

For all your metal recycling needs

JMC Recycling Systems



The JMC GANTEC Stacking System

*The Perfect Partner for the JMC
Ingot Casting Machine Range*



*Taking the manual labour out
of Ingot Stacking*

Combining legendary JMC manufacturing with new technological innovations we can now offer the JMC Gantec Ingot Stacking System to accompany you Ingot Casting Machine.

The Gantec Ingot Stacking System will be custom designed to suit your stacking requirements, included in this leaflet are some possible designs.

Fast and Efficient

JMC RECYCLING SYSTEMS LTD

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The JMC GANTEC Stacking System

The basic system will consist of the following items.

A transfer unit that is able to gradually move the ingot from the mould on the Leviathan Casting machine, as the mould is turned up side down and place it onto a take away conveyor.

The ingot will have been loosened with the Leviathan's hammer system.

A conveyor system that is able to move each ingot away from the end of the Leviathan through air-cooling systems in order to cool each ingot.

The conveyors will consist of a long main cooling conveyor and a shorter collating conveyor. The main cooling conveyor will move the ingots from the end of the Leviathan to the start of the collating and palletising area.

The second short collating conveyor will orientate and collate the ingots for palletising.

The palletiser will consist of a basic two-axis gantry structure that is suited to the environment and is able to be configured to place ingots to 2 4 or 6 pallet stack positions to suit the application.

The basic gantry will be positioned to pick ingots and transfer them either right or left of the pick up point. This will allow the guarding to be divided into two sections or zones very simply. One zone will be "open" for removal of the filled pallet stacks and the other side or zone will be "closed" and interlocked to allow the palletiser to access it. This form of design ensures that the operator is protected from the palletiser.

Conveyor Construction of Conveyors

This will be based on wire belt or chain conveyor able to handle temperatures in excess of 500 degrees C.

The general construction of the conveyors and their supporting frameworks will be similar to that used in the mould handling equipment. The JMC Gantec will be built to be as robust and solid as the Leviathan.

Geared electric drives will be used to power the conveyors controlled from a single control panel with stop and start buttons and emergency stop buttons as necessary. This will be integrated into the palletiser control panel.

Handling of Ingots from Moulds

To remove the need for external control of the ingots, each ingot is currently partially ejected from the mould using a synchronised hammer action connected to the movement of the mould conveyor.

It is proposed that fixed guides be added to the ejection area so that as the ingots move around the end of the conveyor the guides gradually allow the ingots to feed out of the mould.

The ingot will still be moved as the mould moves downwards until as the ingot approaches the bottom of the conveyor motion it will be released onto the take away conveyor in an inverted orientation. The take away conveyor will then move the ingot away from the casting machine.

The fixed guides will be made of thick section mild steel and be carried on a strong support structure that is similar to the rest of the mould handling equipment style.

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Layout Options

The proposed layout to suit the customer requirements is laid out in a straight line.

This requires two conveyors and could allow the overall length of the conveyors to be approximately 4,500 mm for the cooling areas.

At the end of the cooling part of the conveyors a short length of conveyor, up to 1500mm long, which is narrower than the length of the ingot, will be mounted. This will be connected to the cooling conveyor by short dead plate bars.

A short stroke pusher will move the ingots from the end of the cooling conveyor onto the short conveyor. The ingots will then travel to the first of several stops on this conveyor.

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Turnover Collator

Ingots will be presented from the out feed of the cooling conveyor generally cross-wise on the conveyor having been pushed onto the short conveyor by a pusher bar mounted above the end of the cooling conveyor with a drive to the side out of the way of the heat build up.

Positioning stops will ensure that each ingot is stopped briefly to it straighten up. The first ingot will be released from the stops and travel along the short conveyor. The next ingot will stop against the stops behind the first ingot.

Two grippers will locate on the ends of the next ingot and rotate about a horizontal axis lifting the ingot over the stops and placing it face down after the stop. The sequence will then be repeated.

