INTRAME

Asphalt plants
Soil stabilization plants
Cold asphalt plants
Concrete plants

QUALITY, RELIABILITY AND SAFETY

More than 50 years of experience

M-200 InNOVA asphalt plant.

The company

Founded in 1965, INTRAME is nowadays a leader in asphalt plants production with presence worldwide.

During these 50 years of experience, INTRAME has developed its own technology resulting in a complete series of continues and batch asphalt plants as well as concrete and soil stabilization plants that work all around the world. INTRAME's line of products has been completed in recent years with the most modern recycling equipments through cold and hot processes.

As a family owned company, customer's full satisfaction is INTRAME's main goal and therefore all plants are designed and produced complying with the highest quality, safety and environmental standards. Moreover, INTRAME's design allows a high flexibility to reach each customer's needs.

Being aware about plants reliability critical importance, INTRAME has developed a large network guaranteeing to its customers after sales service as well as spare parts delivery.

INTRAME's factory is located at Valladolid (Spain) laid out over a surface of 125.000 m^2 of which 22.000 m^2 are covered surfaces.

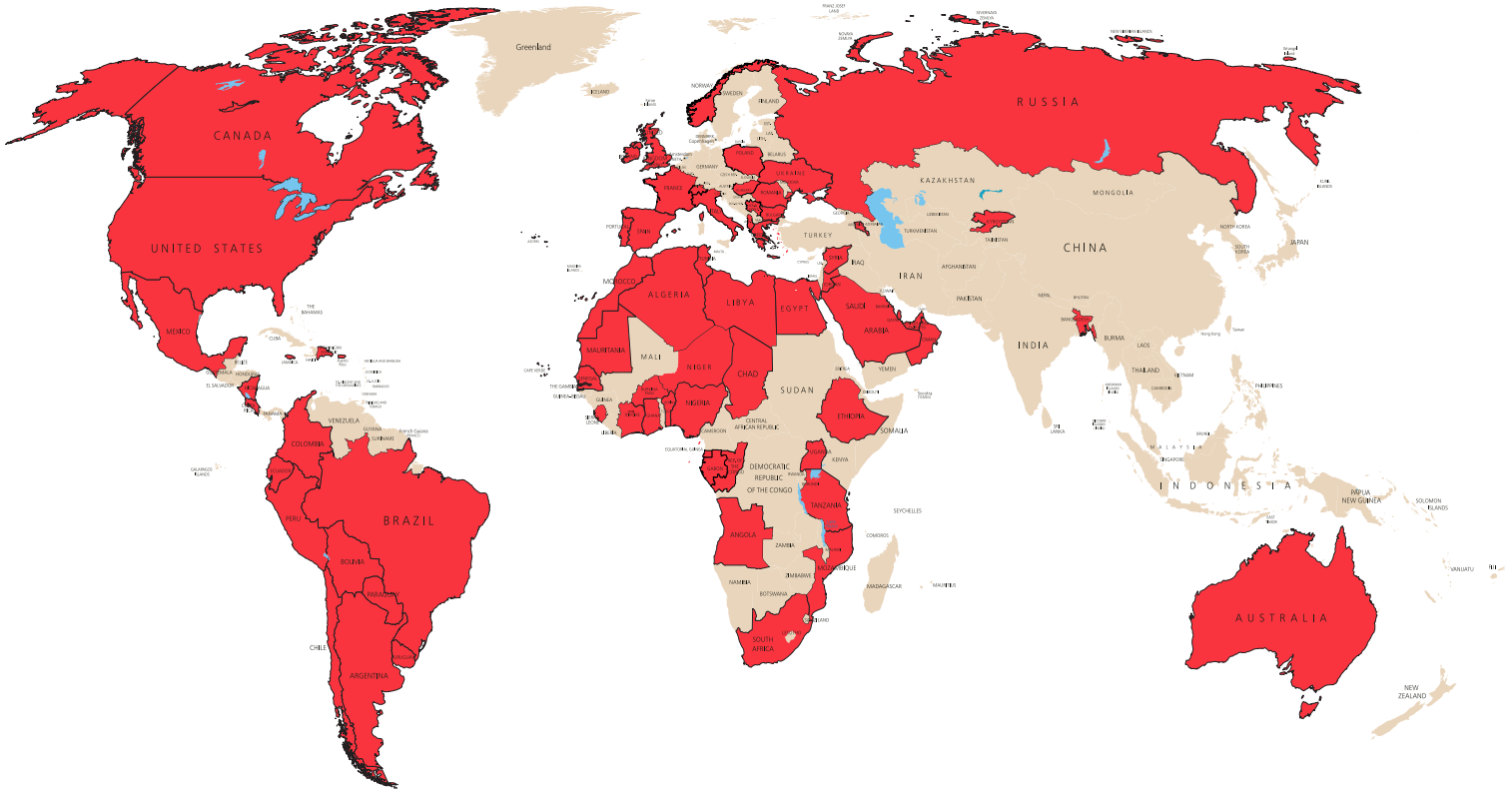
Worldwide presence

More than 1.000 INTRAME plants produce all over the world and have participated in construction projects in Europe, America, Africa, Asia and Australia.

Relevant projects have been accomplished with INTRAME plants in several countries as the repaving of highway A-16 in Switzerland, highways A-1, A-2 and A-4 in Poland, East-West highway in Algeria, Perote-Xalapa highway in Mexico, highways and urban roads in Chile and the majority of roads in Spain and Portugal, countries in which INTRAME remains the absolute leader.

INTRAME plants have also participated in the repaving of big airports such as Charles de Gaulle in Paris, Gatwick and Birmingham in the United Kingdom, Madrid in Spain as well as other international airports like Dhaka in Bangladesh.

INTRAME concrete plants have participated in the construction of several dams, airports, roads and subway works.



Intrame plants around the world.

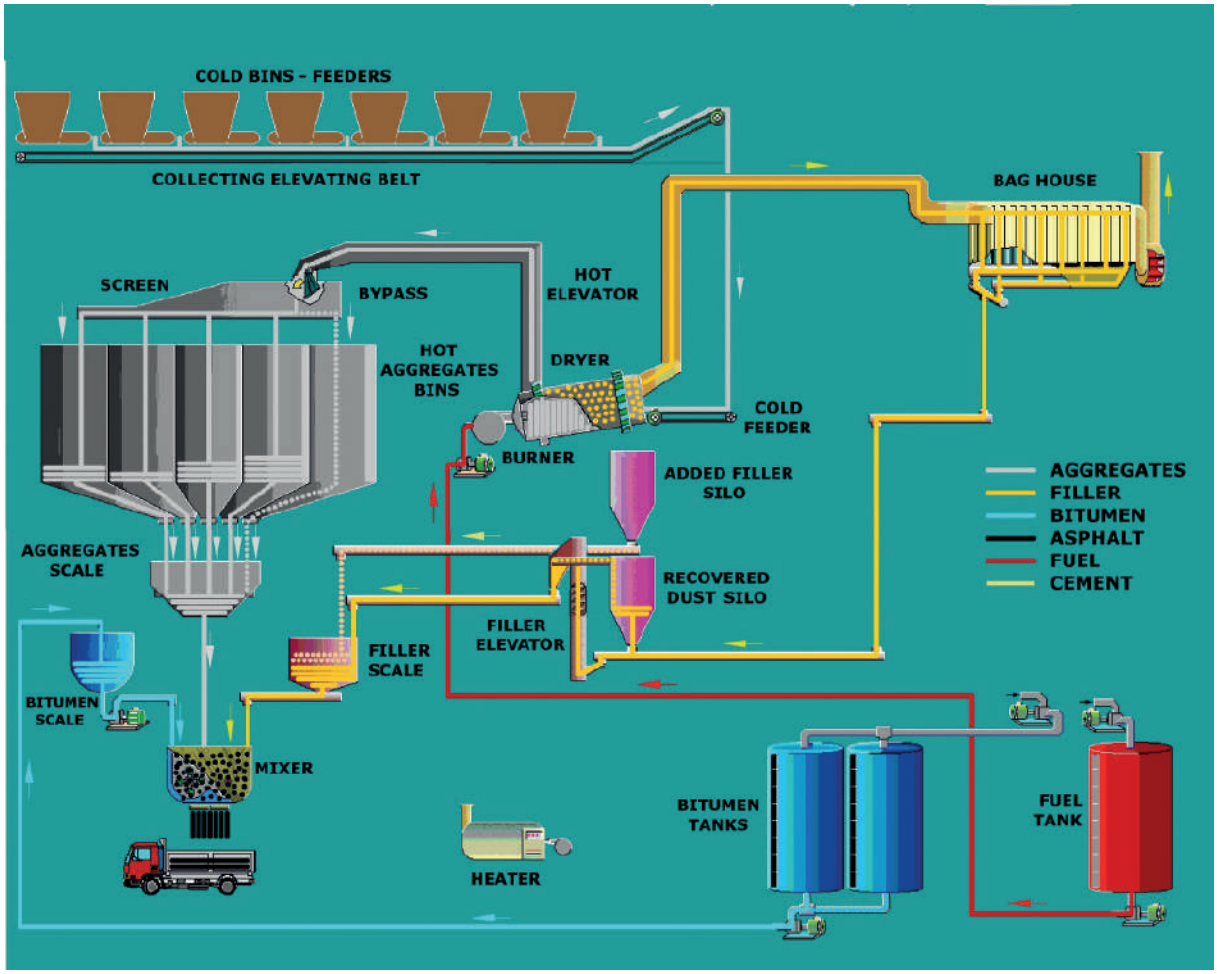
Batch asphalt plants

In batch asphalt plants, once dried and heated, the aggregates go through a screen to reach a perfect control over their quantities and dimensions. A homogenous mix is produced inside the mixer. Aggregates, bitumen and filler are individually weighed before each batch. In every plant the mixer is always over dimensioned to assure production even in extreme conditions.

