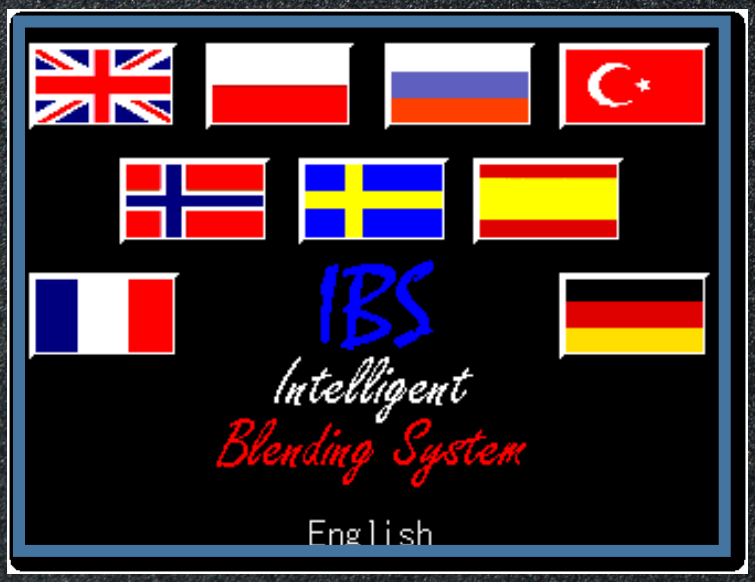
Foundry Machinery and Spares Limited

MIXER CONTROL SYSTEMS



info@fmslimited.co.uk / www.fmslimited.co.uk

Foundry Machinery and Spares Limited

GENERAL SPECIFICATION

Foundry Machinery and Spares (FMS) working alongside Mitsubishi Electric have developed a new range of control systems for their range of continuous sand mixers, FMS discussed with Mitsubishi about the latest technology that could used in our new systems.

Mitsubishi came up with an affordable solution using the GOT1000 range of colour HMIs, using it powerful FX3 range of PLC and direct communications to the inverter drives with 485 communications.

This technology created a powerful system with lots of features, also giving greater control over the pumps using its direct communications from the PLC system.

FMS introduced the Intelligent Blending System (IBS) and the Intelligent Control System (ICS). The IBS is a fully featured automatic chemical blending system with temperature control and the ICS is a chemical control system. Both systems have the latest technology inside them with the only difference being that the ICS does not have the temperature control feature.

General specification

The unit consists of a steel enclosure mounted on our improved pump enclosure; FMS increased the width by 200mm giving you extra room for maintenance around the pumps.

The lower enclosure normally contains 3 positive displacement pumps, this can be increased if other pumps are required, such as water addition or extra catalyst/hardener pumps are required.

The pumps used are a very reliable and accurate Tuthill geared Resin/Binder pump and magnetically couple leak free Catalyst / Hardener pumps, these are coupled with variable speed AC drive motors. The resin pump is a cast iron type with Viton seals, the catalyst / hardener pumps are made from stainless steel or PVC and fitted with seals compatible with the substances that are being used.

The top enclosure houses the pump drive inverters and PLC system. The pumps are controlled by the Mitsubishi D700 range of inverters coupled to the PLC system for advanced control.

The upper enclosure contains all electrical components, which are controlled from the Mitsubishi FX3 PLC, this is linked to a 6 inch full colour GOT1000 type HMI Screen, this touch operated interface displays all the required adjustable components within the PLC program such as sand Gates, mixer operation and chemical controls.

An operator panel connected at the front of the mixer contains the controls for; Start, Pause & Discharge, it also contains an emergency stop, sand programme selection that suits the customer requirements, 5 set time selection switch giving you; very fast, fast, normal, slow and very slow cure times, auto or manual blend switch, this allows temperature to control cure time

info@fmslimited.co.uk / www.fmslimited.co.uk

Foundry Machinery and Spares Limited

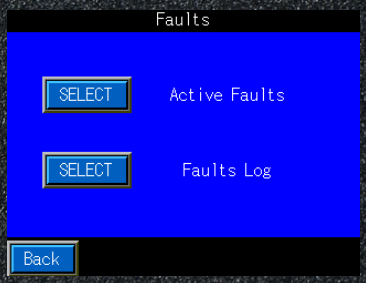
MIXER CONTROL & TIMERS

The control circuit has full shutdown safety circuit only allowing the plc and screen functions upon power up and in the case the emergency stop button pressed, this ensures a high level of safety for the customer, we have also removed the standard contactors from the control circuit, the new Schneider contacts don't allow override starting as previous contacts did, again adding to the safety features.

The screen has full system monitoring, this checks the sand levels and air pressure, if any fail the system will go into auto discharge if the mixer is operating or not allowing it to start before it becomes a problem, this will then be logged in the faults log. Proximity switches for each of the sands and an air pressure switch are included.

Upon power up the system the last screen will be displayed, normally the first screen would be language selection, by pressing the flag of the required country this will then take you to the machine operation screen in the required language.

The machine operation screen displays all the setting that have been calibrated into the system and also displays working items with blue lamps.



Easy to follow menu system

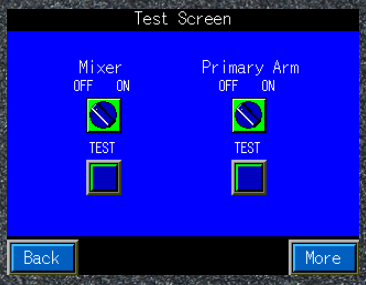
Timers that cover every aspect of the machine.

