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CHRISTIAENS GROUP

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Christiaens Group has compiled this bulletin especially for the Mushroom Days 2004. This publication will give you an impression of the range of projects constructed by the Christiaens Group.

In 2004 many complete projects are being built for the international mushroom and compost production industries. Some of these are renovation projects and extensions to existing facilities - others are entirely new.

The Christiaens Group places the customer central stage. We combine our expertise with the specific wishes of the individual customer.

All aspects of construction are open to discussion - for instance making the choice between aerated concrete or panels, large or small units etc.



*Deckers
Champignon*



DECKERS CHAMPIGNON GERMANY

In early 2004 we started building the growing facility run by Marco Deckers. This company is planned next to the current group of buildings owned by his father Hans Deckers. Total construction time is scheduled for 6 months so the first mushrooms can be harvested in July. The growing rooms are based on production of 40 tons of fresh mushrooms weekly.

The motivation to choose the Christiaens Group as the construction partner was the more than satisfactory experience of working together on previous projects.

The new facility will comprise 5 growing rooms of $\pm 1300\text{m}^2$ including an area where the freshly picked mushrooms can be packed on site. Each growing room houses 4 rows of shelving of 1.2 m wide by 45 m long. The growing rooms are based on production of 40 tons of fresh mushrooms weekly.

The greatest advantage of the new units is the low cost price, which according to Hans Deckers is the result of the larger growing surface per room, the narrow beds and the use of the latest harvesting techniques that considerably reduce picking costs.

FRANKENBERG, GERMANY

In 2003 Heinrich Frankenberg decided to double the capacity of his existing mushroom farm to reach a growing area of 1440m^2 . The existing buildings, dating from 1998, comprise 3 rooms of 240 m^2 .

Building started in November 2003. Within 11 weeks the planned expansion was a fact. The excellent experiences with the Christiaens Group when the first farm was built lead to them being chosen again for this new project. Another advantage for Frankenberg was that the whole building project - and responsibility - was in the hands of a single contractor.





WALKRO BLITTERSWIJK, NETHERLANDS

In 2003, Walkro in Blitterswijck decided to build 17 pasteurisation and incubation tunnels. The first spade was due in the ground in May, but the Avian influenza outbreaks postponed the start. Building commenced at the end of the summer and in a record time, 17 tunnels appeared, as the first tunnels were due to be filled at the beginning of December. Standard supplier Christiaens Group also supplied all the necessary machines and doors. Christiaens were also responsible for the entire technical installation - including air handling, computer systems, cooling, heating and steaming installations. The tunnels have a central air exhaust duct connected to a chemical air washer.

In co-operation with the Walkro Blitterswijck team, the latest state-of-the-art technology was installed and a new computer system from Christiaens Controls applied. This project was successfully completed In February 2004



PILZE NAGY KFT. KECSKEMÉT, HUNGARY

Pilze Nagy Kft. was and is the major producer of pleurotus mushrooms in Hungary and one of the biggest in Europe.

The Christiaens Group cooperated in designing the pasteurisation tunnels and setting up the logistic system. Christiaens Controls was responsible for the engineering and delivered and installed the air handling systems and controls for the tunnels.

Christiaens Machines also supplied the filling and emptying equipment and the blocking line.





CREEKSIDE MUSHROOM LTD. USA

In 2000 Roger Claypol and Bill Swanek decided to invest in an aerated Phase I system. For them the optimal choice was aerated windrows, which could be loaded by a mobile blender. The system is split up in specific pre-wet windrows in the open air and fermentation windrows under cover. Both systems have an aerated floor to minimise the influence of the weather.

Christiaens Controls were responsible for the air technical engineering and controls and later the deliveries and installations.

After the successful start up of the Phase I system, Christiaens Controls supplied the air handling and controls for 10 Phase 2 tunnels, which were constructed immediately following the start up.

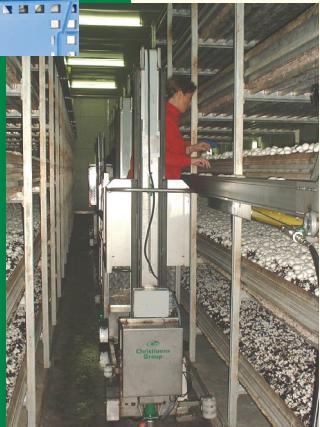


DEVELOPMENTS CHRISTIAENS GROUP

The selfdriven hydraulic lorry is made to approximate the ideal posture. Not only improvement of labour circumstances, but also several other possibilities to reduce the cost-price of the mushrooms are provided by this lorry.

Because of automatic drive and the hydraulic height-adjustment of the platform, it is possible to increase the picking results with 20%; Growing rooms can be enlarged with a 6th bed, because of the hydraulic height adjustment of the platform these beds can be picked easily; Putting the lorry in a new row doesn't take much time that is why harvesting of the beds several times a day is more interesting. This means an increasing of the picking yields with 10%. Harvesting several times a day doesn't only mean an increasing of the picking yields, but has also a good influence on the quality of the mushrooms.

