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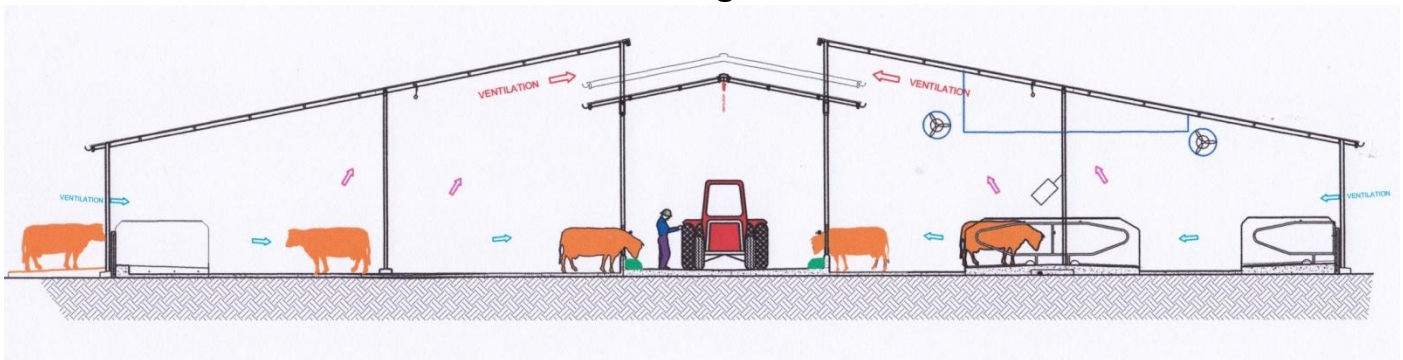
Note: Due to ongoing development, details described may be superseded; a current specification is provided with your quote.

Marsden Engineering proudly presents the

Marsdezyn Cow Lodge System

A revolution in Dairy Cow Management

Patent Pending 622443NZ



Is it a Feed Pad? A Stand off Pad? Shelter Barn? a 24/7 Wintering Barn?

The answer is 'e) all of the above'; and more, as much as you want, when you want it!

You can't dictate the price of milk, so the next best thing is to increase the amount you sell and minimise the cost. Given typical land constraints, a logical strategy is to increase production by intensifying, thus keeping more cows and squeezing out more milk, for longer. Poor cows, and, poor environment—but only if you take miserly shortcuts. Done properly, you have happy cows, reduced waste and costs, more milk, and an improved environment. But how do you make that giant financial leap, with finances stretched tighter than Robin Hood's bowstring? The best way to start any journey is with a modest step, rather than a giant leap.

The Marsdezyn (Marsden-Design) modular construction "Cow Lodge System" is a unique, all-Kiwi engineered, combined pad and building design that can be constructed progressively, at whatever size you want, and with each construction stage performing a specific function rather than just getting bigger. In this way a herd can be managed through various stages of intensification that suit the budget you've got rather than the one the bank says you can't have. At any time, you have the flexibility to advance the system by as many stages as you want, at any size you want—the facility can stretch, just as it can also be erected piecemeal.

The Marsdezyn is a backward design; not backward as in primitive, but backward because it first focuses on the end result: a free-range, free-stall, 24/7 cow accommodation facility, and then cleverly engineers backward to create

the various functional stages leading up to that. It starts where it wants to finish, and progressively prunes back what you can't afford now, to arrive a stage that you can afford, and will still generate a payback.

Confused? Consider an example. Many farmers have started with a Feed Pad for supplementary feeding, but because that is all it is designed to achieve, that is all it can ever be. Erecting *any* kind of building over it later is fraught with expensive difficulties, let alone something with the disciplined geometry required of a cow barn. The falls and drainage are wrong, feed trough placing and access interferes with column and bedding placement, extensive demolition is needed to install foundations, alleys don't suit auto-scrapers, and so on. A recent case study showed that a farmer could save \$100,000 on a retrofit building construction by abandoning all of the previous work and starting again on a new site. Although the first investment paid for itself, it was effectively a write-off, to be rebuilt and paid for a second time to get to the next construction/production stage. Constructing things without a strategic plan is like shovelling money into the wet concrete; it becomes too hard to get it back.