INTRAME produces five series of batch asphalt plants:

– UM, Ultramobile
– M, Modular
– CM, in ISO containers
– RM, Stationary
– InNOVA, Configurable stationary towers

All plants can be adapted to our customer's needs.



Batch asphalt plants working diagram.

Batch asphalt plant InNOVA G-320 (Poland).

UM-280 batch asphalt plant
at Gatwick's airport (UK)

UM Series

ULTRAMOBILE

UM Series: Ultramobile

INTRAME UM ultramobile batch plants are designed to produce on the jobsite, thus reducing logistic costs and installation time. They are transported in several mobile units on wheels, always respecting road transport dimensions. In addition they can be equipped with legs and load distributors that can be regulated in height avoiding concrete foundations if the soil guarantees the appropriate resistance.

UM plants design and final lay out guarantees the operator an easy access to all maintenance and greasing points keeping the same safety, accessibility and environmental standards as for any other plant within the INTRAME range.

UM Model	Mixer Capacity Kg	Drum Diameter mm	Drum Length mm	Nominal Production t/h	Maximum Production t/h
80	1.000	1.600	7.315	80	100
100	1.250	1.780	7.315	100	120
120	1.500	1.890	7.315	120	140
160	2.000	2.134	8.370	160	180
200	2.500	2.275	9.010	200	220
260	3.250	2.438	10.080	260	300
280	4.000	2.438	10.080	280	300
350	4.500	2.750	11.000	350	400

Other configurations are possible combining mixer capacities and the dryer-bag house set to adapt the plant to customer's needs according to the moisture in the aggregates and in case of production with recycling equipments.

UM-120 asphalt plant.

UM-160 asphalt plant.

UM-200 asphalt plant.

UM-260 asphalt plant.

UM-160 Ultramobile asphalt plant mobile units

Mixing tower.

Dryer.

Bag house.

Cold feeders.

Double silo for recovered dust and added filler.

Storage tank with heater.

Storage tank with control cabin.

UM-280 Ultramobile asphalt plant mobile units

Dryer.

Hot bins.

Mixing tower.

Bag house.

Double silo for recovered dust and added filler.

Cold feeders first unit.

Cold feeders second unit.

First tank with heater.

Second tank with control cabin.

Third tank.

Ultramobile units boarding for Algeria


INTRAME
HIDRAULICO
TRX


INTRAME
HIDRAULICO
TRX 182


INTRAME

Two M-280 asphalt plants in Poland

M Series

MODULAR

M Series: Modular

INTRAME M modular batch plants are designed in a way that all the main elements are modules with the appropriate dimensions to be easily transported on truck or semi trailer. In addition they can be equipped with legs and load distributors that can be regulated in height avoiding concrete foundations if the soil guarantees the appropriate resistance. Hence M plants are easily transported between jobsites.

M Model	Mixer Capacity Kg	Drum Diameter mm	Drum Length mm	Nominal Production t/h	Maximum Production t/h
80	1.000	1.600	7.315	80	100
100	1.250	1.780	7.315	100	120
120	1.500	1.890	7.315	120	140
160	2.000	2.134	8.370	160	180
200	2.500	2.275	9.010	200	220
260	3.250	2.438	10.080	260	300
280	4.000	2.438	10.080	280	300
350	4.500	2.750	11.000	350	400

Other configurations are possible combining mixer capacities and the dryer-bag house set to adapt the plant to customer's needs according to the moisture in the aggregates and in case of production with recycling equipments.

M-120 asphalt plant.

M-200 asphalt plant.

M-280 asphalt plant.

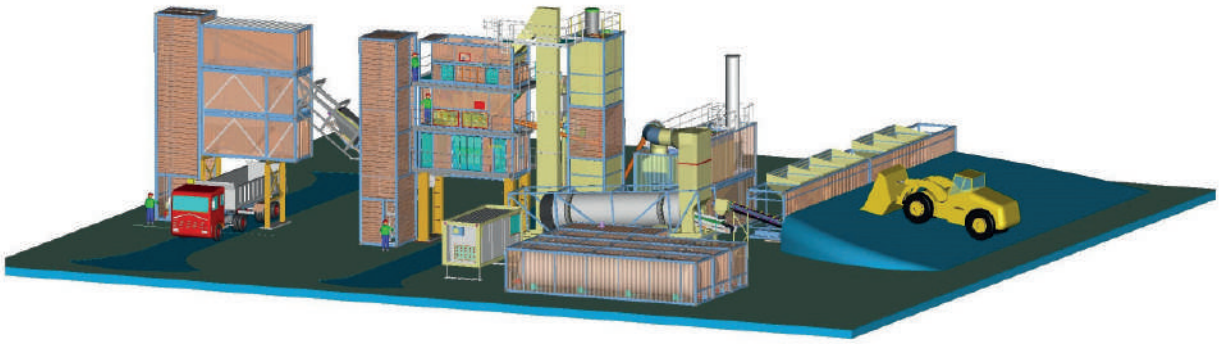
Detail of modular plants unit's supports

Detail of cold feeders load distributors.

Detail of dryer's load distributors.

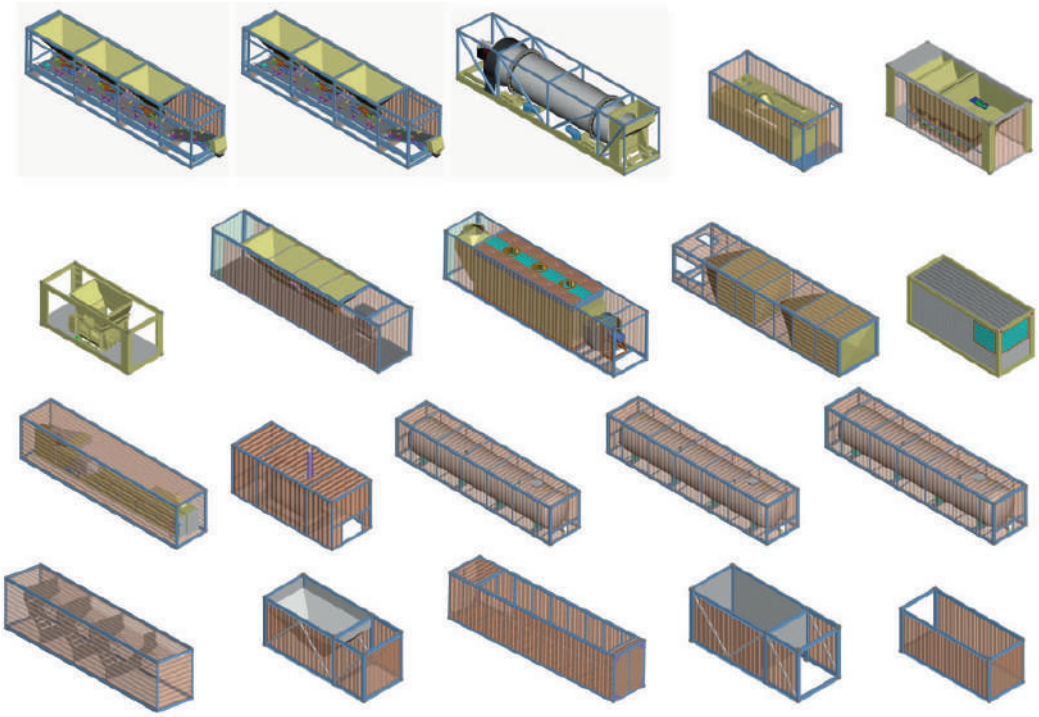
CM Series: in ISO containers

Highly transportable plant designed to minimise freight costs. All the elements are 40' standard, 40' HIGH-CUBE and 20' standard ISO containers.



CM-160 asphalt plant.

CM Model	Mixer Capacity Kg	Drum Diameter mm	Drum Length mm	Nominal Production t/h	Maximum Production t/h
120	1.500	1.890	7.315	120	140
160	2.000	2.134	8.370	160	180



Containers configuration for a CM-160 plant equipped with a CSA-30 hot mix storage silo.

RM-280 asphalt plant
in Spain

RM Series

STATIONARY

RM Series: Stationary

INTRAME RM stationary batch plants are designed to be easily transported from our factory. This type of plant is installed on concrete foundations or on metallic foundations depending on customer's needs.

RM Model	Mixer Capacity Kg	Drum Diameter mm	Drum Length mm	Nominal Production t/h	Maximum Production t/h
80	1.000	1.600	7.315	80	100
100	1.250	1.780	7.315	100	120
120	1.500	1.890	7.315	120	140
160	2.000	2.134	8.370	160	180
200	2.500	2.275	9.010	200	220
260	3.250	2.438	10.080	260	300
280	4.000	2.438	10.080	280	300
350	4.500	2.750	11.000	350	400

Other configurations are possible combining mixer capacities and the dryer-bag house set to adapt the plant to customer's needs according to the moisture in the aggregates and in case of production with recycling equipments.

RM-80 asphalt plant.

RM-120 asphalt plant.

RM-160 asphalt plant.

RM-200 asphalt plant.

RM-260 asphalt plant.

