Innovations from Venti Oelde

Air handling technology and system solutions for the printing and paper industries
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As a competent systems supplier, process and engineering partner, Venti Oelde is well known in the international printing and paper industries. An extensive air technology range with special products and system solutions as well as planning, consulting and maintenance services are the basis. Many innovations and developments in mechanical, air handling and disposal systems guarantee uninterrupted production as well as clean and safe workplaces. The latest innovations include biofilters with living organisms, which dispose of solvent residues. Economy and the environment can be unified with Venti technology. Energy saving and increased productivity are not necessarily in mutual opposition. This article explains several examples of modern engineering and technical services by the worldwide operating air handling specialists.

“The industrial situation of the paper, cardboard and plastics branches in Germany has developed positively in comparison with the overall economic cycle” reported the business press. Although stagnation is otherwise prevalent, these branches are investing, modernising and restructurering. New environmental regulations are challenges for innovation, development, established and new companies. Particularly the VOC Directive of the European Union (VOC stands for Volatile Organic Compounds such as solvents) demands directed preliminary work. Rotation printing, reel offset and illustration gravure printing, laminating, adhesive coating and many more techniques are specifically affected by this. However, increased capacities, faster production and cycle times, computer aided energy management, improvements in the feedback and recycling of residues and the humanisation of workplaces characterise the environment of the economic, technical and environmental improvements in the printing and paper industries.

This is one field of application in which Venti Oelde has become an internationally acknowledged engineering partner and innovative systems supplier: In all machines, production processes and all aspects of the atmospheric process conditions in the manufacture of paper, cardboard and cellulose, in printing, laminating and further processing, air handling processes, components or systems are involved – the domain of the air handling specialists from Oelde.

The range of services (Flow diagram) divided into the subjects of
- production,
- pre-cutting,
- printing/coating,
- finishing and
- residues (or residue feedback, treatment or disposal)

is extremely diverse and extensive.

Optimum results are always achieved when the manufacturers of components and systems are permitted to add their specific knowledge at an early phase of the planning. The developers, consultants and project engineers will verify that the highest efficiency can be achieved in such cases, meaning the best possible performance with the greatest possible saving of energy.

Paper machines / Paper production

In compliance with the company motto “We make air work on your behalf”, Venti optimises, regulates and controls many air handling processes in and around production machines in the paper industry. This is based on trusting co-operation in a partnership for value gain with machine constructors.

Ventilation, air filters, waste extraction, heat dissipation and heat recovery are the central topics where investment and low operating costs are concerned. Experience from completely different fields of competence gained by Venti Oelde has led to exemplary innovations.

The conditions surrounding the machines, the workshop climate, represent a special field of action and reaction. Good working conditions are not only fundamental to a good working environment and smooth production, but also fulfil the statutory requirements with regard to the maximum quantities of toxic substances at the various workplaces in industry and trade. Complete air solutions for machine workplaces, booths, rooms and workshops of all sizes have been developed and implemented for this purpose. One highlight of this is a rotary heat exchanger with an efficiency of up to 75 %. It is self-cleaning, requires little maintenance and is controlled according to the temperature. In combination with supply air and exhaust air units and with an intelligent air distribution system, this replaces conventional heating systems in production shops economically and highly effectively.

Pre-cutting / Reel slitter

Edge trim and cutting dust extraction and vacuum transport systems are the characteristic keywords of innovations by Venti in the field of paper reel cutting. In particular, the complex subject of dedusting is an important field of action. Large quantities of microfine dust are produced in the working areas of extremely fast-running machines. This contaminates the inhaled air and creates deposits which can result in substantial quality losses or interruptions during production. Dust must therefore be captured at its point of origin and guided to suitable filters. This applies to dust produced at return rollers, at the longitudinal and transverse cutters, at vertical punches and also to edge trim disposal. Only effective dust
by a modular principle. Differ-
standardised and extensible
modern system solutions are
machines. Just as the labora-
intermediate ink drying and
method used in computers,
Venti develops largely pre-fit-
tions, edge trims, scrap and cut-
dust are produced. Venti
responses are: residue and
edge trim extraction, dedust-
ing systems, waste disposal
and recycling. Capturing and
transporation waste ensures
work. And afterwards, air handling
systems and Venti technology
are in use where treatment,
packaging and discharge are
concerned. The latest deve-
lopment from Venti is notable
in this respect: a patented
rotation separator. It replaces
cyclones and conventional
screen separators and is a
compact unit which separates
large volumes of material from
air streams. Its suitability for
dge trims, punching waste,
corrugated cardboard, carton
card etc., its high operating
reliability, protection against
fire and explosions (ATEX)
and an air volume throughout
of up to 35,000 m³/h open
diverse fields of application.