By contrast, the *Marsdezyn* system begins with as little as a bare Feed Pad and works up through several stages to full cow accommodation, with very little temporary work and no significant demolition between stages. Even if you don't intend to go that far, it gives peace of mind knowing that you can; it is future-proof. If you ever sell the farm, your asset is more attractive to a buyer because it has potential to develop, which other facilities lack.

The *Marsdezyn* Functional Stages are as follows:

Stage 0 (no building) An open Feed Pad is constructed, to allow efficient supplementary feeding of cows with minimal waste and with effluent capture (see drawing CLO-SALES-004). As much as 50% of feed can be wasted by feeding on the ground, due to rain, sun, trampling, and cows toileting and laying on the feed. Uneaten feed, ground churning, and concentrated toileting all adds to biological overload of the feed area, forcing frequent relocations to dilute the land damage. The pad resolves these issues and also ensures hygienic feeding; feed and cow-bums are kept separated, and the feed vehicle stays off the cow areas, to avoid tyres spreading filth into feed. The Marsdezyn pad incorporates the necessary foundations and geometry to move painlessly to the next stages. The entire facility slopes gently toward an effluent collection cross-channel at one end, to avoid rainwater and urine forming a lake; and dung is swept into this channel either by manual bulldozing, or automatically using a Marsdezyn *Dung-Out* scraper system. Marsdezyn precast concrete Feed Troughs, complete with neck rails, are added temporarily to the perimeter; this provides the 700mm-900mm/cow feed space required for batch feeding. (The finished Lodge with continuous feeding requires only the permanent central feed lane). The pad is typically 75% of the finished Lodge length and has 7m wide cow alleys. Marsdezyn *Cleanfast* tipping water troughs may be included. Payback comes from feed savings, increased milk output from the supplementary feed, and reduced labour due to close feed proximity.

Stage 0+ An Open Stand-Off Pad is the same as the Feed Pad, but wider (13m instead of 7m cow alleys), and the perimeter temporary feed troughs are optional, due to the longer feeding time available. The increased pad area allows cows to be kept off saturated pasture for a few hours longer, to reduce destructive ground churning. The limitations, to be addressed in subsequent stages, are:

- Cows can only stay on this concrete floor for short periods due to hoof pressure.
- The added space allows some temporary bedding material (e.g wood chips or sand) to be laid in the middle, but this should only take place after roofing to exclude rainwater.
- Automatic dung scraping is not practicable for the greater width of a Stand-Off Pad.
- There is no shelter for relief from the weather, so cows still burn calories keeping warm instead of making milk, or overheat in hot sunny weather (no shade), reducing output.
- Rainwater joins the effluent, increasing effluent storage and disposal issues and cost.
- Feed is exposed to rainwater and sunlight degradation.

- Stage 1** A shelter is erected over the central feed lane; this will become the structural "spine" of a much larger building later. Feeding can now continue in any weather without feed degradation, and some rainwater is collected and disposed separately, reducing effluent burden.
- Stage 2A** A Covered Stand-Off is created by erecting a building wing on one side of the feed lane "spine". Loose bedding may now be provided to enable cows to be held off wet pasture for longer. Cows are fully sheltered from the weather and calories are used to make milk instead of burning away in shivering, or lost to sweating in hot direct sunlight. Rainwater is now 60% captured, significantly reducing effluent volume. Remaining limitations of this stage are: high bedding cost/maintenance and compromised hygiene; uncontrolled use of space means fewer cows per square meter can be housed than in a free-stall Lodge; cleanout is labour intensive as automation is not practicable; half of the facility is still uncovered.
- Stage 3A** Covered Stand-Off is completed by erecting an identical wing on the other side of the spine. Stage 3A can happen before or after Stage 2B described below.
- Stage 2B** One wing is upgraded to a "Cow Lodge": Complete 24/7 free-range, free-stall accommodation for the cows. This includes raised sleeping benches with soft impervious hygienic mattresses, *Cleanfast* tipping drink troughs, *Moo-sseuse* rotary back-scratchers, daylight-simulating LED lighting to extend the season, and *Dung-Out* automated dung removal. Cows in this hygienic, pampered environment yield their maximum milk potential, and for longer; a happy healthy cow is a productive cow. A cow must lay down for 8 hours per day, and if encouraged, will lay for up to 11 hours. A study of Holstein cows in the US indicated that for every extra hour a cow could be encouraged to lay down, it produced 2lb extra milk. Labour is minimised, bedding waste and maintenance eliminated, and effluent is fully captured, free of rainwater. It is now possible to leave gates open and let cows freely circulate to the paddock whenever they wish, eliminating the "cage-farming" image that shames farm intensification. Cows don't have to be forced back into this comfortable environment, any more than your kids need to be forced to eat chocolate. The only limitation of this stage, is that the other side of the building is still just a shelter.
- Stage 3B** The second wing is upgraded to a Lodge. Job done! Now the whole herd delivers all of the benefits.

