

The Composters' Guide to Buying Equipment and Services Compost Turners and Mixers

The Composters' Buying Guides provide readers with an insight into the world of buying technology and expertise, as well as providing a directory of the products and services currently available from members of the Composting Association. Following on from previous guides, this feature will concentrate on Compost Turners and Mixers.

The composting process improves when the feedstocks are initially well blended. It improves further if the materials are occasionally mixed and agitated as they decompose. For these blending and agitation functions, composters rely heavily on two types of equipment -- compost turners and mixers.

While both turners and mixers agitate and mix feedstocks, they primarily serve different purposes. Mixers prepare feedstocks for composting. Turners advance the composting process. In fact, mixers are more often used where turners are not, for composting methods that principally employ static piles, bins and vessels. Regardless of which piece of equipment is needed, it is important to choose wisely. A mismatched, poorly sized or poorly maintained machine can severely impair the efficiency and safety of the operation..

Priority on Health and Safety

Turners and mixers are powerful mechanical devices that inherently present health and safety hazards. Design features and sensible operating practices can greatly reduce, if not eliminate, such hazards.

Laws in the UK impose certain responsibilities on the manufacturers, suppliers and users of work equipment. Manufacturers and suppliers must deliver a machine that is safe, meets accepted safety standards and carries the CE (for "Caveat Emptor") safety marking. Users are obligated to ensure that the equipment is operated appropriately and safely for workers, which includes adequate training, and equipment must be maintained to comply with safety requirements. Thus, a low-priced second-hand machine can become expensive if it needs substantial modification and maintenance to make it safe.

When purchasing a mixer or turner, evaluate the equipment with regard to the safety

of the operator, other site workers and bystanders. As a minimum, make sure the equipment has the CE mark. Examples of positive safety features for mixers and turners include enclosed air conditioned cabs with ventilation filters, shields or curtains for intercepting projectiles (more important on straddle turners), guards that prevent accidental falls in mixer hoppers, slip-resistant platforms, ergonomically designed operator controls, dust suppression options, noise minimisation and easy-clearing of jams, debris and dust. For in-depth health and safety guidance, refer to *Health and Safety at Composting Sites: A Guide for Site Managers*, available from The Composting Association.

Compost turning equipment

Turning accelerates composting in several ways. It mixes the composting mass, breaks apart particles, disturbs pockets of irregular materials and disperses moisture, nutrients and organisms. It also introduces fresh oxygen-rich air and concurrently releases trapped moisture, heat and gaseous by-products. Although turning does provide immediate aeration, the effect is short-lived as the oxygen introduced is quickly consumed by the composting organisms. Between turnings, windrows must obtain oxygen via either passive modes of aeration or blowers. The combined impact of turning is to invigorate the composting process. The positive effects are greater with diverse or poorly mixed feedstocks, when oxygen is limiting (e.g. passive aeration) and at the early stages of composting.

Turning can be accomplished with conventional handling equipment, like bucket loaders and excavators.

However, specially designed compost turning machines can do the job faster, more

Komptech's Top Turn X67 in operation



effectively and with added utility. Two broad categories of turners are commonly used for composting in the UK: straddle turners and side turners. Many models are self-sufficient, with an engine to power the mechanisms and transport the turner. Other models are self-powered but require a tractor or wheel loader for travel. A few turners are completely reliant on a tractor or loader, drawing power from the vehicle's power take-off drive (PTO) or hydraulic system. These turners encompass a variety of additional features that determine their mechanical action, mode of traction, power transmission, discharge mechanism, frame design and additional functions. The choices narrow substantially after considering the factors, conditions and objectives of the composting operation.

Types of turners

● Straddle Turners

Straddle-type turners straddle the width of a freestanding windrow and turn the windrow in place as they move down the length. A horizontal rotating shaft, drum or "rotor" imparts a lifting and mixing action to the compost via auger flights, paddles, flails, knives or other tools mounted on the rotor. The rotor and tools are also designed to move the windrow contents from the interior to the exterior of the windrow. Most straddle turners leave the windrow in roughly the same location and shape as it started (straight through discharge). The housing above the turning mechanism envelops and shapes the windrow to a certain width and height. Widths range from approximately 2.5 to 7.5 metres and heights from 1 to 3.5 metres. Options for straddle turners are numerous, including self-contained units, tractor-assisted, wheels, tracks, drive units, irrigation, windrow cover/blanket handling, side and bottom scoops, speed and rotor controls, various operator cab features and engine types.