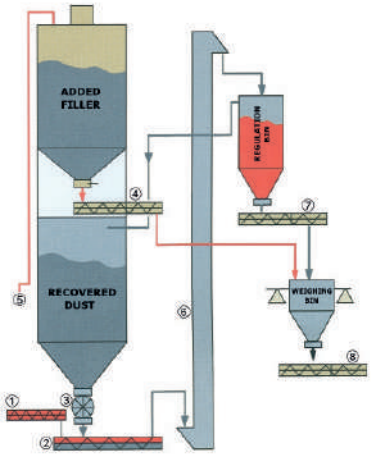
RM-350 asphalt plant.

Batch plants elements

System to incorporate recovered dust and added filler

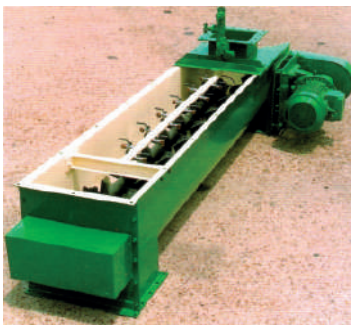
A double silo incorporates in its higher part a silo for added filler equipped with a pneumatic loading system and in its lower part a silo for recovered dust.

The lower silo collects the dust recovered by the bag house. Both materials are transported towards the weighing bin as shown opposite. If a primary collector is used, the bigger particles can be transported towards the hot elevator.

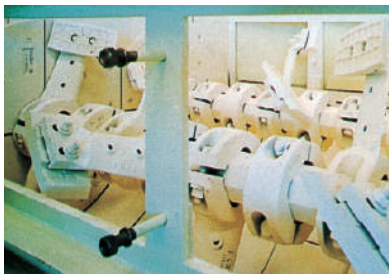


1 Recovered dust from the bag house.
2 Recovered dust from the bag house and the silo.
3 Rotary valve.
4 Added filler screw conveyor.
5 Added filler trucks pneumatic unload.
6 Recovered dust elevator.
7 Recovered dust dosing screw conveyor.
8 Screw conveyor to introduce recovered dust and added filler inside the mixer.

View of a bag house and a double silo for recovered dust and added filler in a RM-280.



Dust conditioner to easily handle the excess of dust.



Twin shaft paddle mixer. Designed for low power consumption and low wear. Heated by thermal oil. High resistance wearing parts. Equipped with lateral access gates for an easy replacement of paddles, etc.

RM-280 dryer. Of high efficiency. Equipped with a high efficiency burner that complies with the strictest international environmental regulations. Also, in the forefront is shown the hot oil heater of high energetic efficiency.

InNOVA-160 asphalt plant in Portugal

InNOVA Series

CONFIGURABLE STATIONARY TOWERS

InNOVA Series: configurable stationary towers

The InNOVA mixing towers are built in two basic structures: **S** (silver) and **G** (gold).

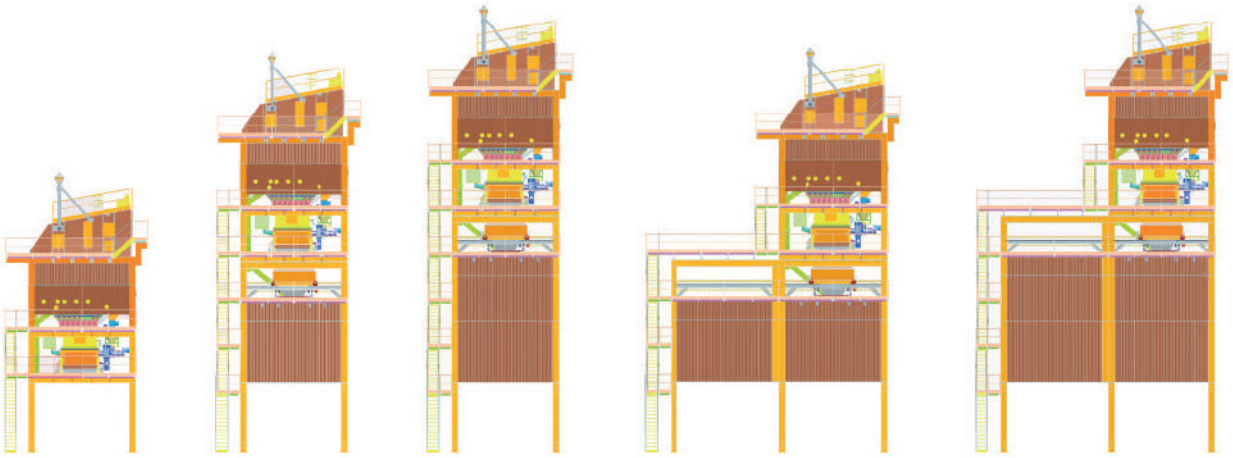
Fitting standard components it is possible to configure seven models of plants: 120-140 t/h, 160-180 t/h, 200-220 t/h, 240 t/h, 280-300 t/h, 320-350 t/h and 360-380 t/h with the suitable components for customer's needs (screen size, dryer size, mixer size, hot aggregates capacity, hot mix storage silo capacity and capacity of the bitumen, aggregates and filler weighing bins). The lateral hot mix storage silos receive the mixed material by means of a wheel mounted hopper with horizontal displacement.

InNOVA Model	Tower Structure	Mixer Capacity Kg	Drum Diameter mm	Drum Length mm	Filtering Surface m²	Nominal Production t/h	Maximum Production t/h
InNOVA 120	S	1.500	1.890	7.315	424	120	140
InNOVA 160		2.000	2.134	8.370	530	160	180
InNOVA 200		2.500	2.275	9.010	636	200	220
InNOVA 240		3.000	2.275	9.010	742	240	240
InNOVA 280	G	3.500	2.438	10.080	742	280	300
InNOVA 320		4.000	2.750	11.000	1.060	320	340
InNOVA 360		4.500	2.750	11.000	1.220	360	380

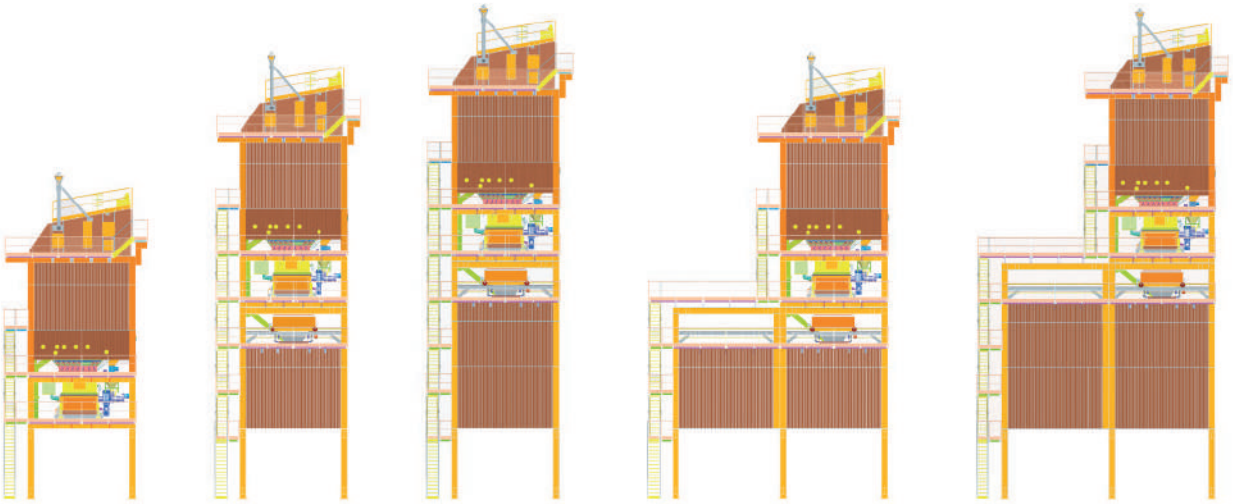
Other configurations are possible combining mixer capacities and the dryer-bag house set to adapt the plant to customer's needs according to the moisture in the aggregates and in case of production with recycling equipments.

		STRUCTURE S	STRUCTURE G
Plant model		InNOVA 120	InNOVA 280
		InNOVA 160	InNOVA 320
		InNOVA 200	InNOVA 360
		InNOVA 240	
Hot aggregates capacity		45 t	80 t
		90 t	160 t
Hot mix storage silos capacity		2x27+3 = 57 t	2x36+9 = 81 t
		2x55+6 = 116 t	2x72+14 = 158 t
		4x27+3 = 111 t	4x36+9 = 153 t
		4x55+6 = 226 t	4x72+14 = 302 t
Hot bins internal division		Four fractions / with or without independent bypass	
		Five fractions conventional mixes / with or without independent bypass	
		Five fractions split mastics / with or without independent bypass	
		Six fractions / with or without independent bypass	
Available mixer capacities		1.500 kg	3.500 kg
		2.000 kg	4.000 kg
		2.500 kg	4.500 kg
		3.000 kg	5.000 kg
Aggregates Scale	Net capacity	1.950 kg 2.350 kg 3.000 kg	3.800 kg 4.550 kg
	Gross capacity	4.700 kg 5.450 kg 6.150 kg	7.450 kg 8.150 kg
Bitumen scale	Capacity	210 kg	450 kg
Filler scale	Capacity	337 litres (235 kg)	785 litres (550 kg)
Screen	Models	3619	4221 4225
	Fractions	four, five or six	
	Sand surface (with six fractions)	6,7 m²	9,1 m² 10,2 m²
	Total surface (with six fractions)	37,0 m²	50,0 m² 56,0 m²

S and G structures

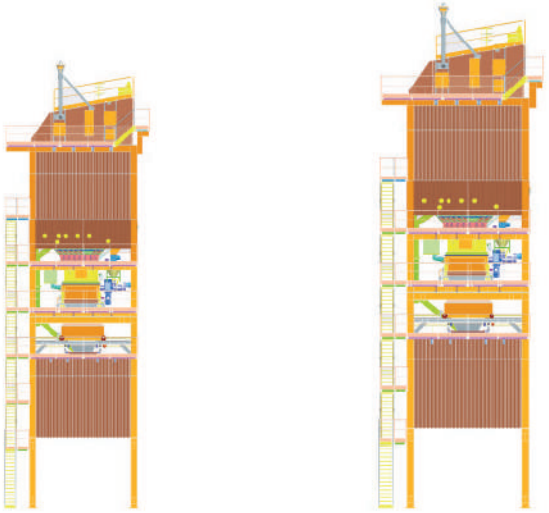


Configuration with different hot mix storage silos and with standard hot bins



Configuration with different hot mix storage silos and with the extended hot bins

InNOVA S tower



InNOVA G tower

S tower and G tower with same configuration and drawn in the same scale

320 t/h asphalt plant (Poland). With InNOVA-G mixing tower. Equipped with 160 t capacity hot bins and 81 t capacity hot mix storage silo. 4.500 kg mixer.