F.A.Q

How long Does it take to build?

The optimum economical build time is 7 months for a complete Cow Lodge. A faster program is possible but has cost penalties. For example, all of the steel is bought pre-cut from the mills so that there is no wastage in off-cuts, delivery can take up to 10 weeks, waiting on mill runs. A fast program using standard stock lengths instead will typically add 30% to the cost of materials and cutting. There are other similar time/cost factors, such as using more expensive earthwork machinery and special temporary drainage to work in all weather instead of just on fine days. If you want to be running in November, you should place an order before April. A Feed Pad has about half of the construction time, but is still weather dependent and may take the same time for consents. Remember also that you may not be the only customer, and in terms of work priority, it is first-come, first-served.

Marsden Engineering is based in Geraldine—how far away can ME operate?

Currently, ME is limited to the Canterbury Plains general area for direct supply and construction of a Cow Lodge. Construction further afield requires special arrangement with suitable local contractors. This will impact time and cost.

What does it cost?

We offer a technically excellent system, and use our unique (patent pending) design to build it for a middle-of-the range price. i.e. Offering value for money rather than a cheap/dirty design with subsequent regrets. A complete Cow Lodge therefore typically costs \$3,600 to \$4,300 per cow depending on size, cows, site, and optional extras.

The Stage Zero Feed Pad for the same number of cows is typically 20-30% of that, depending mostly on earthworks and site concrete cost. Of the Feed Pad cost, typically 5-7% is buried foundations for subsequent stages (future proofing). Temporary perimeter troughs may be leased to reduce capital cost 10-15%, or purchased and then sold back at the next stage. (We don't have a stock of used units to offer yet). Cost can be reduced about 40% by halving facility size and feeding cows in two batches.

All options/stages include effluent collection as far as a sand trap (or sump). Treatment/storage/disposal, etc, are not included above, likewise the feed vehicle turning loop, yards, races, paths, roads and fencing, which are all site-specific.

As you shop around, you will find that the Marsdezyn is good value for money compared to the competition.

How do I work out Payback and put together a proposal for my banker?

ME are not farming experts, and you should work out a development strategy, and a management plan, with a specialist dairy nutrition and farm consultancy. If you like, we can meet together with a consultant on your farm or at our Geraldine office for a round-table discussion. A general principle for the most economic development (best payback), is "big is best". Big cows cost almost the same to house per head as small cows, but yield more milk. Big projects and more stages executed at once dilute the fixed costs, and reduce the number of restart costs. There are other factors to consider, however.

In the new scenario, providing feed other than grass adds a new instant cost, whose impact is very farm dependent. Running low producing cows "hungry" to crop grass short and maximise its annual yield, can yield more calories off some land than cropping it. Against that, hungry cows work more and produce less. A bang-for-buck scenario may be to maintain a prime herd of the best cows in an intensively managed regime, and retain the leftovers to graze land not suited to cropping, and to glean remnant calories from harvested land (and/or use other stock for that).

Then there are wild-card cost and payback factors, such as the cost or impracticality of managing cows around several holdings, or maintaining a viable herd size on a small holding, or across land broken up by roads, rivers, etc. Rather than investing in duplicate milking sheds and extra farm workers, for example, it may be better to invest in an intensification facility (e.g. feed pad, Cow Lodge) adjacent to one good shed, and move the feed instead of the cows. On any farm, situations such as drought may also force some feeding out, in which event having even a small feed pad to reduce losses and feed efficiently can help to reduce the cost impact.