N.B. For those palletising patterns that do not require inverted ingots the inversion operation will not be used, and the ingot will pass directly through to collation.

To ensure that the inverted ingots cannot rollover, the conveyor will be able to index sufficiently as necessary to allow the inverted ingot to be put down next to the non-inverted t. This will create a stable layer of billets. Ingots will be queued up until there are enough to make a layer. The queuing sequence will also ensure that the ingots are collated at the end of the collation conveyor.

The conveyor will be narrower than the length of the billets so that the gripper of the palletiser can pick a layer of billets by lifting under the exposed ends of the billets.

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Palletiser Unit

This will be a gantry-based unit from JMC's Gantec system. A basic gantry structure will carry a linear axis for horizontal motion, a vertical axis for picking and placing of the ingot layer and a rotary unit to allow the collated ingots to be placed alternately at 90 degrees to each other.

Structural steel legs will provide support for the gantry palletiser and the horizontal and vertical beams will be of a similar robust construction.

Gantec palletisers and materials handling units have been installed by JMC personnel for handling materials as varied as steel billets, scrap aluminium bales, and even molten brass. The design allows the critical areas of the machine to be moved away from the hot areas of the process as well as optimising the use of the available floor space and simplifying the guarding.

There are various layouts that can be provided with up to 6 put down positions across the end of the conveyor split into two separate areas.

This will allow the pallets to be filled on one side whilst the filled pallets are removed from the other side. Interlocked guards will ensure that the operators removing the filled pallets are protected.

The final layout can be agreed and altered as the project develops.

A gantry style of palletiser is offered as this provides a more effective use of floor space as well as using a structure that can be used as part of the guards in its basic framework.

The gripper of the palletiser will be able to access the exposed ends of the ingots as they are collated on the collating conveyor.

The gripper of the Gantec unit will lift the layer of ingots and turn it through 90 degrees as necessary and then transfer it laterally to the next put down position on the pallet stack being created.

The gripper will support the layer only under the ends of the ingots and the design will retain the ingots from moving during transit. At a feed rate of one ingot every 3 seconds, the palletising cycle is once every 21 seconds nominally.

System Operation

As the JMC mould conveyor indexes, a fresh ingot will be released onto the take away conveyor that will be continuously moving. The released ingot will be moved out of the way of the next ingot in less than 3 seconds.

The ingot will travel through air-cooling systems mounted above the conveyor to be fitted by JMC. At the end of the conveyor the ingot will be transferred positively onto the collation conveyor.

As necessary, ingots will be inverted and a layer of ingots will be built up against the end stop of the collation conveyor.

The collation conveyor will gradually index as necessary to allow a tight layer to be built up.

The gripper of the Gantec palletiser will lower over the collated ingots and lift them under the exposed ends.

The layer will be lifted off the conveyor and moved laterally with either a 0 or 90 degrees rotation to create an interlocked pattern at the put down position.

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WHY CHOSE THE JMC GANTEC STACKING SYSTEM OVER THE ROBOT STACKER?

- The JMC Gantec is a less complicated design
- It will handle hot and dusty environments better
- The maintenance is easier and less time consuming
- The layouts are more versatile
- The foot print is smaller / takes up less space
- Spare parts and consumables are cheaper
- It is easier to re-programme
- There is the potential for extending the machine with relatively little additional expense, unlike the Robot.