120 t/h asphalt plant with a special InNOVA-S mixing tower (without screen) partially enclosed in a metallic building. Equipped with cold process recycling system unloading in the mixer. Bitumen, emulsion and modified bitumen tanks electrically heated. 1.500 kg mixer. Installed in Nice (France).

320 t/h asphalt plant (Poland). With InNOVA-G mixing tower. Equipped with 160 t capacity hot bins. Bitumen tanks electrically heated. Installed on metallic foundations. 4.500 kg mixer.

280 t/h asphalt plant (Spain). With InNOVA-G mixing tower. Equipped with 160 t capacity hot bins. Bitumen and fuel tanks electrically heated. 4.500 kg mixer. Equipped with cold process recycling system unloading in the mixer.

200 t/h asphalt plant (Portugal). With InNOVA-S mixing tower. Equipped with 90 t capacity hot bins and 57 t capacity hot mix storage silo. 2.500 kg mixer. Equipped with cold process recycling system unloading in the mixer.

InNOVA towers elements

Screen

Three types of inclined screens driven by vibrators.

With four, five or six fractions plus by-pass.

Double by-pass as optional.

Hot bins

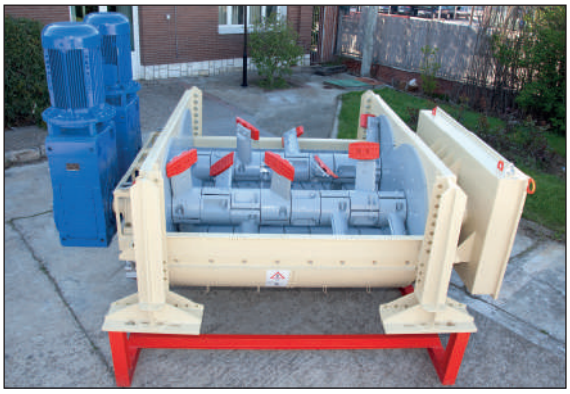
S structure: 45 t standard capacity that can be extended to 90 t.

G structure: 80 t standard capacity that can be extended to 160 t.

Mixer

Eight different twin shaft paddle mixers. Replaceable paddles, arms, lining and shaft protections. All made of hard material.

Heated. Bitumen unloading is done by gravity. As an option for special applications, INTRAME delivers an intermediary tank and a pump to inject the bitumen into the mixer.



Hot mix storage silos

Configurable with capacities going from 57 t to 226 t in the S structure and from 81 t to 302 t in the G structure.

Silos' loading is done by means of a wheel mounted hopper with horizontal displacement.

Continuous asphalt plants

Flow-Mix series:
with counter flow dryer and separate mixer

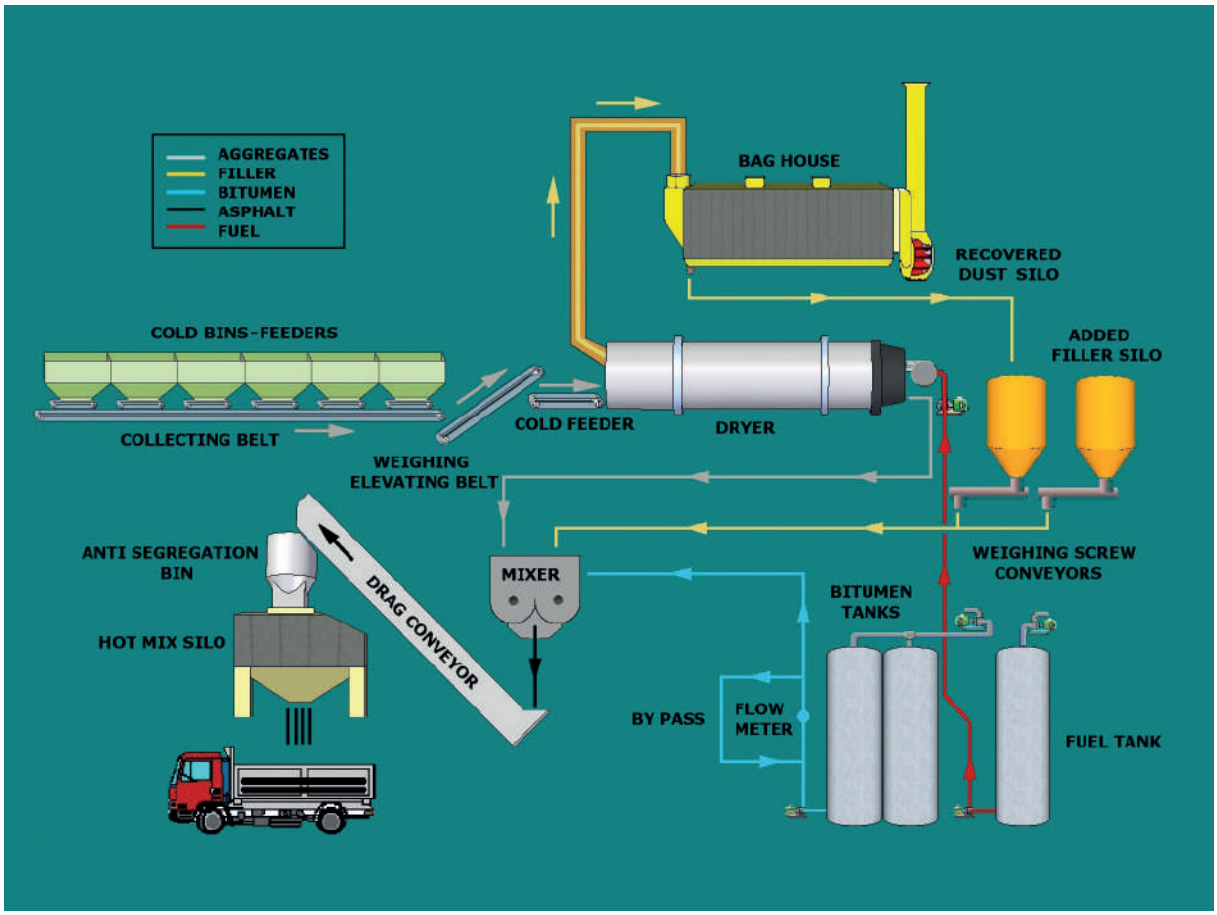
INTRAME Flow-Mix continuous plants are characterized by:

1. Aggregates are dried and heated in a counter flow drying drum.

2. Mixing is produced in a separate synchronized twin shaft paddle mixer.

The advantages are: low energetic consumption, filler control, low emissions and high mix quality.

In the continuous process, the cold aggregates are dosed, weighed, heated and mixed with the bitumen previously dosed by a mass or volumetric flow meter and with the recovered dust. The hot mix is transported towards regulation bins or towards hot mix storage silos either by a skip or by a drag conveyor.



Continuous asphalt plants working diagram.

Dryer and mixer of a continuous Flow-Mix 220.

Flow-Mix 220 asphalt plant in France

FLOW-MIX Series

CONTINUOUS

Flow-Mix series:
with counter flow dryer and twin shaft paddle mixer

INTRAME produces stationary, modular and mobile continuous Flow-Mix plants characterized for having an external twin shaft paddle mixer and for the counter flow displacement of the aggregates inside the dryer.

Flow-Mix Model	Drum Diameter mm	Drum Length mm	Maximum Production t/h
100	1.600	7.315	100
120	1.890	7.315	120
140	1.890	7.315	140
180	2.134	8.370	180
220	2.275	9.010	220
300	2.438	10.080	300

Flow-Mix 140 stationary.

Flow-Mix 100 stationary.

Flow-Mix 100 mobile.

