

bulletin

CHRISTIAENS GROUP



Parwan Mushrooms, Australia

Again another year in which the world economy is suffering from the crisis. Due to the successful total project approach of Christiaens we are performing very well. Last year we have given a questionnaire to see what we can do to serve our customers better. As a result we have centralised our administration and service department to be able to give a better overall service for all three disciplines.

Innovation is and will always be a key item within our organisation. At the moment we are working on a new harvesting system with semi automatic harvesting. In order to test the newly designed system we are building a pilot in a room of one of our customer. For more information you can always contact us.

Christiaens is dedicated to complete projects from engineering till completion of the project. Also a warm start-up belongs to the options. Having the disciplines like Construction, Machines and Controls in house it makes us able to realise projects in a short period of time. The latter is very important in the current economy we are living nowadays. Of course you can still contact us for machinery, climate control, air conditioning, shelving, lorries, etc.

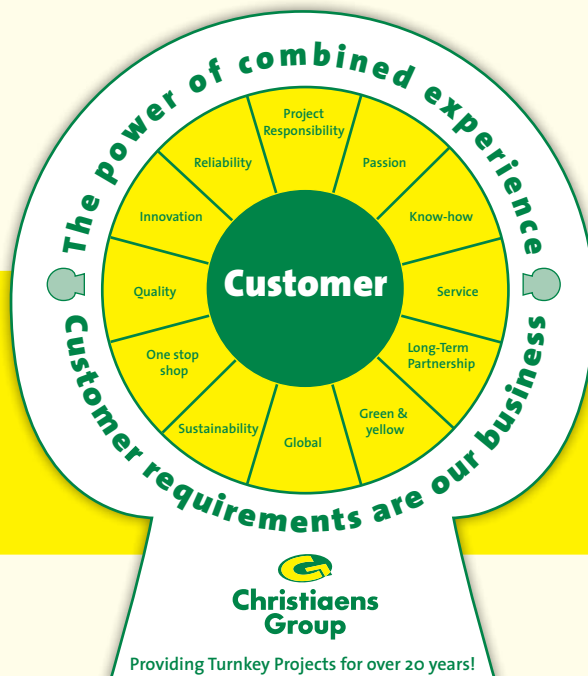
We also invite you to take a look at our website with various information about our company, our completed projects, contact details, etc.: www.christiaens.com

bulletin

CHRISTIAENS GROUP



**Christiaens
Group**





Country Mushrooms

[South-Africa]

Country Mushrooms is situated in Gauteng, ±40km from Johannesburg's OR Tambo International Airport. The company was started by three brothers and their partner in 1986 and is now currently owned by 3 shareholders. Country Mushrooms is based on 2 locations separated only a few kilometres from each other. One of the locations is the former Mushrooms Cordon Blue also known as the Aalwyne Farm which works with wooden trays. The other farm is Wattlewood also formerly known as Country, which works with shelves in combination with loose compost. Both farms are self-supported, and therefore both have a phase 1 and phase 2 compost yard and growing facility. Both farms also now trade under the name of Country Mushrooms.

Wattlewood farm: The management of Country Mushrooms felt the need to expand its operations and upgrade its facilities at the Wattlewood location, in order to keep up with the market trends. Christiaens was approached to upgrade 9 of their growing rooms with new shelving and computerised controls. A Christiaens Hybrid head-end filling Spawning/Casing Machine was also introduced where it has reduced the operation time with 50% and has proved to be less labour intensive. Christiaens were also involved in the upgrading of the cooling plant with the addition of a heating and steaming boiler and has also been proven to be most effective in the operations. Country Mushrooms foresees a noticeable improvement on the production and quality. The management of Country Mushrooms were very pleased with the high standard of service, equipment and knowledge and expertise of the staff of Christiaens. We definitely see ourselves doing more business with them.



Biofungi

[Hungary]

Bio Fungi is ongoing expanding their businesses.

The bunkers are expanded with another 3 pieces. At the moment Bio fungi has 10 bunkers each with a capacity of 750 tons of Phase 1. The recently build 'state of the art' 9 tunnel facility is also expanded with 3 tunnels. In total Bio fungi consists out of 24 gas concrete tunnels and 12 insulated panel tunnels. Another additional 5 tunnels will be build in 2013.