● Side Turners

Side turners characteristically discharge the turned compost to the side. In doing so, they shift the location of a windrow or pile. Two types of side turners are common - side cutting and elevating face turners.

Side cutting turners have developed with the practice of composting in wide trapezoidal piles (flat on top with sloping sides). Side cutting turners remove a layer of compost from the exposed face of a pile and then discharge the compost on the face of another pile on the opposite side of the turner. The turner, which may be self-contained or coupled to a tractor or loader, drives in the aisle between the two piles. Depending on the model, the turner removes the compost from the pile with one or more rotating shafts or drums fitted with teeth, paddles or

other tools. A conveyor discharges the compost across the aisle.

With most side cutting turners, the shaft rests on the sloping face of the pile where it shaves off a layer of compost as the turner travels forward. The depth of each cut typically ranges from one-half to one meter. These turners work with the cutting shafts at a near vertical orientation so the length of the shaft determines allowable pile heights, roughly 3 to 5 metres. Other models of side cutting turners use a combination of rotating shafts, vertical and horizontal, to carve out a slice of the pile. The width and height of the cuts are approximately 2 and 3 metres respectively.

Elevating face turners employ a wide backward sloping conveyor with cleats or teeth attached to the face of the conveyor. As the turner moves forward, the conveyor acts like a wedge lifting compost from the base and face of the windrow/pile. The compost is carried to the top of the conveyor where it is deposited on a second conveyor, which deposits the compost several metres to the side (or back) of the turner. In one pass, an elevating face turner can turn the width of a windrow or a slice of a trapezoidal pile. The conveyor face, and thus the width of the turn, ranges from 2 to 3 metres wide. Some models are tractor/loader towed but have their own power unit. Self-driven models have a side cab for the operator and can work in tight spaces with very little aisle space required between windrows.

● Auger Turners

Auger turners have a horizontal rotating shaft with either flights or paddles arranged in an auger-like fashion. The shaft is shrouded in the back by a curved housing, which gives the turner the appearance of a snow blower. The turner is typically mounted on the front of a tractor, wheel loader or skid loader that pushes the turner through the windrow or pile. The flights or paddles lift and spiral the material to one side as the machine moves forward, displacing the windrow or pile to the side. The vehicle usually powers the turning mechanism but some models have their own power units. Auger turners can turn individual windrows and slices of large piles, with the width of the cut determined by the shaft width (2 to 3 m). Windrows and piles are limited in height by the diameter of the shaft paddles (1 to 2 m).

Tips for Selecting a Turner

The wide variety of compost turner types, models and features can make the task of selecting a turner seem overwhelming. However, the choices narrow substantially after you start to consider the factors, conditions and objectives of your composting operation.

● Composting Method

For composting in freestanding windrows, the options are straddle, elevating face and auger turners. Straddle turners have a greater selection of models, sizes and features. They are the standard for traditional windrow composting and have a long and proven track record. Elevating face and auger turners have also proven successful in windrow composting and offer the advantages of flexibility in windrow size and the capability to physically relocate a windrow.

For turning large trapezoidal piles, side and elevating face turners are the primary alternatives. Side turners are designed specifically for this purpose. Auger turners can also turn sections of large piles but at shorter pile heights.

● Throughput

To determine the required throughput of the turner (e.g. cubic metres turned per hour), divide the weekly volume of compost that must be turned during peak periods by the available time for turning. The throughput of a particular turner is determined by its working travel speed and the size of the windrow that it can handle. Larger and more powerful



Menart's 40 tonne 10330-SPMC model that can handle windrows of up to 11x3 metres

machines generally have greater throughput rates because they process larger windrows.

● Labour

All turners require one, and only one, operator. Therefore, for a given volume of compost, the labour requirement is determined by the throughput of the turner. An exception to the one operator rule is when water is being added from a tank truck or wagon driven by a second operator. The second operator is not needed if the turner includes an irrigation system.

● Site capacity

Turners that handle wider and, especially, taller windrows accommodate a greater volume of material within a given area. Also consider the aisle space required by the turner. Self-driven turners require less aisle space than towed models. (Trapezoidal piles are much more space-efficient than individual windrows.)