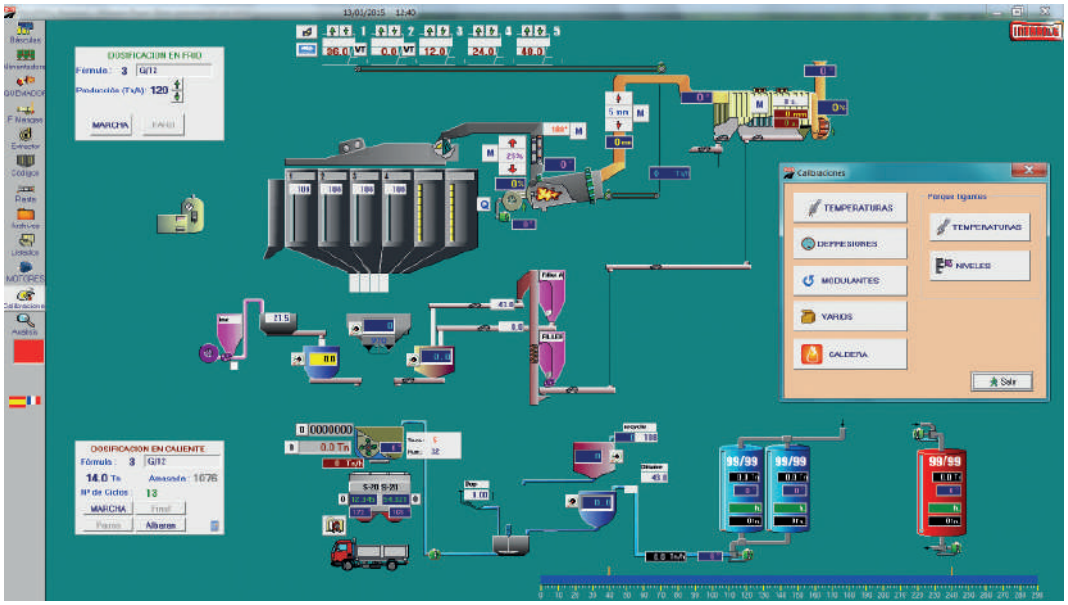
Flow-Mix 140 mobile.

Flow-Mix 140 mobile with silo.

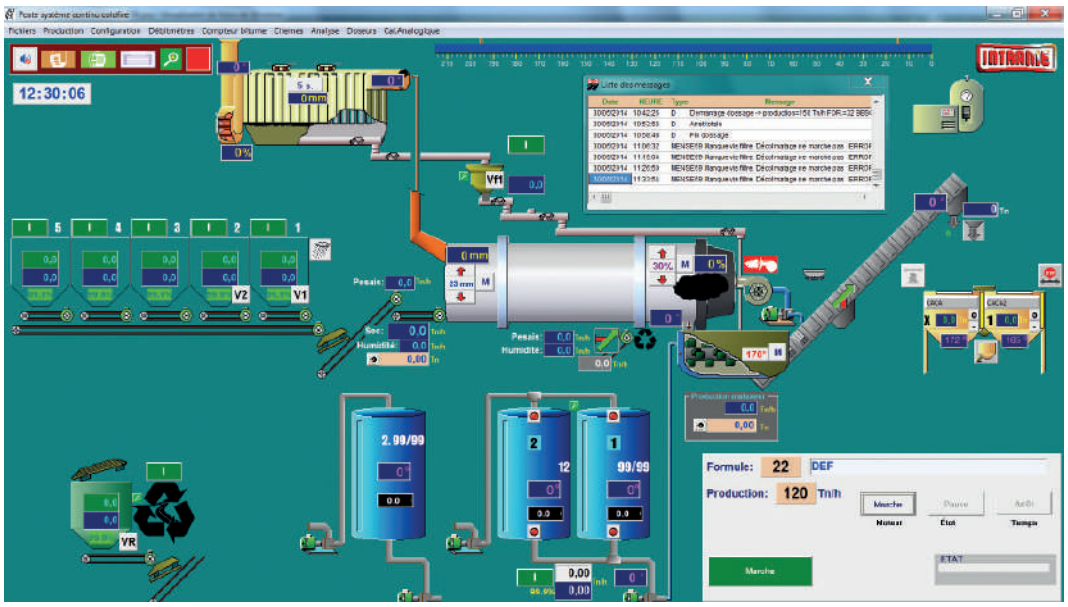
Control systems

Highly intuitive SCADA type control software. Its reliability and flexibility, as well as the independence of its standard and commercial platform, transform it into a tool highly appreciated by the end user. Its multi lingual environment, Windows 7 Ultimate, and the control software translated, approach this industrial control experience to every corner of the planet.

Choosing the right platform more than 15 years ago allowed us to evolve along with the state-of-the-art technological innovations.



Batch plant integral control synoptic.

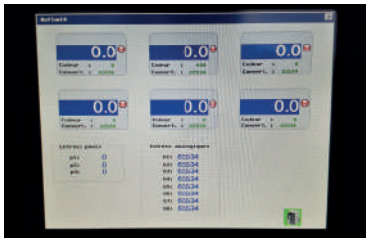


Continuous plant integral control synoptic.

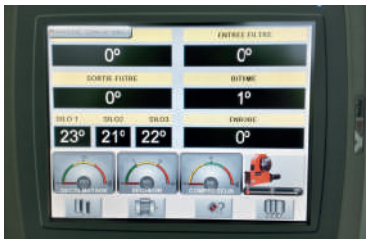
Control equipment

Electric panel in technical room.

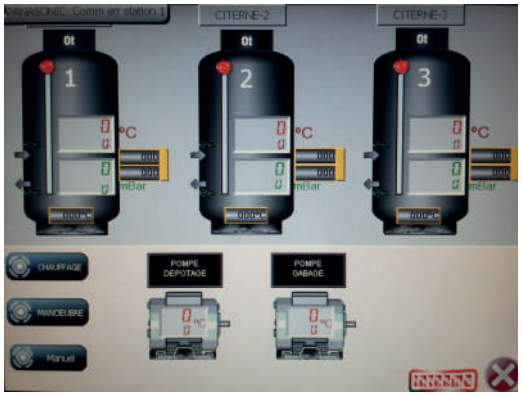
Electric panel in cabinets.



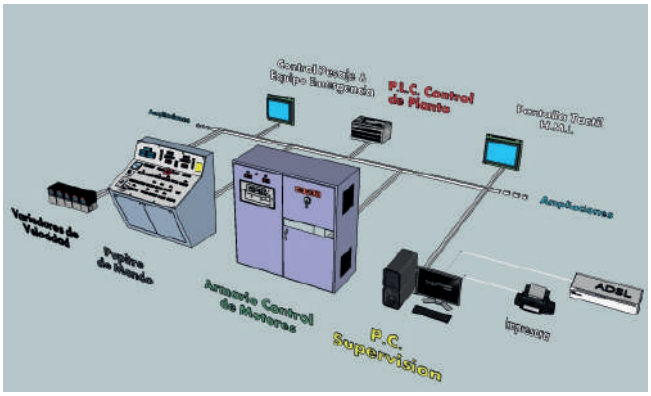
New weighing control terminal (auxiliary equipment).



HMI tactile terminal (Human Machine Interface).



Storage tanks integral control.



The most modern Ethernet IP communications design. Open and flexible.

Clear desks.

Desks with push buttons for a higher manual control.

Recycling equipments

– In batch plants there are two different systems according to the way in which the recycled material (RAP) is treated: cold or hot.

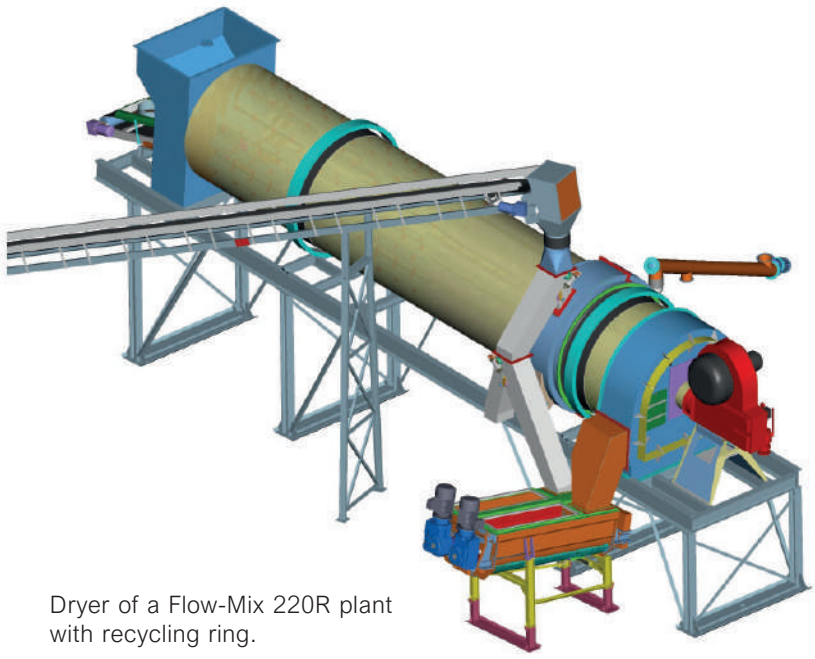
Cold processes **developed by INTRAME**

1. RAP is introduced into the dryer's outlet or into the base of the hot elevator. Maximum quantity to recycle 15%.
2. RAP is introduced into the dryer's combustion zone through a special ring. Maximum quantity to recycle 15-20%.
3. RAP is previously weighed and then introduced into the mixer. Maximum quantity to recycle 25-30%.
4. Double line system introducing bigger fractions of RAP into the dryer (system described in point 2) and the smaller fractions into the mixer (system described in point 3). Maximum quantity 40%.

Hot process **developed by INTRAME**. Consists in heating RAP in an additional parallel flow dryer without direct flame, by means of the hot gas coming out from a generating chamber. Afterwards, RAP is weighed and introduced into the mixer. Maximum quantity to recycle 50-60%.

– For Flow-Mix continuous plants, INTRAME offers 3 different equipments for recycling:

1. RAP introduction after continuous weighing into the dryer's outlet. Maximum quantity to recycle 25%.
2. RAP introduction after weighing into the dryer's combustion zone through a ring. Maximum quantity to recycle 40%.
3. RAP introduction after weighing into a special dryer with a temperature homogenization zone through a ring. Maximum quantity to recycle 50%.