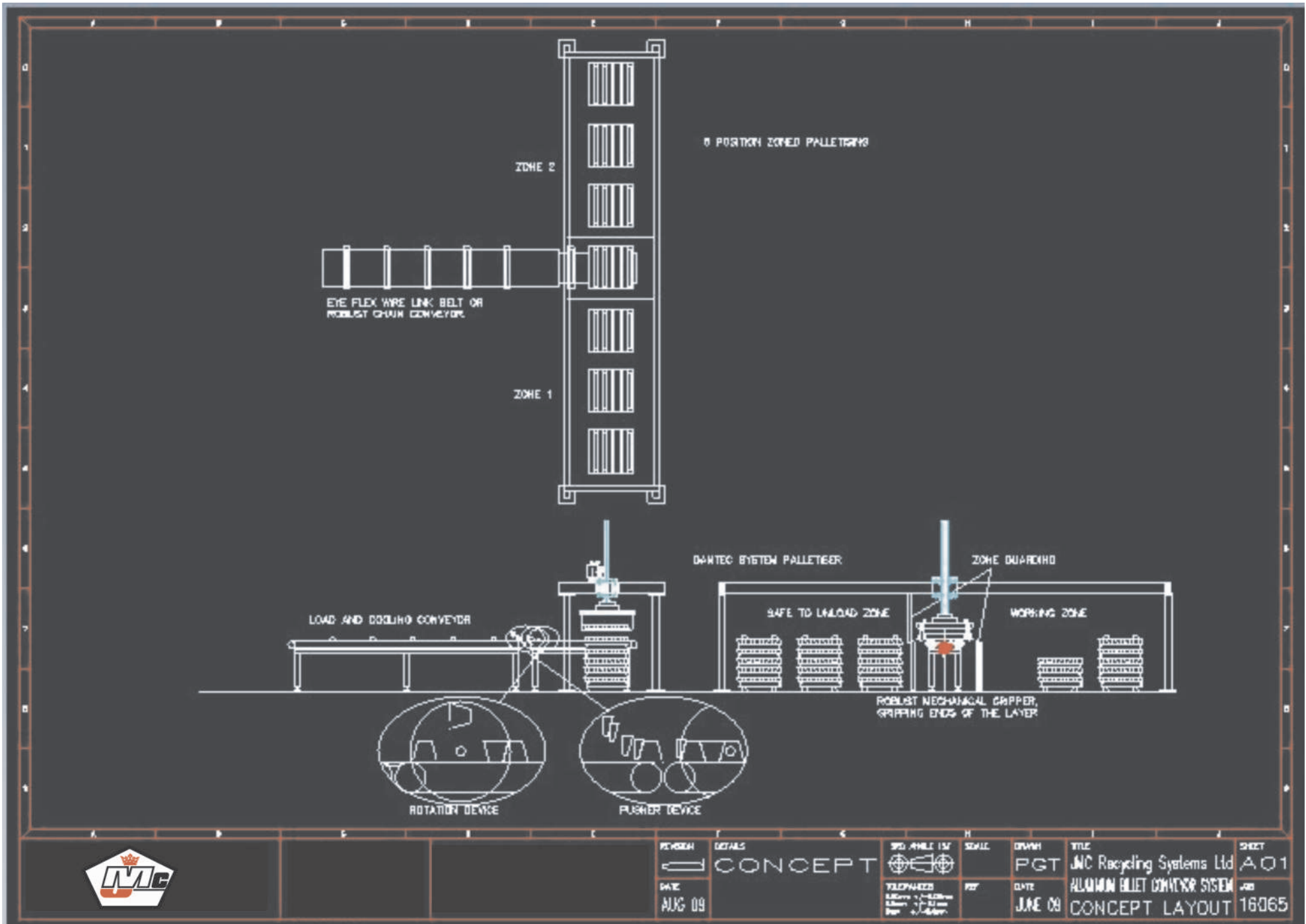
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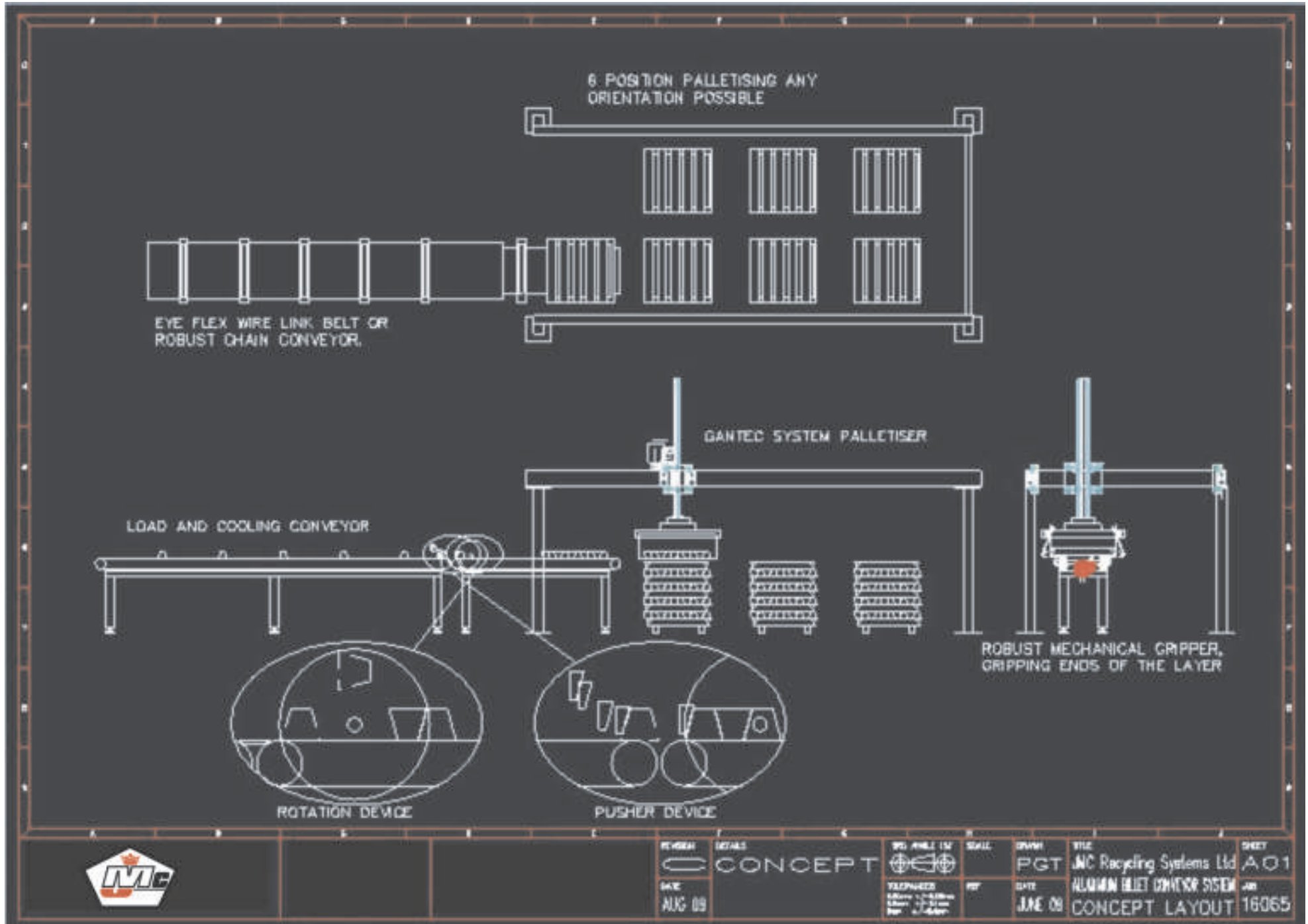
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