● Existing (available) equipment

Tractor-assisted turners are substantially less expensive than self-driven models. They are good cost-reducing choices if an appropriate tractor or loader is available for the required turning time. If a new tractor/loader must be purchased, it can be used for other tasks within the operation when the turner is idle. Self-driven models become more cost-effective when turning is nearly a full-time task.

● Feedstocks

Most straddle turners provide good mixing action and work well for diverse feedstocks that are not initially mixed. For feedstocks that can benefit from moderate shredding (e.g. leaves, light brush), consider a turner that imparts a more aggressive turning action. Conversely, if the primary interest is "fluffing" the windrow (i.e. decreasing bulk density), look for



Menart's diesel driven 5320-SPM

turners that lift rather than shred -- such as elevating face and straddle turners with a slower rpm and paddles with a flat aspect. Fluffing can improve passive aeration of windrows with dense homogenous feedstocks like manure, paper sludge and compost nearing maturity.

● Discharge options and materials handling

Elevating face and side turners have discharge conveyors that relocate the position of windrows and piles. Similarly auger turners inherently shift materials to the side. Straddle turners can be fitted with conveyors for side discharge but the option is available on only a few models. The ability of these turners to transport materials delivers several potential advantages including combining windrows or directly loading vehicles. Furthermore, windrows and piles can be laid out to 'migrate' from a distinct starting point (e.g. staging area) to a distinct ending point (e.g. curing pile).

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Straddle turners

Company	Contact Name	Contact Number	Email	Website	Model	Turning mechanism	Drive mechanism	Windrow width range (m)
Blue Machinery	Allan Kane	01786 469444	sales@bluemachinery.com	www.bluemachine.com	Backhus complete range			
KOMPTECH UK Ltd.	Paul Carley	01926 642972	info.uk@komptech.com	www.komptech.com	TT 300	Archimedes screw with paddles	PTO	3
KOMPTECH UK Ltd.	Paul Carley	01926 642972	info.uk@komptech.com	www.komptech.com	TT3500 Glorious	Archimedes screw with paddles	Diesel engine	4.8
KOMPTECH UK Ltd.	Paul Carley	01926 642972	info.uk@komptech.com	www.komptech.com	TT X 53	Archimedes screw with paddles	Diesel engine	5
KOMPTECH UK Ltd.	Paul Carley	01926 642972	info.uk@komptech.com	www.komptech.com	TT X60	Archimedes screw with paddles	Diesel engine	5.7
KOMPTECH UK Ltd.	Paul Carley	01926 642972	info.uk@komptech.com	www.komptech.com	TT X67	Archimedes screw with paddles	Diesel engine	6.4
Harry West	Jeff Auton	01948 840465	jeff@harrywest.co.uk	www.harrywest.co.uk	Seko SCV 320-MD	Horizontal rotors	Diesel engine	3.2
Harry West	Jeff Auton	01948 840465	jeff@harrywest.co.uk	www.harrywest.co.uk	Seko SCV 370-MD	Horizontal rotors	Diesel engine	3.7
Harry West	Jeff Auton	01948 840465	jeff@harrywest.co.uk	www.harrywest.co.uk	Seko SCV 470-MD	Horizontal rotors	Diesel engine	4.7
Harry West	Jeff Auton	01948 840465	jeff@harrywest.co.uk	www.harrywest.co.uk	Seko SCV 570-MD	Horizontal rotors	Diesel engine	5.7
Harry West	Jeff Auton	01948 840465	jeff@harrywest.co.uk	www.harrywest.co.uk	Seko Panter VTC 3000	Vertical rotors	Diesel engine	2.5
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	4300-SPM	Rotor	Diesel engine	4.8
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	5320-SPM	Rotor	Diesel engine	5.8
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	5330-SPM	Rotor	Diesel engine	5.8
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	4300-SPMC	Rotor	Diesel engine	4.8
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	5320-SPMC	Rotor	Diesel engine	5.8
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	10330-SPMC	Rotor	Diesel engine	10.5
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	3300-SP	Rotor	Tractor PTO	3.3
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	4300-SP	rotor	Tractor PTO	4.3
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	5300-SP	Rotor	Tractor PTO	5.3
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	4800-SP (new)	Rotor	Tractor PTO	4.8
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	8330-SPMC	Rotor	Diesel engine	8.0