Dryer of a Flow-Mix 220R plant with recycling ring.

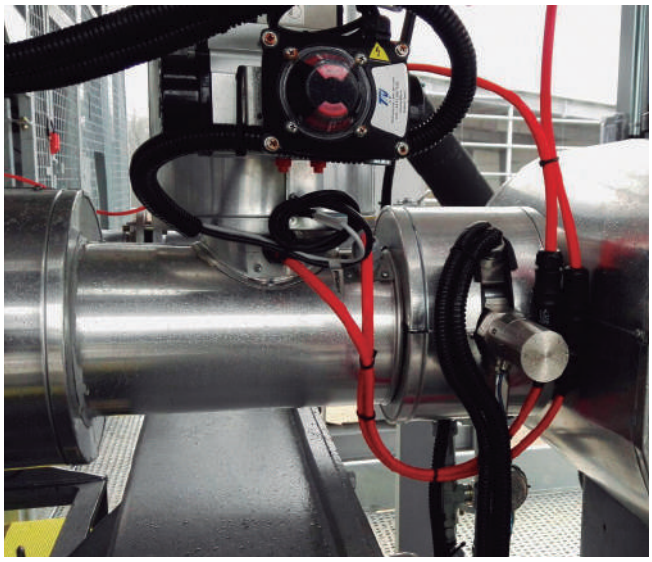
Cold process recycling equipment with introduction into the mixer.

Double line recycling equipment.

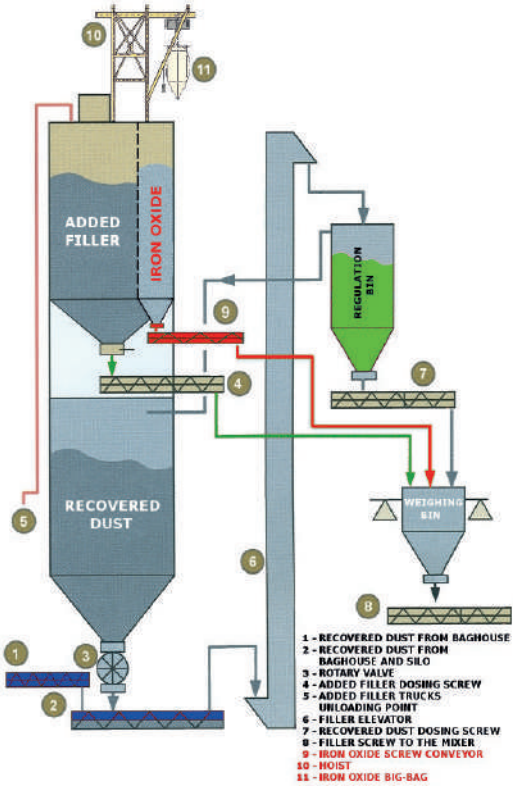
Hot process recycling equipment RC-120 installed in a M-280 asphalt plant (Switzerland).

Hot process recycling equipment RC-80 installed in a UM-200 asphalt plant (Spain).

Bitumen foam and additives equipments



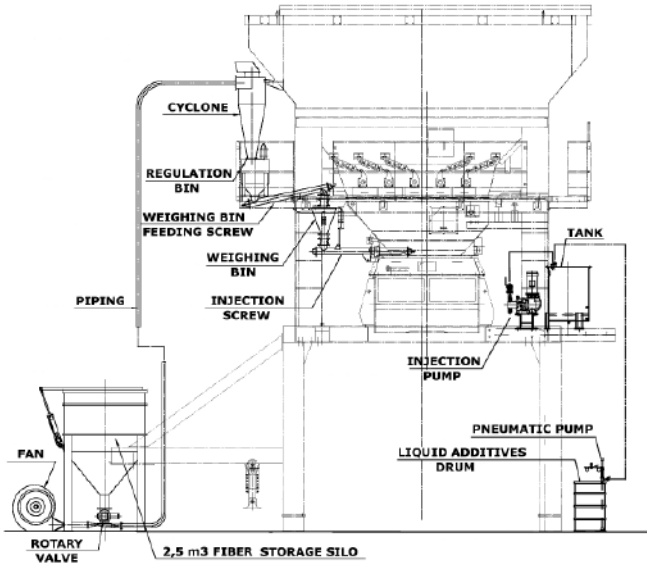
BITFOAM bitumen foam equipment for warm asphalt. In line foam ramp type. Equipped with a flow independent, constant pressure foam system. The pulverization pressure can be regulated.



Equipment for adding iron oxide.

Equipments for fiber type solid additives and liquid additives

Fiber equipment.



Equipments for fiber type solid additives and equipment for liquid additives.

Storage tanks:

INTRAME produces horizontal and vertical tanks thermally insulated and covered with a metallic envelope, usually in aluminum.

The tanks can be equipped either with internal coils for thermal oil circulation or with electrical resistances. Bitumen and fuel pipes and pumps are heated by thermal oil or electrical resistances according to the case. Pipes are covered with a layer of insulating material.

Mobile horizontal tanks are installed on semi trailer type chassis equipped with axles and wheels.

Storage tanks heated by thermal oil

Mobile tank on wheels incorporating heater.

Vertical tanks heated by thermal oil.

Heaters

INTRAME oil heaters are totally automatic and incorporate a burner and a double coil heat exchanger to heat the appropriate oil up to 210º centigrade. The oil circulates through a closed circuit towards the equipment in need of heat.

INTRAME range of thermal fluid heaters.

Model	Gross Power (Kcal/h)	Net Power (Kcal/h)	Heating Surface (m^2)	Light oil maximum consumption (Kg/h)	Circulation Pump		Thermal oil volume
					Litres/min	H.P.	
DSH-30	353.000	300.000	16,10	35	333	7,5	337
DSH-45	530.000	450.000	21,70	52	431	10	491
DSH-55	647.000	550.000	34,90	64	498	10	722
DSH-65	765.000	650.000	34,90	75	614	15	722
DSH-80	941.000	800.000	41,02	92	766	15	842

Bitumen drum melters

INTRAME produces two models of melters:

– C-12 with chamber for 12 drums.

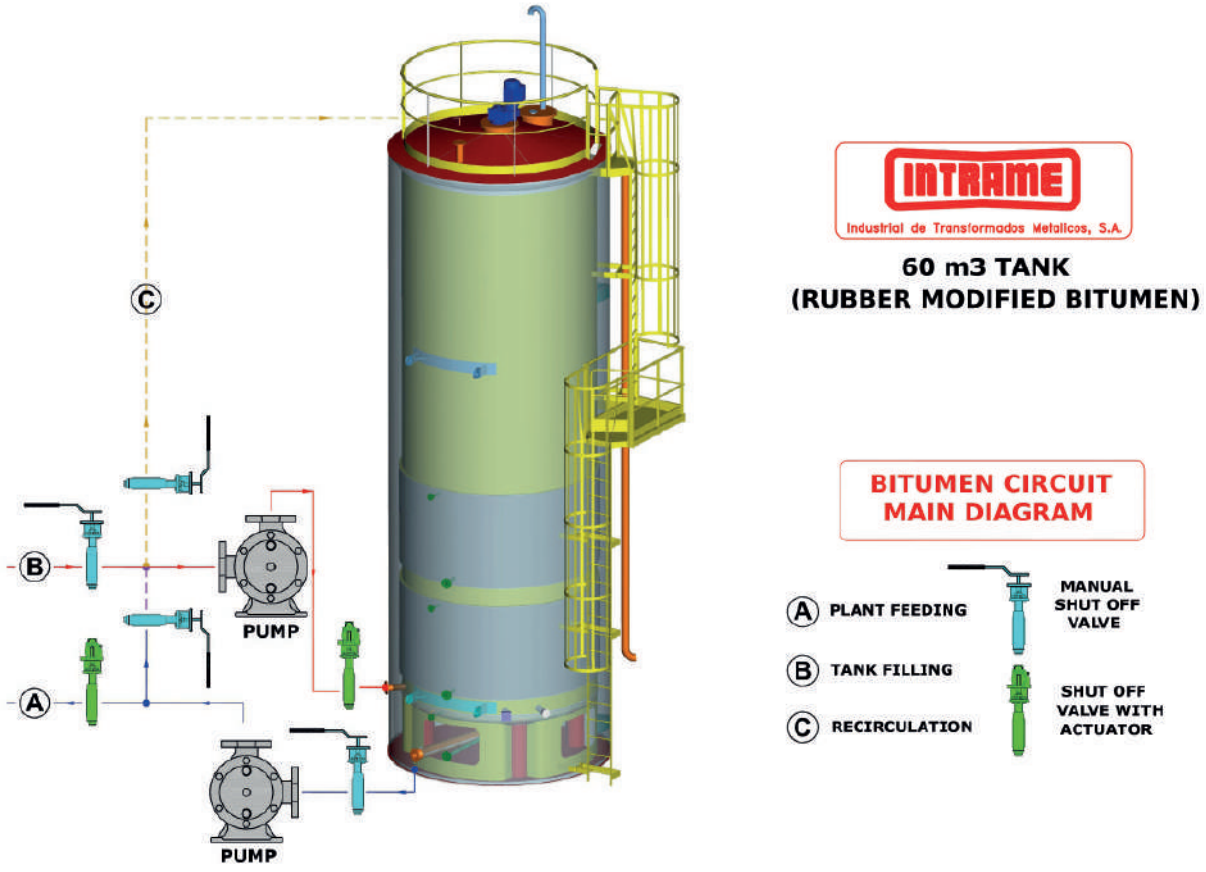
– C-16 with chamber for 16 drums.

