100 *2

The model with ACE means having the automatic dust removal device.
*1 : conveying by blower, *2 : conveying by vacuum pump.

MTS Centralized conveying system sketch



Material Conveying Pipe
Vacuum Conveying Pipe



Material Conveying System



Online Gravimetric Control System



High Precision Gravimetric Continuous Blender



High Precision Gravimetric Batch Blender

The company honor



Company patent



Recyclable