Turners (cutting/elevating face)

Company	Contact Name	Contact Number	Email	Website	Model	Turning mechanism	Cutting Depth	Windrow width range (m)
KOMPTECH UK Ltd.	Paul Carley	01926 642972	info.uk@komptech.com	www.komptech.com	Sideturn 2000	Toothed Chain Conveyor	2	2
Vermeer	Jo Hatton	01933 274400	sales@vermeeruk.co.uk	www.vermeeruk.co.uk	CT670	Elevating Face	7ft/2.1m	1.8
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	3000-M	Rotors & Belts	2.75	n/a
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	3000-MTR	Rotors & Belts	2.75	n/a
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	I200-TR	Rotors & Belts	1.2	n/a
MENART	John Edstrom	01252 658 739	john.edstrom@ntlworld.com	www.menart-technology.com	I200-MTRA	Rotors & Belts	1.2	n/a

Mixers

Company	Contact Name	Contact Number	Email	Website	Model	Mixing mechanism	Mobile or static
KOMPTECH UK Ltd.	Paul Carley	01926642972	info.uk@komptech.com	www.komptech.com	Mashmaster I300	4 x Slow speed Augers	Static Electric
KOMPTECH UK Ltd.	Paul Carley	01926642972	info.uk@komptech.com	www.komptech.com	Crambo 3400	2 x Slow speed shredding Augers	Mobile & Static
KOMPTECH UK Ltd.	Paul Carley	01926642972	info.uk@komptech.com	www.komptech.com	Crambo 5000	2 x Slow speed shredding Augers	Mobile & Static
KOMPTECH UK Ltd.	Paul Carley	01926642972	info.uk@komptech.com	www.komptech.com	Crambo 6000	2 x Slow speed shredding Augers	Mobile & Static
Harry West	Jeff Auton	01948 840465	jeff@harrywest.co.uk	www.harrywest.co.uk	Seko 400/50-GT	2 augers + blades	Mobile
					Seko 450/90-GT	2 augers + blades	Mobile
					Seko 500/I 110-GT	2 augers + blades	Mobile
					Seko 500/I150-GT	2 augers + blades	Mobile
					Seko 600/I170-GT	2 augers + blades	Mobile
					Seko 600/200-GT	2 augers + blades	Mobile
					Seko 600/230-GT	2 augers + blades	Mobile
					Seko 650/250-GT	2 augers + blades	Mobile
					Seko 450/90-GC-T	2 augers + blades	Mobile
					Seko 500/I110-GC-T	2 augers + blades	Mobile
					Seko 500/I150-GC-T	2 augers + blades	Mobile
					Seko 600/I170-GC-T	2 augers + blades	Mobile
					Seko 600/200-GC-T	2 augers + blades	Mobile
					Seko 600/230-GC-T	2 augers + blades	Mobile
					Seko 650/250-GC-T	2 augers + blades	Mobile
					Seko 700/300-GC-T	2 augers + blades	Mobile
					Seko Constellation 6000/200-T	2 augers + blades	Mobile
					Seko Constellation 7000/300-T	2 augers + blades	Mobile