Electrically heated storage tanks

Electrically heated storage tanks in InNOVA 320 plant (Poland).

Electrically heated pipes in InNOVA 320 plant (Poland).

Storage tanks for rubber modified bitumen



Hot mix storage silos

For batch asphalt plants, INTRAME produces two types of silos:

– Direct silos placed under the mixer with over elevated towers. According to the number of silos, loading can be done directly, through a by-pass or through a wheel mounted hopper with horizontal displacement.

– Silos besides the tower with a skip as loading system. The lower part of the skip can be folded to allow trucks passage under the mixer for direct loading of asphalt from the mixer.

  These silos can be either stationary or mobile according to the type of plant.

  For big storages, a battery of silos can be laid out with two skips, one for elevation and another for distribution. In this case, silos can be equipped with a weighing system to control truck loading.

For continuous asphalt plants INTRAME produces stationary and mobile silos with two loading systems: drag conveyor or skip. As an option, weighing equipments to control truck loading can be offered. For big storages, previously described batteries of silos can also be incorporated.

Plant with silo under the mixer. Loading by gravity through a wheel mounted hopper with horizontal displacement, thus allowing the installation of additional silos.

Mobile silo.

100 t silo installed in a M-280 asphalt plant.

Silos with drag conveyor.

Battery of four silos, 85 t each, loaded through a horizontal displacement hopper that collects the hot mix from the mixer by means of an elevating skip. Each silo is equipped with a weighing system to control truck loading.

Soil stabilization and cold asphalt plants

INTRAME produces one model of soil stabilization plant with high production capacity for the construction of highway base courses. They have also been successfully used in the construction of dams by the RCC method.

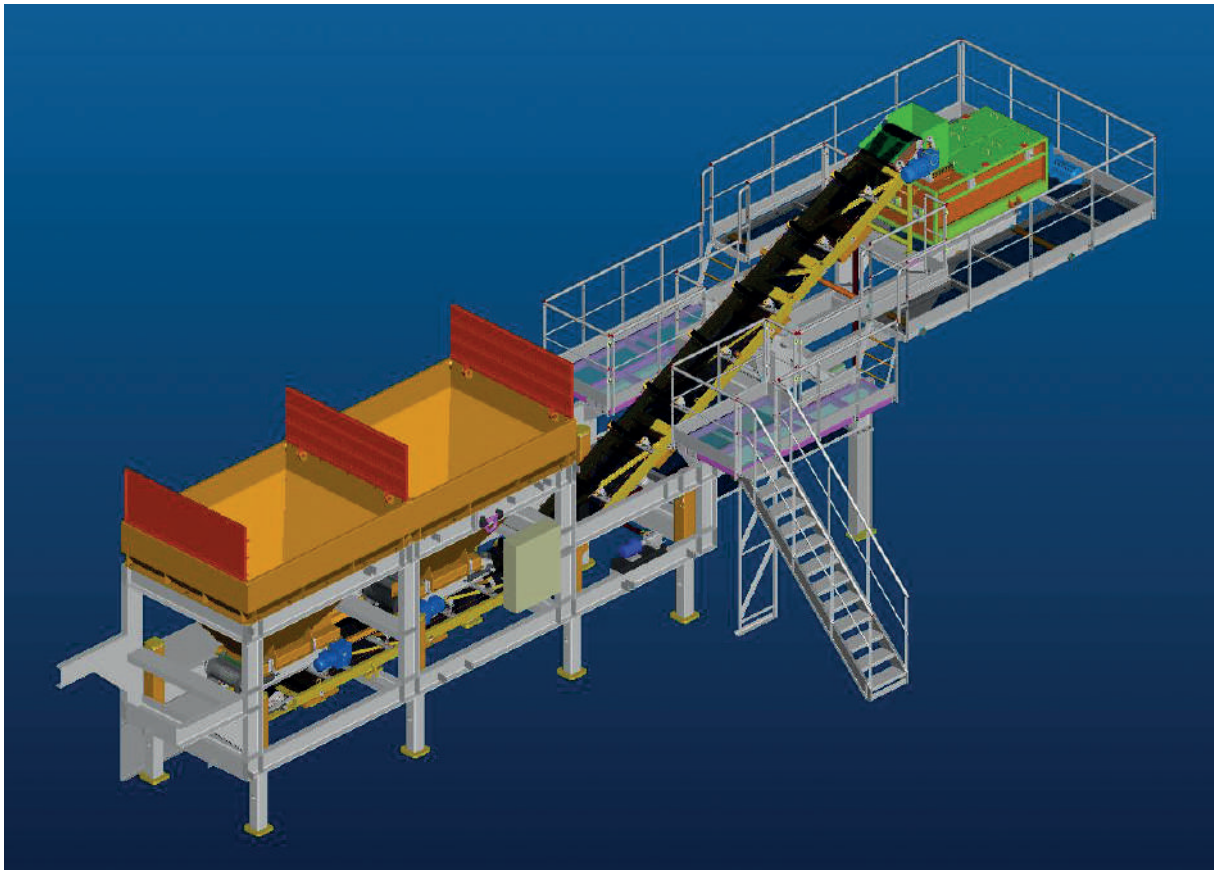
This plant, with a production capacity of 600 t/h, is produced in two versions:

– GT-600 model. The main units are modular easy to be transported.

– GM-600 model. The main unit is mounted on wheels.

Soil stabilization plant GM-600.

Mixer of a GT-600 plant.



Cold asphalt plant with 100 t/h production capacity.

Concrete plants

INTRAME produces concrete plants with twin shaft horizontal mixer or with tilting drum mixers.

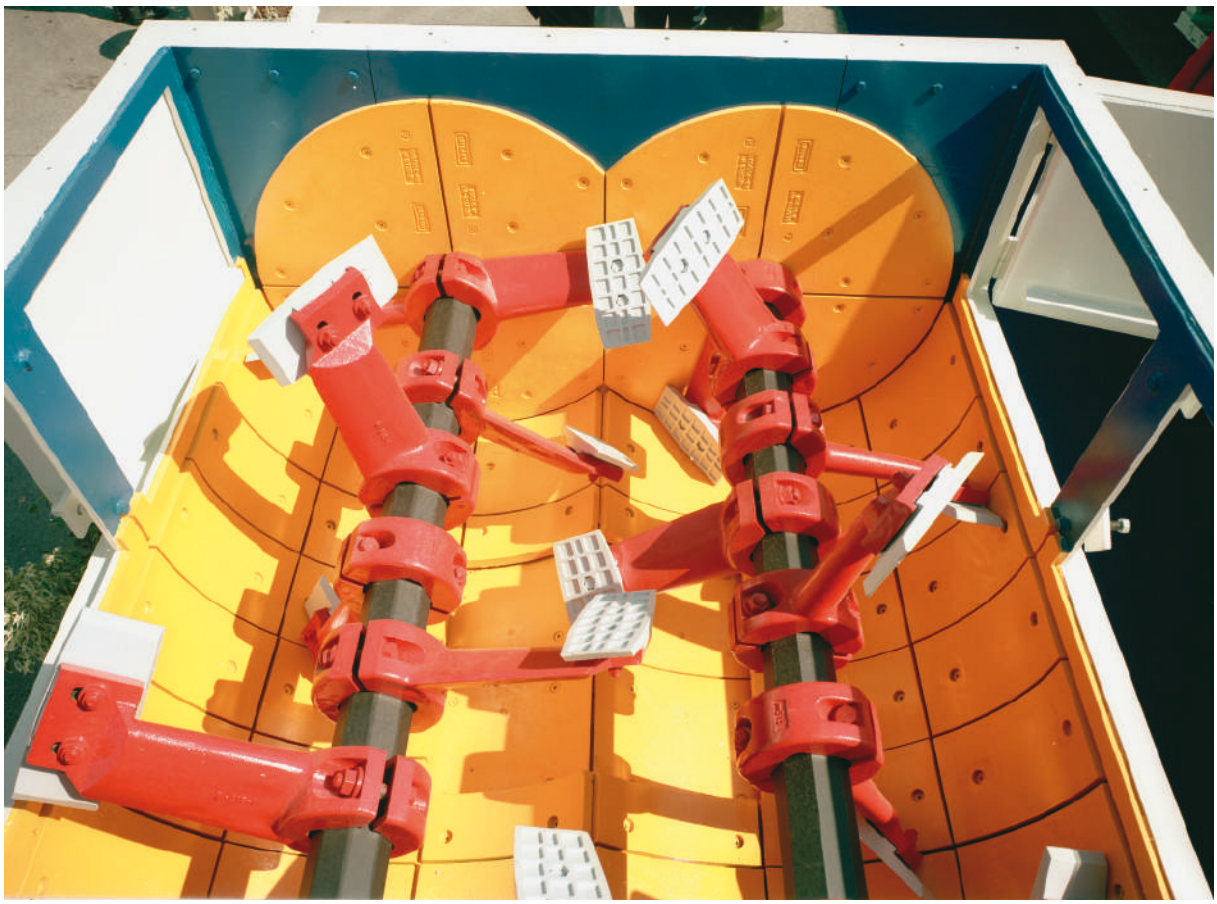
These plants reach productions up to 300 m^3/h and are produced in four versions: stationary, modular, in container or mobile on wheels. They have been successfully used in the construction of concrete highways, airports, dams, ports, canals, bridges, buildings, tunnels, etc.