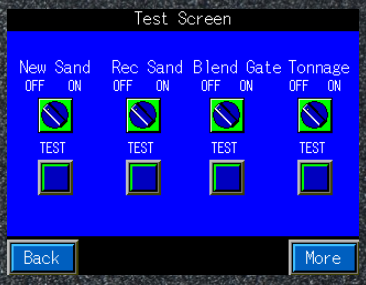
Start, Pause, Pause Alarm, Re-start and Discharge.

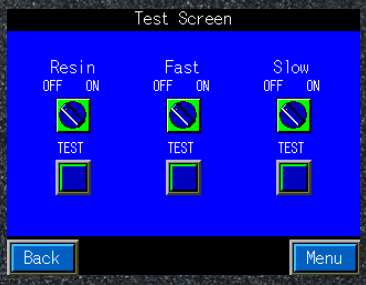
info@fmslimited.co.uk / www.fmslimited.co.uk

Foundry Machinery and Spares Limited

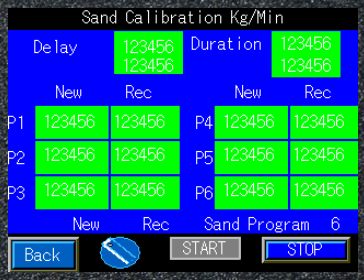
TEST & CALIBRATION







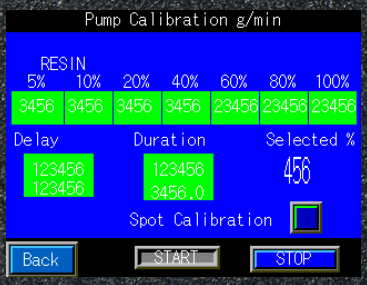
Operation and Test all aspects of the machine



Sand calibration that cover all required sand programmes.

Easy to operate with delay and duration timers.

Simple start operation button does it all, then enter weight in required sand program.



Easy to operate with delay and duration timers.

Pump calibration is straight forward, select required percentage, press start.

Put weight in that percentage, do all percentages, pump curve is created.

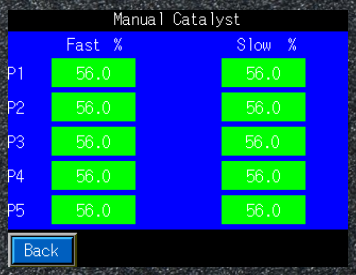
Spot calibration to check correct requirement.

info@fmslimited.co.uk / www.fmslimited.co.uk

Foundry Machinery and Spares Limited

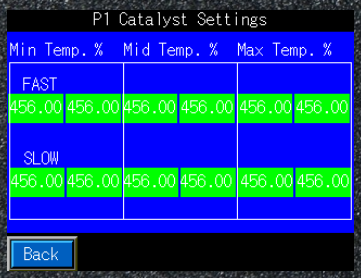
CHEMICAL SETTINGS

Resin Setting, just enter required percentage per sand program.



Catalyst percentage settings.

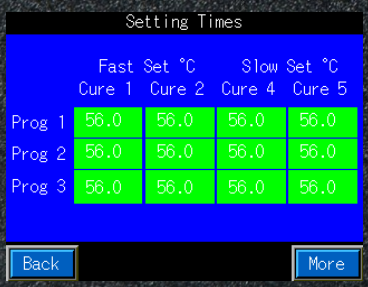
5 settings per sand program.



Catalyst temperature settings, enter min, mid and max temperature.

Enter required percentage at the required temperature.

System automatically adjusts blend rates to temperature. (IBS ONLY)



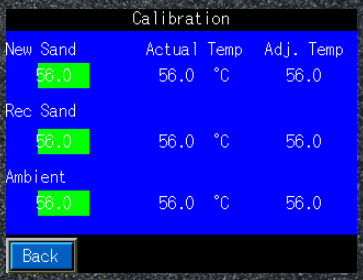
Setting times offset temperature to speed up or slow down cure times.

5 setting giving you 2 faster programs, 1 normal and 2 slower programs. (IBS ONLY)

info@fmslimited.co.uk / www.fmslimited.co.uk

Foundry Machinery and Spares Limited

FAULTS & DATA LOGGING

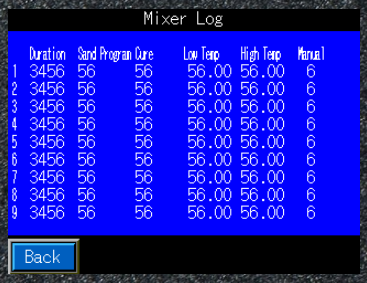


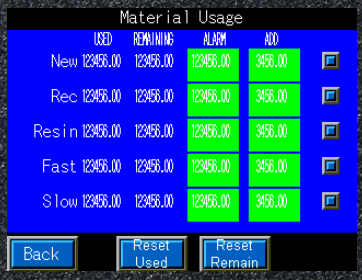
Temperature probe calibration, gives better control of temperature settings. (IBS ONLY)

Personal Computer data download.

Collects machine usage date and stores to CF card.

Download to USB (optional extra)

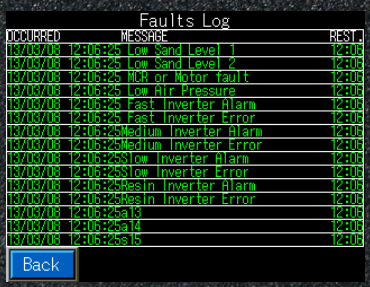




Mixer run duration, sand program, cure setting, temperature and manual program log.

Material Usage and alarms levels.

Enter amount of sand/chemical delivered, enter low level warning value, machine usage will decrease available sand/chemical value as used, once low level is reached a warning strobe will illuminate.



Active Faults and Faults Log.

Active Faults display green lamps when health and red when fault is present.

Faults Log records faults and time of reset.

info@fmslimited.co.uk / www.fmslimited.co.uk