What about layouts, permits, and quotes?

Our free service includes a CAD layout proposal for a Cow Lodge System on your farm, and budget cost estimates for various options and stages (our Cowculator can deliver a quick estimate for most situations). A full quote is also free when you decide on a proposal to pursue. Resource consents and the like are to be arranged by you, and ME will process a building permit on your behalf. The consultants, Davis Ogilvie & Partners, will perform the statutory duties related to the structural design and earthworks design; they will also arrange for site surveying as necessary. If you need help with consents, they can also assist you directly with that. The more stages you build at once and the less time between them, the less permits or renewals you will need.

What if I get halfway through and find I got the size wrong?

What do you do with the extra 200 cows you just bought?

The pads or building can be stretched lengthwise at any time. If you are reaching the practical limit of length for a single building, then another can be built alongside, sharing the effluent collection system. This is where the Marsdezyn really comes into its own, because the unique low profile design (enabled by the Solar-Boost

ventilation system), allows Lodges to be erected closer together than conventional barns, as they are less prone to wind-shadow interfering with the ventilation.

What is this "Solar-Boost" ventilation?

See drawing CLO-SOLAR-01 (patent pending 622443NZ). The Marsdezyn's heart is the unique Solar-Boost ventilation system, invented to cool cows in 'cow-killer' hot windless weather. It is easy to ventilate a building using wind flow methods, but the time when you *most* need to remove heat is when there is no wind! Cows can survive cold fairly well, but excessive heat will dry them up or kill them; it just takes one super-sizzler day and the damage is done. As well as solar heat gain to remove, the cows also generate significant body heat and airborne contaminants that need to be removed to maintain air quality. Ventilation is therefore *the* most critical, dominant factor in accommodation design.

Conventional barns are extremely tall to create a convection chimney effect for still-day ventilation, making them expensive, precluding staged construction, and forcing wide separation of buildings to avoid blocking each other's airflow. The visual bulk of these land-eating monsters may also upset the neighbours. The Marsdezyn however, tips the chimney effect over on its side, enhancing horizontal air flow and allowing a low-profile construction. (The Marsdezyn is 7m tall compared to a typical equivalent barn at 12m tall). The building wing roofs are white (or a pale colour such as desert sand) to reflect sunlight; but the central spine roof over the feed alley is black, to absorb sunlight. This local hot spot heats the air above it, causing it to rise faster, and drawing in replacement air from the sides. Because this spine roof is set down below the wing roofs, the replacement air that it draws, comes from *underneath* the wing roofs—the hot spine literally vacuums air out of the building.

What if I have an exceptionally hot local climate?

The spine roof will be set down to its lowest limit to increase the ventilation gap. However, no natural ventilation system is a silver-bullet solution, because pulling air that is already too hot into the building, won't make it any colder. If excessive heat is a problem, then ME can fit a system of fans and water sprays to wet the cows and cool their bodies directly by evaporation. This can be retrofitted at any time.

What if I have a very cold local climate?

The spine roof will be set at its highest position so that there is a smaller ventilation gap, reducing airflow. If winter wind penetration is a problem, then there are proprietary screen systems that can be bought to screen one or both of the side walls; ME can arrange this for you if you wish.

Can the Spine Roof ventilation gap be adjusted later?

Yes, the spine roof can be raised or lowered at any time after construction, if necessary; the ability to "tune" ventilation like this is a unique Marsdezyn feature. If the ventilation gap proves too large in winter but about right in summer, then moveable flap screens can be provided instead, to partially close off the gap, rather than adjusting the roof height.

What about hygiene and vermin control?

Shelter, food, loose bedding—all attract vermin, and their excrement can contaminate beds and feed with nasty bugs such as salmonella. The entire frame of the Marsdezyn Cow Lodge is RHS box section, with RHS purlins set flush with the rafters, and roof sheeting directly on top of that; there is almost nowhere for a bird to perch, let alone make a nest. The impervious permanent bedding offers no rodent habitat, unlike loose straw or woodchips; and unlike some designs with grated floors, there is no dung collection basement for vermin to hide and nest in. Dung is removed continuously by scraper, so there is no time for flies to breed in it, or for it to stew and stink.