This hydraulic lorry can be used in combination with the harvesting belt. Handpicked mushroom will be transported by this belt to the front of the shelving, where the mushroom will be packed into crates. Roots will be cut off automatically.





CENTRAL COMPOSTING LTD. IN ABBOTSFORD BC CANADA

When we met representatives of Central Composting they were being pressured by the local authorities due to environmental pollution caused by odour emission. At that time they were producing their Phase I compost conventionally.

The Christiaens Group designed and delivered the installation in coöperation with certain local companies. The system comprises a completely enclosed phase one production unit with a controlled exhaust system including ammonia scrubber and bio filter.

Central Composting are currently expanding their plant in coöperation with Christiaens Group.

GIORGIO GRESPAN, ITALY



The advantages of the new growing unit are extremely high production yields of premium quality mushrooms according to Giorgio Grespan. Another benefit was the cook-out process that destroys all unwanted diseases.

The good references from Funghi di Treviso, as well as the professional approach, high quality materials and short construction time made the choice to the Christiaens Group to realise this project.

August 2003 saw the start of construction of a growing facility with 12 growing rooms of around 300 m². After just 9 weeks the first room was ready to be filled with compost, and production could start. Total production levels for this farm are at 100 tons of fresh mushroom annually.



MOUNTAIN VIEW MUSHROOMS LTD. ABBOTSFORD BC CANADA

In the 2000 Art and Ron de Ruiter decided to build a new mushroom growing unit made up of 22 growing rooms. The building was designed and constructed locally. Christiaens Controls delivered the air handling and control systems. They also engineered the central energy systems, which were constructed and delivered by a local installation company.

In the meantime the first farm of 21 growing rooms has been renovated and also equipped with identical systems.

At this moment the Christiaens Group has the order for building 4 new phase II/III tunnels.

CHAMPAG INC. VERCHÈRES QUÉBEC CANADA



The Champag mushroom farm is a renovation project on an existing mushroom farm. The only thing maintained was the original building. The Christiaens Group designed and delivered a complete range of new air handling systems. In 2003, 18 rooms were equipped and put into operation.

Before the end of 2004 the next 18 growing rooms will be in operation. The Christiaens Group also supplied the aluminium shelving and filling and emptying machines for the growing rooms.



LINDE KCA



Linde KCA is a daughter company of Linde AG and is active in the field of engineering and constructing complete waste treatment plants. Building waste composting tunnels is their major strength. Since 2000 Linde KCA has used automatic filling and emptying machines supplied by Christiaens Machines and automatic tunnel doors from Christiaens Construction. Controls come from Christiaens Controls. Christiaens Group and Linde KCA recently finalised a partnership contract. Both partners intend to intensify their cooperation in tendering for and building waste composting projects in Europe. Two projects comprising a total of 32 tunnels have just been completed. A number of projects are in the pipeline for 2004 / 2005 covering a total of 96 tunnels.



RAB

RAB is an Austrian engineering agency specialised in advising and guiding local authorities and companies in setting up waste composting plants. The design phase is carried out according to a fixed concept. One of the component parts is the supply of pre-sorted waste to the tunnels and the filling process. Loaders empty the tunnels.

Christiaens Machines, and a number of other machinery manufacturers, were approached to design a tunnel filling cassette suited to the basic tunnel designed by RAB. The first order for 2 tunnel filling cassettes was granted in 2002. "As well as being the most competitively priced, Christiaens also provided the best technical solution and support". To date, 3 systems have been delivered and a further 2 ordered.





THE POWER OF COMBINED EXPERIENCE

PROJECTS IN PROGRESS WORLDWIDE IN THE YEAR 2004

Continental Mushrooms, Canada

Champignonkwekerij Jacobs, Netherlands

Jos Cox, Netherlands

Champignonkwekerij Willems BV, Netherlands

Mercajucar S.c., Spain

Cooperative Avicola do Cavicans, Portugal

CAC II, Portugal

Weser Engineering, Germany

Elf Farm Products, Australia

Ecochamp, Spain

Mushroom producers Coop, Canada

Mountain view, Canada

Bio Funghi, Hungary

Highveld, South Afrika

Wrona, Poland

Adelaide mushrooms, Australia

Phase I

Expansion growing surface

4 growing rooms of 1200m²

6 growing rooms of 1480m²

24 growing rooms of 420m²

4 Manure composting tunnels

9 Manure composting tunnels

Expansion with 3 tunnels of 540m³

14 Phase II/III tunnels of 200 tons

Complete mushroom project

Expansion phase I and II/III facility

4 phase II / III tunnels

3 phase I bunkers and 6 Phase II/III tunnels

6 phase II/III tunnels

12 phase II/III tunnels

9 phase II/III tunnels

New developments within Christiaens Group:

Self-driven hydraulic lorry

Harvesting belt

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