

**Owner's Manual
of
RED LINE MARS -
Multi-point powder Auto Recycling system**

RED LINE INDUSTRIES LIMITED

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INTRODUCTION

Dear Sirs,

The **RED LINE MARS/SARS** Multi (Single) point powder Auto Re-cycling System is one of the ideal recycling system for automatic powder lines. This is based on the venture suction system with electronic controls for a wide range of settings.

Please do go through this Owner's Manual so that you may maximize the utility of this system.

Should you require any further assistance or information on **RED LINE MARS** or **SARS** powder recycling systems or any other RED LINE powder coating application equipment or system, please feel absolutely free to write to us directly or contact your nearest local Authorized RED LINE Sales & Service Center. It will be our pleasure to be of assistance to you.

We wish you all success.

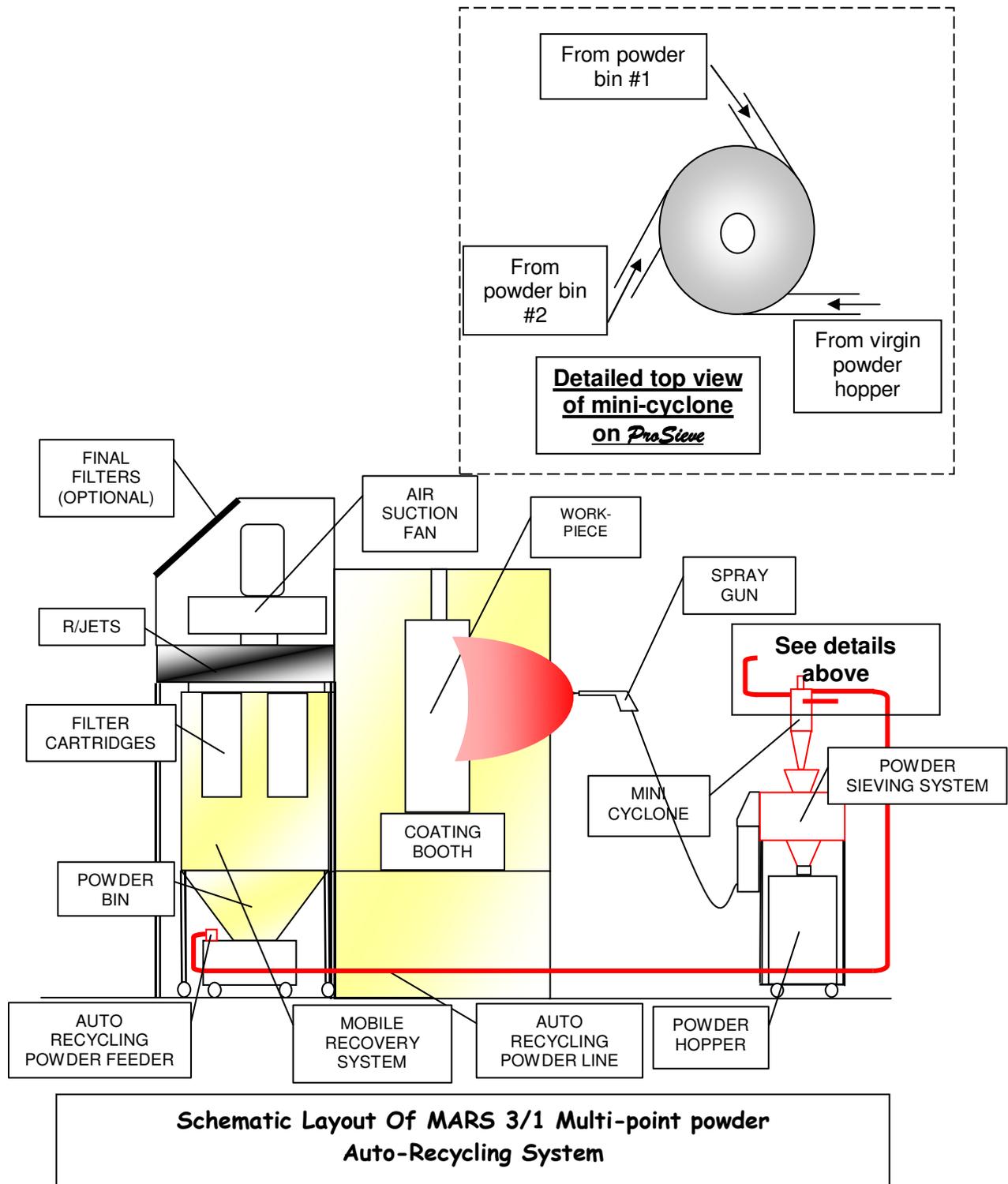
With warm regards,

Himanshu Shah, Director
RED LINE INDUSTRIES LIMITED

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**Working of MARS - the Multi-point
Auto powder Recycling System:**



This is recommended for high production systems where the powder recovered in the bin needs to be recycled back into the master powder hopper of the coating equipments, sieved and mixed, if required, with fresh, virgin powder before being reused. The powder bin under the filter cartridge modules where the oversprayed powder collects has a fluidizing bed facility underneath. Using compressed air, powder in the bin is fluidized and using a venturi powder feed pump arrangement, the powder is extracted from the bin and transported to a sieving system. On top of the sieving system is mounted a specially designed mini-cyclone

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which separates the compressed air from the powder particles so that only powder coatings is dropped into the sieving system – and compressed air escapes from the top of the mini-cyclone (carrying with it a very small proportion of ‘fines’).