Windrow height range (m)	Windrow cross section (m ²)	Hourly capacity (m ³)	Discharge mechanism	Tracked or wheeled	Additional features	Power (hp)	Engine type	PTO option	New/refurb/hire	Price
1.6		500	Straight through		Hydrostatic drive	Minimum 60 hp Tractor			New	POA
1.8		1000	Straight through		Side displacement L & R	152 hp	Deutz Turbodiesel	NA	New	POA
2.4		2500–3500	Straight through		Side displacement L & R	340 hp	CAT	NA	New	POA
2.8		2500–3500	Straight through		Side displacement L & R	340 hp	CAT	NA	New	POA
2.95		to 4500	Straight through		Side displacement L & R	446 hp	CAT	NA	New	POA
1.3		250–900			Sprinkler	85	Diesel		New	£78,750.00
1.7		500–1200			Sprinkler	175	Diesel		New	£105,883.00
2.2		800–1500			Sprinkler	350	Diesel		New	£195,486.00
2.4		1000–2000			Sprinkler	350	Diesel		New	£244,721.00
3.0		1500–3000	Conveyor			700	Diesel		New	£341,206.00
1.8	to 5.0	to 1500	n/a	Wheeled	All SPM models	185	Diesel	No	New	Per Specification
2.2	to 7.5	to 2500	n/a	Wheeled	Sprayer tank assembly	325	CAT diesel	No	New	Per Specification
2.8	to 7.8	to 4000	n/a	Wheeled	Fleece cover assembly	420	CAT diesel	No	New	Per Specification
1.8	to 5.0	to 1800	n/a	Tracked	Same as SMP Models	250	Diesel	No	New	Per Specification
2.2	to 7.5	to 2500	n/a	Tracked	Same as SMP Models	325	CAT diesel	No	New	Per Specification
3	to 22.8	9,000 +	n/a	Tracked	None	950	CAT diesel	No	New	Per Specification
1.7	to 2.7	to 1100	n/a	Wheeled	A wide range	PTO = 90	n/a	n/a	New / Refurb	Per Specification
1.8	to 4.5	to 1500	n/a	Wheeled	A wide range	PTO = 100	n/a	n/a	New / Refurb	Per Specification
2	to 6.6	to 2000	n/a	Wheeled	A wide range	PTO= 125	n/a	n/a	New / Refurb	Per Specification
1.9	to 5.5	to 1800	n/a	Wheeled	A wide range	PTO = 110	n/a	n/a	New	Per Specification
3.0	to 16.8	7000 +	n/a	Tracked	Same as SPM models	700	CAT diesel	No	New	Per Specification

Windrow height range (m)	Hourly capacity (m ³)	Discharge mechanism	Additional features	Power (hp)	Engine type	PTO option	New/refurb/hire	Price
3	1500	Belt conveyor		340 hp	CAT	NA	New & Refurb	POA
2.1	1500	Rear vanes	Self contained engine, tow behind	48hp	Cummins a2300	N/A	Yes	POA
3.5	to 500	Belts	n/a	250	Diesel	No	New	Per specification
3.5	to 1800	Belts	n/a	360	Loader as transporter	No	New	Per specification
3.2	to 1500	Belts	n/a	PTO - 260 min	Tractor	n/a	New	Per specification
3.2	to 1500	Belts	n/a	350	Diesel	n/a	New	Per specification

Hopper size	Hourly capacity (m ³)	Batch or continuous loading	Exit length conveyor (m)	Additional features	Fuel type	PTO option	Power (hp)	New/refurb/hire	Price
4m x 22m x 2.7m	55	Batch	4.4	Load Cells	NA	NA	2 x 75 kW (100hp)	New	POA
4m x 22m x 2.7m	100	Continuous Loading	5.4		Diesel	NA	160 kW Elec/340 hp Diesel	New	POA
4m x 22m x 2.7m	150	Continuous Loading	5.4		Diesel	NA	200 kW Elec/456 hp Diesel	New	POA
4m x 22m x 2.7m	200	Continuous Loading	5.4		Diesel	NA	2 x 160 kW Elec/ 608 hp Diesel	New	POA
5m ³	10–12	Batch	0.8–2.4	Various	Various	Yes	40	New	£14,003.00
9m ³	25–30	Batch	0.8–2.4	Various		Yes	50	New	£19,284.00
11m ³	35–40	Batch	0.8–3.0	Various		Yes	80	New	£23,254.00
15m ³	40–45	Batch	0.8–3.0	Various		Yes	90	New	£26,113.00
17m ³	45–50	Batch	0.8–3.0	Various		Yes	110	New	£39,613.00
20m ³	55–60	Batch	0.8–5.0	Various		Yes	110	New	£42,975.00
23m ³	65–70	Batch	0.8–5.0	Various		Yes	120	New	£47,607.00
25m ³	75–80	Batch	0.8–5.0	Various		Yes	160	New	£66,137.00
9m ³	25–30	Batch	0.8–2.4	Various		Yes	50	New	£32,916.00
11m ³	35–40	Batch	0.8–3.0	Various		Yes	80	New	£39,534.00
15m ³	40–45	Batch	0.8–3.0	Various		Yes	90	New	£43,372.00
17m ³	45–50	Batch	0.8–3.0	Various		Yes	110	New	£62,603.00
20m ³	55–60	Batch	0.8–5.0	Various		Yes	110	New	£65,607.00
23m ³	65–70	Batch	0.8–5.0	Various		Yes	120	New	£72,225.00
25m ³	75–80	Batch	0.8–5.0	Various		Yes	160	New	£78,856.00
30m ³	80–100	Batch	0.8–5.0	Various		Yes	250	New	£115,796.00
20m ³	100–150	Continous	3.0			Yes	350	New	£118,058.00
30m ³	180–250	Continous	3.0			Yes	350	New	£187,147.00