Cows lay on a clean, cleanable mattress, and are oriented by stall dividers to keep the grubby rear end pointed at the alley, not the bed. Contrast this with loose bedding in a stand-off type facility, where cows wander all over the bed dumping their contaminants at will; their bed soon becomes a matt of organic material cemented together by each other's poo, crusted over a festering stew of bacteria. Some suppliers suggest that their facility's transparent roof allows UV light in to sterilise the loose bedding; however, UV can only treat the surface, while the bugs run riot underneath. When the cow walks in and lies down, the bed is churned and she lays in the stew.

Keeping the udder clean by using a proper bed is good for everybody, cow included. With defined stalls, cows also tend to habitually use the same bed, reducing the tendency to cross-contaminate bugs.

Clean food and water are also key elements for maintaining cow health. The feed delivery vehicle travels along a dedicated central lane inaccessible to the cows, so that it is dung-free, and no dung is flicked from vehicle wheels into food. The sides of the lane, bordered by low concrete walls, are the cow's dinner plate. Concrete here is smooth to be kind to the tongue, and high density to resist absorbing food juices that could go "off" and taint feed. Dry feed adheres to a cow's face and then washes off into drink troughs, rapidly building up decomposing sludge and slime. The *Cleanfast* tipping water troughs make frequent dumping of this settled waste easy, and the stainless steel surface resists slime better than plastic or concrete, and is easier to clean.

What do you mean by "All-Kiwi engineered"?

All of the design originates here in Canterbury, made for NZ conditions, and wherever possible using locally stocked components and materials. (If you prefer a particular imported product, such as mattresses or cow brushes, then that may be substituted). We aim to support the local economy and to improve maintainability by using parts that you can buy yourself, off the shelf in NZ. Your local workshop should be able to carry out any routine maintenance, without drama; our aim is to be wanted, not needed.

Who is actually designing and building this thing?

Marsden Engineering have a permanent professional engineer, BE (mechanical) MIPENZ, with more than three decades of experience, who designs the process architecture, building architecture, and machinery. Acting as head contractor, ME constructs and erects the steelworks and machinery, and makes moulds for special precast concrete units.

Structural design is carried out by Davis Ogilvie and Partners, professional engineering consultants.

Electrical works are designed and executed by Laser Electrical Ltd.

Other contractors may typically include:

Roofing and guttering by Dan Cosgrove Ltd.

Concrete works by Paveco of Ashburton, assisted by a subcontract builder where necessary.

Earthworks by Blake Downie Ltd.

Mattresses by Viking Conveyor Ltd

Numerous other NZ suppliers for components and materials.

I would like to do some of the work myself, is that okay?

Some farmers are also contractors with construction equipment and skills, and if requested, ME will engage with them in the same way as with any subcontractor; or if you are really keen, ME will provide a DIY kitset and leave you to it. Obviously ME can only be responsible for its own work and that of its own subcontractors; anything you do yourself, you take responsibility for. However, the Structural Engineer Consultant cannot be substituted and the design cannot be altered—various statutory duties preclude this.

What Guarantee does ME offer?

ME will guarantee its own workmanship and that of its subcontractors. Any machinery or construction defects (i.e. other than wear and tear or physical damage) will be rectified as far as is practicable, free of charge, for up to **5 years** from the date of erection. ME has no control over weather, cow metabolism, feed quality and other aspects relating to performance and hence can't offer any performance guarantees.

What about Effluent?

The Cow Lodge comes complete with its own self-contained effluent *collection* system (not treatment). *Dung-Out* automated scrapers transport dung out of the Lodge to an in-ground channel, that conveys it to a sand trap "wedge" (this is a large sump with a ramp for a front end loader to drive in and clear out settled sand / mud / stones from time to time). The entire Cow Lodge facility slopes gently toward the collection channel, so that urine and hose water can to some extent flow out by gravity, assisting the scraper by reducing its liquid loading. The slope is adequate to drain off rainwater for the Stage 0 Feed Pad. A pump in the wedge delivers the effluent to

the farm treatment system. As an optional extra, if the disposal system requires, ME can provide a solids removal screen-press facility at the wedge.