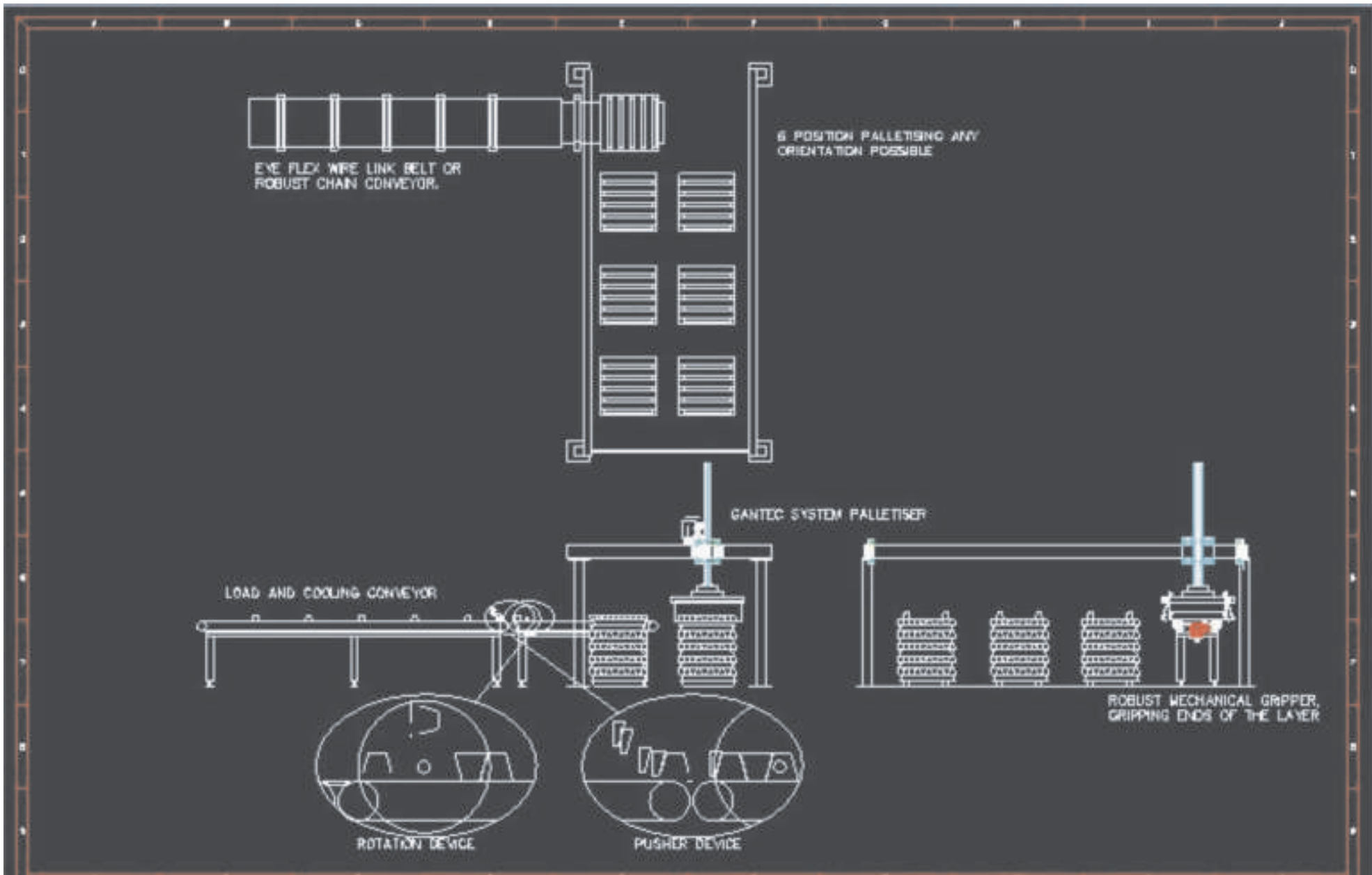
Custom designs, multiple options available



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REVISION	DETAILS	3RD ANGLE 1ST	SCALE	DRAWN	TITLE	DIST
CONCEPT				PGT	MRC Recycling Systems Ltd	A01
DATE		TECHNICAL	PROF	DATE	ALUMINUM BILLET CONVEYOR SYSTEM	JAN
AUG 09				JUNE 09	CONCEPT LAYOUT	16065