For a Multi-point recycling system, an electronic control unit is provided which allows virgin powder to be mixed with recovered powder at the time of dropping into the sieving system. The ratio can be set using pressure regulators on the control panel. Depending on the volume of overspray, timings can be set so that the powder bin in the recovery system is continuously emptied of collected powder.

The sieving system sieves the recovered powder (as well as fresh powder) and deposits this cleaned powder into the master hopper form where it is used by the coating equipments.

Normal operations:

Specific controls have been provided to control the rate of flow of powders from the bin to the sieving system. This is done using the pressure regulators mounted on the master control panel. For a triple-point recycling system, 3 independent pressure regulators have been provided – one for each powder bin. A pressure setting of approx 5 – 5.5 bar should give you a throughput of upto approx 25 kgs/hr through that particular recycling node.



MARS 3/1 control panel

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Routine maintenance:

The entire recovery system is maintenance-free and should not create any downtimes or interruptions to your production – as long routinely, the following is done.

Daily:

At the end of every day, it is suggested and recommended that the entire system be cleaned – including the booth (spray section), the powder recovery system, the venture feed pumps, the mini cyclone, interconnecting powder pipes, the sieve itself and the hopper and powder bins. A clean system will ensure trouble-free performance. Experience has shown that most problems faced by users find their source in an unclean system. In case during operations, the sieving system appear to get 'choked', please empty the sieving system, remove the sieve from underneath and clean it – the sieving process will collect the dust particles and other contamination on the sieve (allowing clean powder through). In case the powder is excessively 'dirty', this could lead to choking.

Weekly:

Clean thoroughly and also check the following for wear and tear (where applicable) and replace only with original equipments spares:

Sleeve inside the outlets of all venture feed pumps. At the time of refitting these pumps back on the powder bin, please ensure the O rings under these pumps are in place and the pumps have a tight fit.

The powder pipes (tubings) from the venture feed pumps to the mini-cyclone should be cleaned to prevent any kind of choking of the powder flow.

Sieve mesh in the sieving system must be fitted with the finer mesh on top and the supporting wire-mesh underneath (in case of reversal, powder may get trapped between the two meshes and the mesh may need to be replaced)

Dismantle the mini-cyclone and clean the insides thoroughly and put back again ensuring correct and proper fitment of the various parts (particularly the top)

Remove the after-filters (if provided) from their housings and using compressed air in the opposite direction (out to in), thoroughly clean the inside to remove all residual powder – in case of very high powder throughputs, this process may be required to be done twice a week instead of weekly.

Monthly:

Please clean the inside of the air extraction fans every month to remove all residual powder coatings that may get stuck there

Trouble-shooting:

These systems are trouble-free once installed and in operation. The only time they may give trouble is in case the system has not been cleaned.

In case recovery is poor, and powder appears to bounce back out from the booth, very likely the after-filters are choked. Cleaning these after filters should take care of the problem.

In case the powder bins are overflowing, either [1] the venture pumps and their associated powder pipes are choked or blocked with contamination or [2] the pressure settings for the venture pumps (on the control panel) is too low or [3] the sieving system is 'choked' (see above). Appropriate remedial measures should take care of this.

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MAINTENANCE & TROUBLE-SHOOTING

The entire recovery system is virtually maintenance-free and should not create any downtimes or interruptions to your production.

- In case of any malfunction, first please check that the input power supply and compressed air supply is as needed.
- In case one or more of the reverse pulse air-jets is malfunctioning, open the control panel. The electronic control unit, from where the wires lead out to the reverse pulse air-jets, has been provided with LEDs - one for each reverse pulse air-jet. The relevant LED will indicate the availability of control signal (in a predetermined and preset sequence) to the reverse pulse air-jets with a gap of 30 to 40 seconds between signals. If this is happening, the electronic control unit is functioning satisfactorily.
- Special reverse pulse jet solenoid valves (coil voltage: 220-230 V AC) mounted in the scavenging head above the filter cartridges control the air-flow through the reverse pulse air-jets. Wires from the electronic control unit lead to these solenoid valves. Disconnect the wires from the solenoid valve that is malfunctioning and give this solenoid valve an independent 220-230 V AC supply. If the valve is not operating, please replace with a new valve to resume work.
- In case one or more LEDs do not indicate the availability of the control signal at the control unit end, remove the relevant wire from the connector on the unit and reconnect it to the next available port. Shift the sequencing pin-plug (located at the center of the control unit) to the next pin or by as many pins as the number of new ports employed. Each control unit will have at least 2 free and spare ports available. The system will now operate with the new sequencing circuit.
- In case the entire electronic unit is not functioning, please check the power input to the unit and the fuse. Replace fuse if blown.
- In case one of the reverse pulse air-jets does not switch off (compressed air continuously passes through it), that reverse pulse air-jet solenoid valve needs to be removed from the system, dismantled and cleaned as its plunger movement has been restricted with dust particles carried in with the compressed air.
- The filter cartridges have an effective life of approx. 4000-6000 hours of use while the final filters if fitted should last for approx. 1000 hours before needing replacement. Final filters can easily be replaced by unscrewing the old ones and re-screwing in the new ones.

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