Three effluent collecting systems are offered:

Option 1 flumes the dung to the wedge using recycled treated effluent, this is only available where the effluent treatment is adjacent or a screen is fitted at the wedge (to provide the recycled water). Marsdezyn precast stainless-bottom flume units are used.

Option 2 has a 400 wide x 500 deep precast channel with Marsdezyn internal reciprocating wiper to transport the dung to the wedge.

Option 3 (not recommended) is the industry status-quo method; the channel is 1000 x 1600 deep with a weir to retain a pond along it. Dung floats on the pond and is driven to the wedge by hydraulic pressure from its own weight, like a manure glacier. This system can choke if dung is dry. Unlike options 1 & 2, the channel also accumulates settled material such as sand, mud, stones, tramp metal, etc. This requires lifting heavy covers and manual cleanout. The deep channel and deeper sand wedge sump make this more expensive than options 1 & 2, and the sole benefit is the absence of machinery to maintain.

ME does not currently provide effluent disposal expertise or systems, although our cooperating subcontractor Dan Cosgrove Ltd, manufactures large effluent storage tanks, for where the water table is too high for a pond.

What about milking?

ME does not offer any milking systems, but will cooperate with a provider of your choice to integrate a milking facility with the Lodge development. This is best kept as a separate facility at the end of the Lodge, for versatility and to avoid design/construction complexity. This also avoids plant duplication, as the Spine alley effectively divides the Lodge into two separated herds.

What about yards, gates and fencing?

ME does not currently offer overhead electric or backing gates, but may do so in the future, if demand exists. The Lodge gates and immediate yard area fencing and manual gates can be provided, and also a CAD layout of yards to suit your site. However, a Lodge is a large build and ME needs to keep its site workload to a minimum, to avoid depleting the workshop resources. If significant work is required, then either ME or the farmer may need to engage a specialist site contractor to execute yarding cost-effectively.

How good is the lighting?

The Lodge has a white ceiling that reflects light, and low-profile purlins to maximise its effectiveness. Diffused (indirect) daylight enters through the open side walls and the deep vertical ventilation openings along the spine. These features make transparent skylight sheeting unnecessary. We do not recommend skylight sheets as they create a lethal fall hazard on the roof, are vulnerable to wind damage, cause uneven lighting (bright stripes) and they let in direct solar heat as well as light, creating a greenhouse effect that adds to hot weather heat load. To extend daylight hours to maintain production at the darker ends of the season, artificial lighting is used. The LED lamps mimic daylight colour and are the most energy efficient solution available; they also deteriorate less in output and last much longer than other lamps. Access is always difficult to barn lighting, and so the low maintenance LED has a big advantage. (Cheaper halide lamps are available if preferred). The standard offer is for a single line of lights down the length of each wing, concentrating approximately 180 lux of light on the middle double-row of beds, to promote wakefulness. The building perimeter beds receive overspill light; but increasing this to the same intensity would require an extra line of lights, which is rarely cost-effective. If there is such a thing as owls and larks amongst cows, then having a less-bright area for the larks may be beneficial anyway, since the philosophy of a Lodge is to let cows self-regulate and self-manage to suit their own personal physiology.

How good is the corrosion protection?

The building steel frame is pre-galvanised (Supagal) material, with all exposed components such as cleats zinc plated, and welds coated with a compatible paint system. For long life, steelwork is strategically located clear of the chemically aggressive floor areas, and at higher levels, attachments either clamp or bolt rather than welding, to avoid penetrating the coating. Column feet are all concrete encased. As an optional extra, a thick protective

coating of resilient polyurethane "bed liner" can be applied, typically for the first 1.5m up from floor level. Alternatively, the entire construction can be painted over—how much you want to invest is your choice.

Why fit cow brushes?