At the growing farm 4 new rooms are build and counts in total 12 rooms of each 864m² growing area. At the farm the latest technology is implemented with automatic watering system integrated in the shelving. All air handling units are equipped with a pre heating / cooling coil. This coil is connected to the heating and cooling circuit and the grower can choose if this coil is used for pre heating during the winter period or pre cooling during the summer period.

Mid 2013 a modern packing house and expedition hall including offices will be commenced. Read also about Bio fungi in Bulletin number 11 and at their website www.biofungi.hu.





Parwan Mushrooms Pty. Ltd.

[Australia]



PARWAN VALLEY
MUSHROOMS

In April 2012 we started up a new mushroom facility for Parwan mushrooms. The investors came originally not out of the mushroom industry and explored the potential supplier who could be their best partner for building this project. After several discussions and comparison with other suppliers Christiaens Group received the order to build this farm. The decision for Christiaens Group was mainly because of the comprehensive proposal and the huge experience all over the world and especially in Australia which gave them a comfortable feeling.

The farm consists of 12 growing rooms of 820m² each. The rooms are having 4 rows of shelves each of 6 levels high. The farm is equipped with modern technics and machineries. By example a static automatic watering system integrated in the shelving, efficient high ambient cooling machines, energy efficient process control and everything designed for a future expansion.

At the moment Parwan Mushrooms has ordered hydraulic picking lorries to improve their harvesting efficiency.

Some words of the farm manager:

'In just nine months, we've transformed a greenfield site in regional Victoria into a 17-hectare fully operational mushroom farm producing some 50 tonnes of mushrooms a week. This project is today a significant horticultural addition to this state's economy.

We're especially proud that throughout every stage of its construction, the project remained on target and on budget – a remarkable achievement and testament to all those involved.

From its planning to design, construction and fit-out, we've delivered a world class facility with the very latest in mushroom production technology and techniques available anywhere in the world.

Please allow me to thank the mushroom facility's designers and builders, Christiaens Group from Holland and all their subcontractors.'





Highveld Mushrooms

[South Africa]



Highveld Mushrooms have recently bought a controlling share in Medallion Mushrooms Western Cape Stellenbosch. Medallion Mushrooms is a company who is producing the compost on one side of their property, in the middle they have a wooden-tray-line, and on the other side they have the growing farm and packing area. The lay out of everything is very compact, and there are not much possibilities for future expansions.

The facility is current 32year old and not of the latest standards.

There was a big need of improvement in compost quality, logistic, equal mixing of the recipe, less maintenance, less labour costs, and many other points which were very hard to realize on this current location.

This made the company decided to build a completely new compost yard on an complete other location with a lot of space and start from scratch

Another benefit to start on another new location was that during building time the production of compost at the old compost yard could still be guaranteed. This new premises is also much further separated from civilisation and expansion possibilities for the future are here available.

Recently the new compost yard was completed with 3x Phase1 bunkers which are each 6x30x5 meter (WxLxH) and 1x Phase2 spigot floor tunnel which is 6x20x5 meter (WxLxH), all build with Christiaens machinery.

The scope of delivery was consisting out of a dosing hopper, chicken manure hopper, belts, compost mixer, tunnel-filling-cassette and central electrical control box. Everything was delivered in such a way, that all the machines could be build up very easy with local people to save costs.

The client is very satisfied with the Christiaens Group with the way of delivering nicely on time, the quality of the machines, the clear drawings for local use, building instructions, back up assistance, but mostly the end result of the huge improved quality of the new compost which is been made at this new facility.

The new facility has been constructed to facilitate a doubling of compost volumes in the near future. The old compost facility at the original location is now redundant and the old compost yard can now be closed down.





machineries during assembling



Miko-Food

[Ukraine]

In the East of Ukraine the company Miko-Food is established near by the city Donetsk. Miko-Food is growing very rapidly and expansion is going on constantly during the last years. The company exist out of 2 facilities which are been separated half a kilometre. One of them is the mushroom farm with 2 blocks of 20 and 22 rooms of 723,6 m² each room (22,5 x 1.34 x 4 x 6 meter). The other facility is the compost yard.