Menart's PTO driven 4300-SP

● Traction (wheels versus track)

Self-driven turners that ride on wheels are more prevalent, although tracked vehicles are increasing. Wheels are simpler in design, less expensive, faster to drive when not turning, and operate well in most situations. Tracks allow the turner to work on soft surfaces and between closely spaced windrows.

● Irrigation

Turning offers an excellent opportunity to introduce and distribute water and other liquids into windrows and piles. Most turner manufacturers offer features for irrigating windrows while turning, including water nozzles, booms, hoses, tanks and the associated plumbing. Water is supplied from a tank (attached or towed) or long hose coiled in a reel that unwinds as the turner moves. A hose can be cumbersome but it avoids the need to periodically refill tanks, which interrupts turning.

● Transport

If moving a turner between remote sites is necessary, the ease of transporting the turner over the road is an important consideration. The transit objectives are to minimize the effort and avoid special road permits. Most manufacturers understand the requirements for transporting equipment and have designed in features like folding or retractable components. Several models are self-trailing; others fit conveniently on a flat bed trailer.

● Maintenance

All turners perform rugged work that causes much wear and tear. Maintenance is a routine chore and expense. Paddles, teeth and augers of rotating shafts and drums require frequent replacement. Fluids, bearings, hoses and filters and other components also demand regular attention and frequent replacement. In considering competing turner models and options, give extra high marks to those with good maintenance and repair histories.

● Details

A machine's reliability, efficiency and running costs depend a great deal on the mechanical, structural and operation details - things like how the bearings are protected, galvanised versus stainless steel components, the location of a particular hydraulic cylinder and what happens when the turner stalls in the middle of a windrow. These details can be the difference between satisfaction and disgust. They deserve scrutiny and investigation when shopping for a turner. Ask a lot of questions of the dealer, the manufacturer and prior users.

● Costs

Turners can be expensive pieces of equipment. Purchase costs increase as the machines grow in size, speed, power and special features. However, consider purchase costs in relation to throughput and capacity. A larger turner with a higher price can mean a greater volume of compost or a smaller site. Maintenance and running costs are relatively high for turning equipment and should be factored into any purchase decision. Higher priced models that operate less expensively can be a bargain.

Compost Mixing Equipment

Mixing equipment is used at the front end of a composting system to blend feedstocks of different character. Mixing is more important for composting methods that do not include subsequent turning, like aerated static piles and in-vessel tunnels. Many mixers provide moderate shredding capability and can be used for size reduction of some feedstocks including leaves, paper and straw. Although mixing can be accomplished by operators working bucket loaders, and also with compost turners, many operations purchase a mixer dedicated to the task. Consider the following factors in selecting a mixer:

● Mixing Mechanics

The majority of compost mixers use one or more rotating augers to blend materials together. The primary variations relate to the number of augers and their orientation – horizontal or vertical. While a single auger produces good mixing, some machines have two, three or even four augers to enhance mixing and/or shredding. In general, horizontal and vertical auger mixers are similar in performance and features. Horizontal mixers have rectangular hoppers. Vertical models have oval-shaped tubs that better accommodate bulky feedstocks. Some large composting facilities use continuous mixers that employ rotating shafts with paddles (e.g. pug mills).

● Shredding capability

Some mixers can impart a substantial shredding action via the rotation of closely-spaced augers and/or sharp blades mounted on the auger shaft. Depending on the mixer, paper, food waste, straw, hay, vegetation and even light woody material can be shredded during mixing. Mixers cannot handle large dense feedstocks, like tree limbs.

● Batch vs. continuous operation

Most composting mixers are batch operated. The feedstocks are loaded, mixed and unloaded in batches. Some large-scale operations, with automated materials handling, can justify a continuous mixer (usually horizontal) that receives and mixes feedstocks and discharges the mix in a nearly continual stream.