As well as saving valuable assets from destruction by itchy cows, a cow self-grooming *Moo-sseuse* rotary brush cleans the hide and stimulates blood flow, improving health and wakefulness. At least one study has recorded a decrease in clinical mastitis and a slight increase in milk yield; a wide awake cow will feed and produce more. Cows will typically groom themselves 3 to 6 times daily, and the 2-axis-swing brush satisfies this need by effectively reaching a high proportion of the body. Brushes can be cheaply replaced or reconditioned, and the IP56 hose-proof motor is robust and long-life. The whole unit can be unplugged and exchanged without needing an electrician, and its electrical box includes a single-phase power outlet for general maintenance use.

How does the *Dung-Out* alley scraper work? Doesn't it bother the cows?

Hinge-winged scrapers are hauled at very slow speed by an endless heavy chain, looped around two alleys. While alley 1 scraper sweeps dung toward the effluent channel, alley 2 scraper reverses back to its start position; the drive then reverses, and alley 1 retracts while alley 2 sweeps forward. Cows easily step over the low, slow scraper and after a while, barely notice it. When reversing, the scraper arms fold back to avoid bumping cows and back-shunting dung up the alley. The folding plough is able to work on an open pad, unlike non-folding types that only work in a confined alley, because they would otherwise clash with each-other. Safety trips defend against injury to workers or to any cow that has fallen or laid down in its path.

Why use a chain scraper for dung removal, instead of a cable scraper?

The *Dung-Out* chain is extremely strong compared to cable-hauled systems, and will not fray and cause protruding sharp wire needles that could injure and infect cow legs. The unique Marsdezyn ultra-long progressive automatic take-up and open drive unit also solve the problems of high maintenance and difficult machinery cleaning, common to competitors' chain scraper designs. The entire unit is made by ME using locally available components, making servicing a breeze compared to imported units full of exotic drives and special widgets.

Stall Dividers come in a bewildering variety of shapes, what is the story with that?

In a nutshell, stalls provide regulated individual spaces for cows to stand or lay on a comfortable surface, relieving foot pressure and promoting healthy rest. The dividers prevent cows from encroaching on neighbouring beds, and make them point the dirty end at the alley, to minimise the dung/urine dumped on the mattress. The Marsdezyn divider geometry is based on a reputable US university study and field observations. Dividers are locally made, from galvanised steel pipe. Other makes have differing shapes and materials, and opinions widely diverge on their relative merits, largely depending on which salesman you are talking to. ME will install a different make of your choosing if you prefer.

What about mattresses? The variety is confusing.

There are many types and makes of mattress available, each with its own strengths and weaknesses, and life expectancy—most are imported. Marsdezyn Mattresses are locally made, available in two types.

- The **Marsdezyn Monolith** mattress, built in-situ on the full length of the concrete bench, comprises a waterproof sealed-cell PE foam core covered by a heavy reinforced PVC sheet with a shallow grip-tread pattern. The inherently waterproof PE core is leak tolerant, but will eventually compact and lose resilience. Alternatively, a latex type foam core can be used that will maintain resilience almost indefinitely, but not being waterproof, it requires an extra polythene jacket, and it is not tolerant of punctures. With either core, end of life means total replacement with a lot of in-situ installation work.
- The **Marsdezyn Unit** Mattress comprises a latex type foam core fully encased in a welded heavy PVC jacket. It costs about 30% more, but lasts longer and in event of damage or excessive wear, individual Units can be replaced or sent away for repair. End of life replacement is therefore piecemeal and spreads the cost; it also takes a lot less site work to replace.
- Alternative imported proprietary mattresses ME can offer include **Kraiburg** Wingflex, **Easyfix** Foam Mattress modules, or other of your choice.

Brisket Pillows ("brisket boards") serve to optimally locate the cow on the mattress as she lays down, without discomfort, and allowing her to lay a leg over the top if desired. ME currently offer as standard a robust profiled timber unit, made locally. Alternatives include as first preference the Kraiburg Ergoboard flexible rubber unit (slightly cheaper), and otherwise any other proprietary system of your choice. Cost differences are minimal and so your technical preference should prevail.

What next?

Call today for a chat, (03) 693 9634 (extension 2) or email to the address above.