In the beginning the compost was been bought externally but the management decided to start producing their own compost. The first step was making their own phase 1 and phase 2 compost. The Christiaens Group made the layout-design of the compost plant. The idea was to make a compact set-up because everything has to be inside a building due to the extreme winter conditions. Another reason was to have the logistics as efficient and logic as possible. The first stage of this project was building 6 bunkers and 4 tunnels with on 1 side of the tunnels a combined filling and emptying hall. The production with this set-up is about 500 Tons of phase 2 per week.

After starting up this facility the decision was quickly made to expand the compost facility to be able to make phase 3 compost as well. After the expansion there will be in total 8 bunkers and 13 tunnels. The production will be around 500 Tons phase 3 per week. This means that the amount of delivered compost is more or less the same after switching from phase 2 to phase 3. The growing cycle will be shorter and the production of mushrooms will therefore be increased.

For the machinery Miko-Food made the decision to have the most modern equipment. To give some examples: a ChristyFloor container model hopper, the new big mixing drum, the cascade conveyor system and new design high/low-filling-cassette were in the scope of delivery. The expansion contains an extra emptying hall at the back side of the tunnels with the needed machineries like a second pulling winch and conveyors.

For the growing rooms Christiaens was also responsible for the delivery for the new head-end filling machine. This filling machine is been build in such a way that it is possible to fill phase 2 compost or casing soil separately, or to fill compost and casing soil simultaneously.

All the equipment was been transported to the Ukraine by the Christiaens Group, and was been assembled locally by Miko-Food.





Dohme Pilzzucht

[Germany]

In 2012 Christiaens was occupied with building the new phase 1 facility for Dohme. Seven Phase 1 bunkers have been build, vife process bunkers and two bunkers which can be used as a straw/bio filter.

When bulletin 11 was published last year the new facility was about to start up. Already during starting-up the major improvement of this latest state-of-the-art standard was obvious for everybody.

Now 1 year later still everything runs fine and experience is been gathered since. We like to give you some inside information from some examples what have been improved.

For the building the concrete bunkers were better re-enforced, and also the shape of some critical items was changed. The choice of materials is improved due to the hard conditions (with ammonia). The way the doors will be closed is easier and therefore life time will be longer. Heat recovery for the energy which the compost will provide can be used on other locations. Temperature and Oxygen sensors are easier to guide inside the bunker. Also there was extra attention to some items multiple functions, therefore it is possible to raise the quality of these items but control the expenses.

For the climatisation the same thinking was realized due to quality and multiple functionality. Because the bunkers are closed with doors the compost can be better controlled (less influences from outside like rain, wind, sun and temperature) and process air can be reused.





The hot air (with ammonia and of up to 80 degrees) can be reused back into the bunker or fresh (cold) air can be blown into the bunker or a combination can be made with a mixture of air. The warm process air can also be blown through the bio/straw filter or directly to the outside via a chimney.

The frequency controllers, the process computers and the central electrical control box are placed in a separate insulated container which is been feed with fresh air to enlarge the lifetime of all equipment.

The concrete working area is been poured under a slope, and the waste water is therefore been guided to a central collecting point. With a filter the bigger parts are filtered out of this gully water. The gully water will be collected in a big tank with controlled aeration.

For the machinery the choice was been made to place a big Christy Floor hopper in the middle of the working floor to keep the loader driving distance as short as possible. To be sure that mixing will go easy, the decision was made to pay extra attention to be able to pulverize the chicken manure, therefore a lot of shredders were integrated in the system. On several locations gully water or fresh water can be added to have better spreading and more flexibility in the system.

After all basic materials are been feed onto a big conveyor, everything is been guided into a new developed mixing drum. With this mixing drum everything is been mixed very properly (see the other article in this bulletin) By means of an extreme improved overhead filling system the compost is been spread in rows into the bunker.

All these improvement are only a summary and many more are been realized at Dohme. We like to explain you all the possibilities which can be used at your compost plant.