Twin shaft mixers

INTRAME produces three models of twin shaft horizontal mixers: 2 m^3, 3 m^3 and 4 m^3.

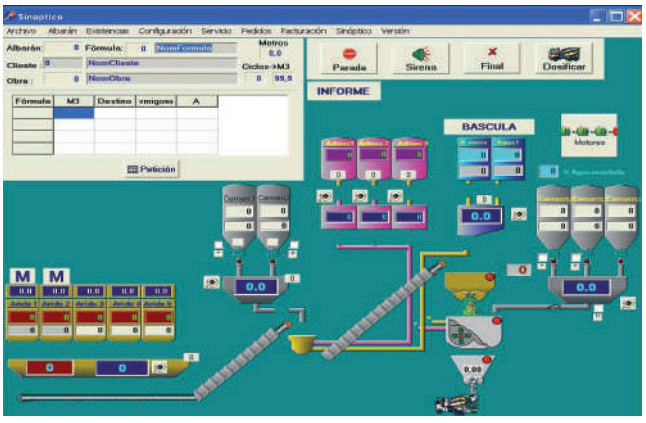
Biconical tilting drums

INTRAME produces several models of tilting drums from 1,5 m^3 up to 7,5 m^3.

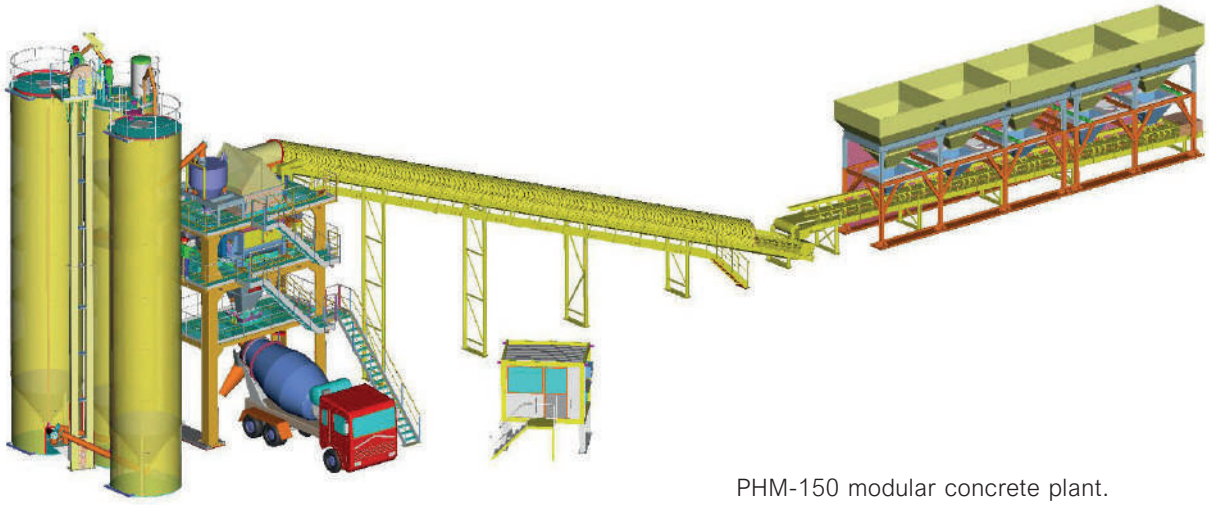


View of the interior of a twin shaft mixer equipped with replaceable paddles, arms and lining produced in high hardness material.

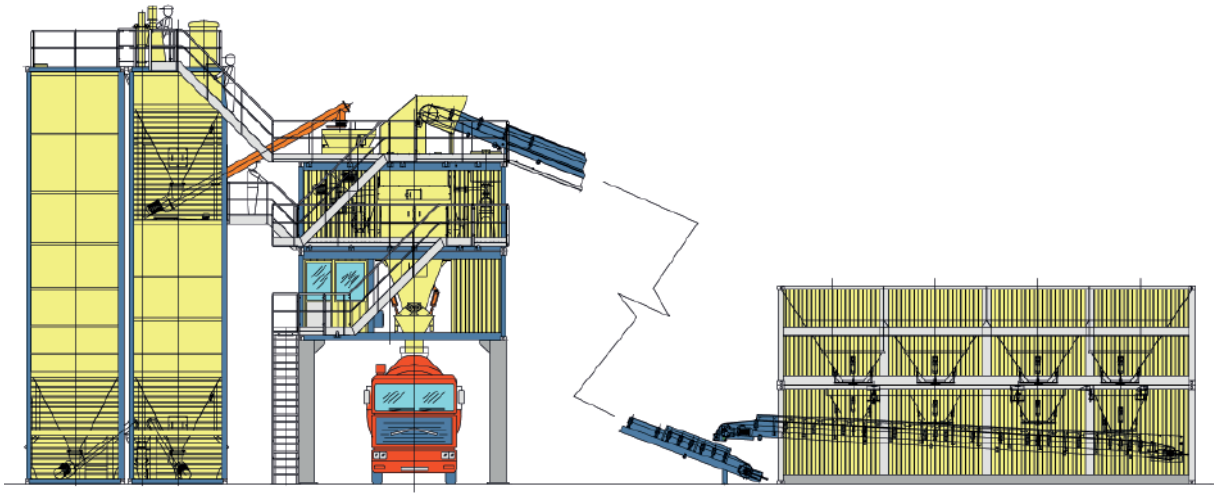
Concrete plant PH-150 equipped with a 3 m^3 twin shaft horizontal mixer working at Barcelona's airport.



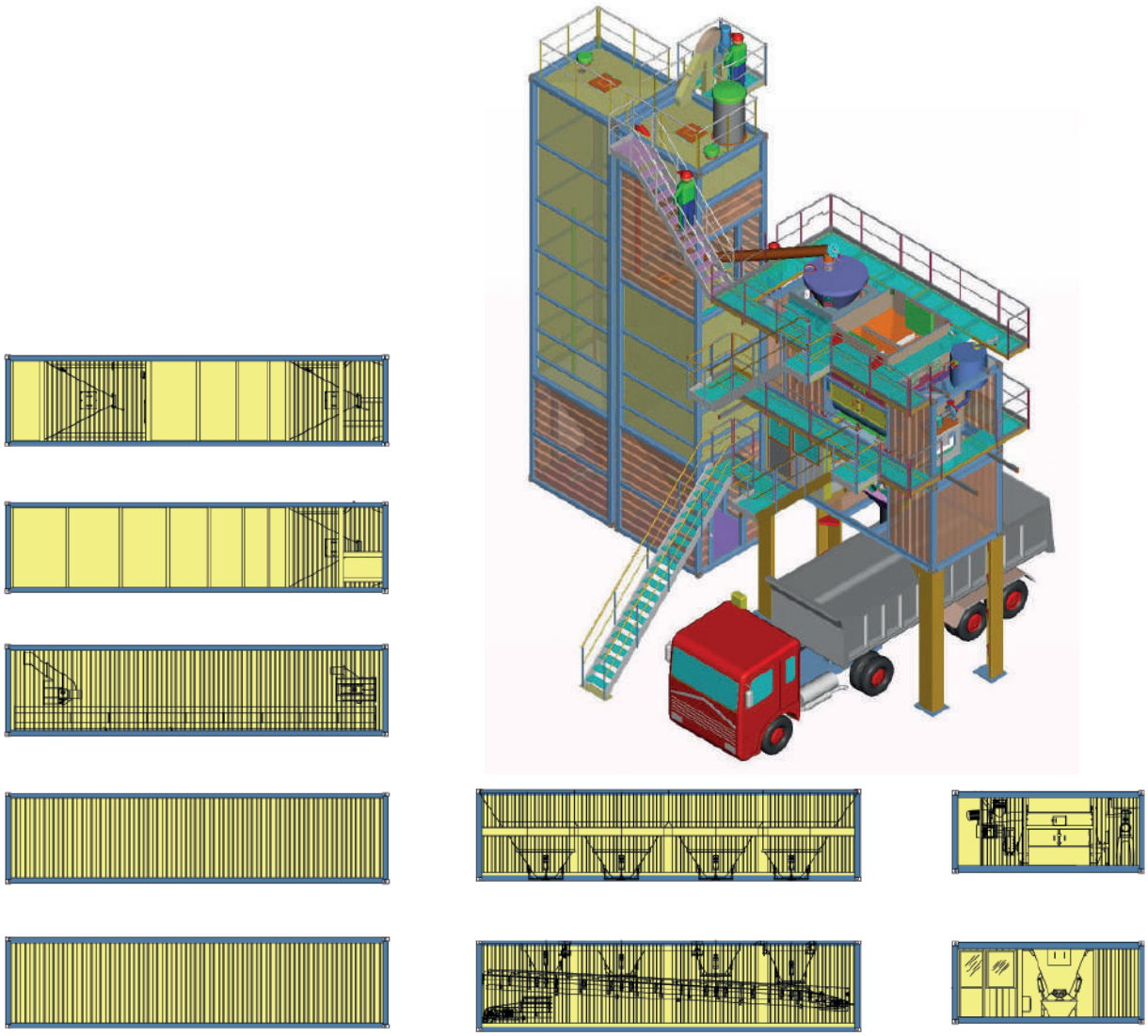
Screen showing plant's integral control synoptic.



PHM-150 modular concrete plant.



PHC-100 concrete plant in ISO 20’ standard and 40’ HC containers.



Containers configuration for a PHC-100 plant.

Special concrete plant working for a precast factory.

INTRAME

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* These specifications are subject to change without previous notice.

CG/07/22/I