Gathering, transporting, separating and utilising residues
In all processes summarised above, various types of waste
are produced. Air handling systems to gather, transport
dispose of this are often the best solution.
Venti air handling technology offers tested and economical
solutions for:
• Dust caused by abrasion in
production, which penetrated
the respiratory tracts, af-
fects control systems and
the mechanisms of machi-
nies, and often impairs the
printed results
• Punching waste and cutting
residues before finishing
• Edge trims produced as end-
less material during cutting or
trimming
• Discards from starting-up or
stopping the machine
• Slops which are too dry and
with which valuable sub-
stances are to be retrieved
The material is conveyed by
special fan impellers designed
for shredding through the pipe
network to the separator. Var-
ious techniques ensure that
dge trims, cutting residues and
discards are effectively
and efficiently shredded dur-
ing transport even if they oc-
cur intermittently. Tearing fans,
pipe cutters and cutting mills
are therefore also included in
the Venti system solutions.
Proven efficiency of 85 % with
closed fan impellers for air
conveyance and 65 % with
open fan impellers for material
conveyance are impressive
figures for state-of-the-art
technology. These top values
allow a measurable reduction
of the energy costs.

Air is separated from the
material by separator systems
manufactured by ourselves.
These include cyclones, screen
separators, fabric filter
systems, wet dedusting sys-
tems (scrubbers) and rotary
airlocks. They are supplemen-
ted by bale or container
presses.

A diverse range of services
such as maintenance, repairs,
tests, machine modernisation,
rationalisation and exten-
sion completes the package.
Venti also offers the unusual
in this “customer service sec-
tor”: keywords are teleservice
and remote diagnostics. The
Venti hotline is available and
ready round the clock for
customers with urgent mainte-
nance and repair needs. Re-

te diagnostic systems allow
communications with machi-
nes without personal presen-
cence. This serves well in moni-
toring and in the analysis of pro-
blems, or provides information
for the replacement of wear
parts. Service engineers can
prepare site visits optimally
and/or bring along the requi-
red spare parts. This substan-
tially reduces machine stoppa-
time.
**Flow diagram paper**

**Ventilation plants**
- Ventilation plants with heat recovery, humidity separator and air conditioning

**Exhaust plants**
- Wet and dry filter plants for dust and coating media

**Recycling**
- Separating waste paper
- Drying and separating of rejects
- Return of production waste into the pulper
- Wet scrubber plant with return into the pulper

**Fans**
- Fans for the drying process

**Vacuum plants**
- Vacuum plants for automatic reel replacement
- Paper web guiding in cutting area
- Paper web guiding for automatic edge-to-edge pasting

**Dust collection plants**
- Continuously operating bag filter for removal of dust from the web
- Dust collection from roll slitters

**Edge trim exhaust**
- Continuous trim handling with injector plant
- Continuous trim handling with material discharge into silo
- Edge trim shredding by means of cutting mill
- Edge trim shredding through tearing fans

**Reel slitter**

**Paper machine**
Web drying
- Drying equipment for flexo and rotogravure printers as compact solution with choice of air heating systems

Solvent oxidation
- Biological exhaust air treatment plants to comply with the German Immision Law 31. BImSchV

Printing shop air conditioning
- Ventilation
- Temperature regulation
- Air replenishment
- Humidity regulation

Exhaust plants
- Dust removal from the web
- Punch clamping exhaust

Printing machine

Dust removal
- Wet scrubber plants for laser perforation
- Exhaust plants for the paper web
- Dust removal for cross cutters and reel slitters

Exhaust of residual material
- Exhaust
- Shredding of die-cutter lattices
- Handling of die-cutter residual material

Edge trim exhaust
- Edge trim exhaust on rotary die-cutter

Workshop air conditioning
- Workshop air conditioning depending on the building, heat produced during production process and the product requirements

Punch
Industrial fans
Dust collection and process air cleaning plants
Exhaust air treatment plants
Ventilating, heating and air conditioning plants
Recycling and waste processing plants
Surface technology