Walkro Blitterswijck

[The Netherlands]

Walkro – The Netherlands

At the end of 2012 Walkro decided to upgrade the machines at their 2 compost facilities in the Netherlands. Because Walkro is one of the biggest compost producers in the world and therefore they use the machines a lot of hours per week. Walkro has some special additional requirement to make working with the machines even easier. As preferred supplier the Christiaens Group was selected to build those high sophisticated machines.

Walkro has at their facility in Blitterswijck phase 1 tunnels with a Christy Floor system. This means that the tunnels are equipped with a row of plates lying on the floor of the tunnels. This is a unique system for this purpose. These Christy Floor tunnels are been used after the mixing stage of the conventional phase 1 spigot floor bunkers and are used before the compost is been filled in the phase 2/3 tunnels. To fill these Christy Floor tunnels 2 separate overhead filling systems are used. For emptying these Christy Floor tunnels 2 separate tunnel-emptying-machines are used.

The old emptying machines were about 8 years old and because of the amount of compost which runs through these tunnels and because of the compost plant can't loose any production days a major refurbish operation was established to be able to empty even faster and make more use of these tunnels after modernizing these 2 machines.

Also for the phase 2/3 tunnel facility at Blitterswijck a new Tunnel-filling-cassette is delivered. This machine has also some extra adjustments which makes the machine much more luxurious. Some examples are, operators cabin which can be completely cleaned inside with water an airconditioning and aircleaning carbon filter unit on top of this cabin are installed. Also an electrical joysticks for operating the swivel conveyor a weighing device integrated in the top belt and are placed on the machine. Several adjustments in making the steel structure stronger but also more open steel construction for easy cleaning access a special tip-up platform, etc. etc are part of this machine.

A new tunnel-emptying-winch at the Horst facility is build for their existing phase2/3 tunnels. Some adjustments which are been included extra in this machine are, hydraulic motor for the pulling shaft is made extra compact to be able to park the tunnel-filling-cassette beside it, extra un-wind-winch mechanism for the tunnel net, speed control on the pulling shaft, water system, hydraulic tension system on incline belt, wireless remote control, etc. etc.

Customers like Walkro (who have a lot of practical experience) who raises every time the bar a little bit more and with the knowledge we have as Christiaens have everyone benefits from these developments which becomes available on the market.





Deckers

[Germany]

The company was founded in 1974 comprising 4 growing rooms. Almost 40 years later it is one of the most modern manually harvesting companies in the region.

In 2004 we started up a new facility for Deckers in Germany. The first stage consisted out of 5 growing rooms of 1296m² each. In 2006 we doubled this farm to 10 growing rooms in total. Last year we doubled the farm again to 20 growing rooms in total. We have realised this expansion into 2 phases of each 5 rooms. We started with the groundwork in April 2012 and filled the first room in August. The second phase was started right after and was filled in November. The farm produces about 150 tons of mushrooms per week.

Each room has 4 shelf rows of 6 level high, 45 meter long and 1,2 meter width. The farm is equipped with self driven hydraulic harvesting lorries. For the middle aisles we have self propelled lorries which are driving over the floor. These lorries makes it also much easier for the selective picking and greasing. This improves yield and uniformity of the product.

The new technical installation is combined with the existing one. We have placed 2 heatpumps to supply the new expansion with cooling and heat energy. In the summer period the heat energy will be used first in the farm and what is left will be destroyed with the cooling tower. The heat which is extra required in the winter time will be added by the existing hot water boiler. Having 20 growing makes it easier to spread the production as well as spreading the cooking out. Therefore we could realise this expansion without an additional steam boiler.

Germany has a supportive programm for producing green energy. This made is feasible to cover the roof. The whole roof of the farm is covered by solar panels. A mushroom farm in general has a relative big roof which makes it interesting to install the solar panels.

To reduce the risks for infection the farm is designed to cook out the empty trays coming into the farm. Also the short cycle of 5 weeks and a good hygiene management makes it possible to work without chemicals.

All mushrooms are packed on the farm and sold via Rheinland Champignons, an associative company. Also mushrooms from others are packed and sold. Deckers company is driven by market demands.