● Mobility

Most models of mixers are available as either stationary or mobile units, mounted on a trailer or truck bed. Mobile units tend to be batch mixers. Discharge conveyors on mobile units can conveniently load the mix directly to a pile or windrow.

● Capacity

For continuous mixers, capacity is determined by how quickly the feedstocks move through the machine, which depends on volume and power delivered. The capacity of batch mixers is primarily determined by the size of the hopper. The mixing time is short, relative to the loading and unloading time.

● Power and power source

The power requirement for various mixer models ranges greatly from 20 to over 500 hp, depending on the capacity. Mixers are powered by combustion engines, electric motors or tractor PTO drives. Many manufacturers offer a choice for a given model. Electric motors are quiet and used primarily on stationary mixers. Relying on a tractor PTO drive reduces the cost of the mixer.

● Additional Features

Mixing equipment comes with a variety of specific features that vary among models. Hoppers and other loading mechanisms, discharge conveyors, mixing controls and drive mechanisms are a few examples. Load cells for proportioning feedstocks are a popular feature in composting situations. 

Compost Certification update

The producers and compost products profiled below show-case some of the recent certifications within the Association's growing Compost Certification Scheme

Eco Sustainable Solutions Limited

Mike Thompson, Technical Manager

'The certification and quality control process gives our clients confidence in the quality of the compost we produce. It also eases the process when introducing new farmers into using ABPR compost as an agricultural soil conditioner.'



Profile

Organisation:	Eco Sustainable Solutions Limited
Process location:	Chapel Lane, Parley, Christchurch, BH23 6BG
Process type:	In-vessel, then open air continuous piles
Input materials:	'Green waste' (plant materials), animal by-products Category 3 and others biodegradable wastes, source-segregated, allowed by the Quality Compost Protocol
Input quantity:	27,000 tonnes per annum
Certified product:	Soil Conditioner 0 – 15 mm
Particle size grade:	0 – 15 mm
Certification code:	ESS-PIV-0015
Product quantity:	13,500 tonnes per annum
Product Type:	Soil conditioner for agriculture/turf farm
Sales enquiries:	Andy Hill, 01202 593601

Case Studies

Market sector:	Turf Production
Customer / Client:	Eco Turf
Application:	Parley Turf Farm Application by muck spreader Ongoing application – rolling operation taking place immediately post turf harvest
Description:	Compost used as an agricultural soil improver to assist in the regeneration of top soil once the turf has been lifted. The compost improves the condition and performance of the very sandy soil, assisting turf formation, water retention and rapid regeneration of topsoil, hence giving a sustainable turf farm.
Outcomes:	Use on the turf farm gives an improvement in the quality of turf, a guaranteed outlet for the compost and assists in the regeneration of top soil post harvest.



R J T Ainsworth

Robert JT Ainsworth, Owner

'This certification gives us an official of quality assurance for our customers. It gives them further confidence that the product we produce, and they use is of a uniform and consistent quality.'

Profile

Organisation:	R J T Ainsworth
Process location:	Mill Farm, Stone Road, Chebsey, Stafford, ST21 6JU
Process type:	Open air turned windrow
Input materials:	Green waste ('plant materials'), source-segregated
Input quantity:	18,000 tonnes per annum
Certified product:	Soil improver
Particle size grade:	0 – 20 mm
Certification code:	AINS-MF-0020
Product quantity:	15,000 tonnes per annum
Product Type:	9,000 tonnes / cubic metres per annum
Sales enquiries:	Robert Ainsworth, 01785 850722

Case Studies

Market sector:	Agriculture
Customer / Client:	BJ & CM Bayliss, Wincote Farm
Application:	Wincote Farm 25T per ha spread after harvest on stubble fields Minimum-till and inversion ploughed 2005/2006
Description:	This arable farm growing combinable crops on 263ha of medium clay loam to heavy clay. Rotation 1st wheat, 2nd wheat, barley, oilseed rape.
Outcomes:	Soil nutrient benefits were found from the first application. Extensive soil testing has shown that P & K are no longer required saving £13-14K yearly. Nitrogen rates have been reduced from 51 units per ha to 26 units per ha The farmer has been satisfied with the results so far, to the extent that he has invested in a dedicated spreader solely for compost. The overall effect on farm profit is positive, net value = £53.00 per ha per year for 2005/2006.