Champignonkwekerij Jacobs BV

[The Netherlands]



Champignonkwekerij Jacobs BV is a mechanical harvester and grows mushrooms for the canning industry for several years. To achieve a better efficiency with the economy of scale Jacobs decided to expand. In the end of the nineties the first 6 rooms of 775m² were built. A couple of years later Jacobs expanded to 10 growing rooms. The width of the shelves was increased from 1,36 to 1,60 to get more growing area into the building. In 2006 another 4 rooms were built as well as the first rooms were renovated. The last expansion is finished in 2012 with another 6 growing rooms. At this stage the total growing area is 20 rooms of 1075m² each.

During this expansion we focussed on energy saving. We have installed a heat pump system. The heating coils of the existing rooms were equipped with a bigger circulation pump to make sure enough heat is going over the coil while the water temperatures in the systems are lower. Heat from the heat pump goes towards the technical room. When there is not enough heat the hot water boiler will add extra energy towards the system and from there it goes towards the air handling systems. The cold energy is transported directly towards the air handling units. The heat pump is connected to a big buffer tank as well as the 2 existing cooling machines. A PLC is managing a master slave control. First the heat pump is activated and when it doesn't bring enough cold energy the next cooling machine is started etc.

In this concept we have placed the heat pump into an insulated sea container. The insulation makes sure the machine is frost-free and the noise is reduced. On top of the sea container we have placed the cooling tower which destroys the surplus of heat. Depending on the location of such a system it has a COP of 3,5 on the cooling side and 4,5 on the heating side. Even in the summer there will always be heating needed for dehumidification so such a system will bring energy savings during the whole year.





The new Mixing Drum for Phase 1 compost

Since decades the Christiaens Group is building all kind of machines for mushroom growing rooms, but we are also building machines for making compost.

We wanted to improve the micro mixing of the chicken manure with the straw. To get a good compost the basic materials have to be mixed, and a certain recipe is therefore required.

Example of the way of working:

The straw will be thrown by a loader into the dosing hopper with Christy floor. The dosing hopper with Christy floor is been used for getting a continues flow of material. The straw will fall at the backside out this Christy floor hopper onto a horizontal conveyor underneath it. On top of the straw the gully water, and mix of chicken manure and gypsum will be added in a required percentage. The mixing drum will mix everything very thoroughly without shopping the straw in small pieces (keeping the structure!), and a smaller mixing axle is installed direct after this mixing drum. Afterwards the compost will continue it's journey over the conveyors.

The mixing drum and mixing axle can be adjusted in speed and height, therefore the first time with fresh straw it is possible to work aggressive with mixing the basic materials. When an aggressive way of working is not needed anymore (with for instance re-filling the bunkers), and you want to hold on to the structure, the aggressive way of mixing has to be reduced or can complete be eliminate. Because the same line of machines is been re-used during re-filling the bunkers, it is easy to adjust the recipe during the process. Furhtermore this helps also to minimize the investment. Also loader movements will be reduced till a minimum.

End result of the Christiaens system including the new mixing drum:

GOOD MIX OF COMPOST WITH MAINTAINING THE STRUCTURE !





Christiaens Group

| the power of combined experience |

Projects in progress:

Xillion, Hungary	14 growing rooms
Ecofresh, United Arab Emirates	6 growing rooms
Loveday Mushrooms, Canada	7 Phase 2/3 tunnels
Country mushrooms, South Africa	9 growing rooms
Miko-Food, Ukraine	Extension machineries for Phase 1 and 2
Walkro, Netherlands	New machineries Phase 2/3
Farmers Fresh, Canada	5 Phase 1 bunkers and 9 Phase 2/3 tunnels
Tvedemose, Denmark	4 Phase 2/3 tunnels
Biokoz, Romania	6 growing rooms
Toyota, China	3 Phase 1 bunkers, 9 Phase 2/3 and 24 growing rooms
Mushroom Exchange, Australia	10 Phase 1 bunkers, 3 biofilters and 24 Phase 2/3 tunnels
Parwan Mushrooms, Australia	34 Hydraulic picking lorries
Foodcorp, Bahrein	6 growing rooms
White wolf farms, Libanon	3 growing rooms
Boglar Champ, Romania	9 growing rooms
Biofungi, Hungary	5 tunnels

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