tapflo®

DIAMOND SERIES APPLICATIONS

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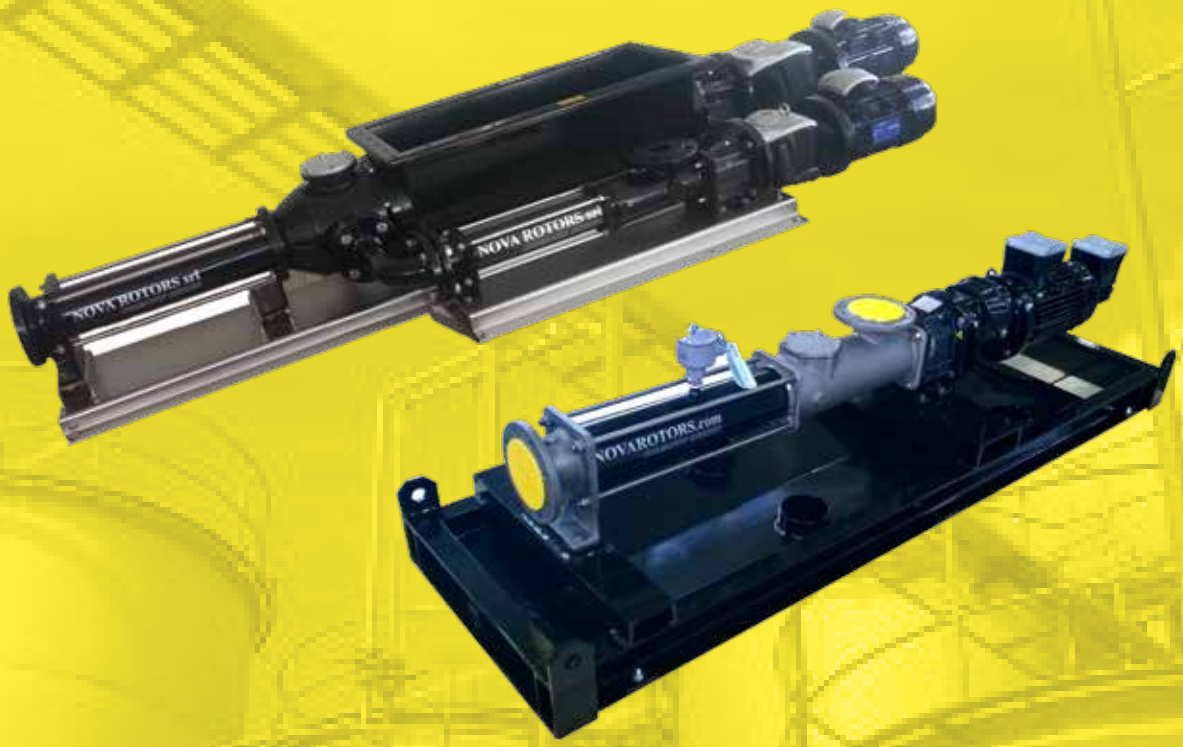

All about your flow

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WINE INDUSTRY

The wine-making industry has always played an important role in the history of humanity in both economic and social terms. The wine tradition has such ancient origins that its roots are buried in legends: the Bible attributes the discovery of wine to Noah after the Flood. The earliest historical documents that bear witness to the production of wine date as far back as 5000 B.C. in Mesopotamia in the Fertile Crescent, where the ancient Sumerians began cultivating wild grape vines and fermenting grapes.

Currently in Italy and in countries like France and Spain the wine making industry is a leading sector in continual change that is investing heavily in the development of new viticulture and winemaking techniques, with the aim of producing an ever higher quality of wine.

The winemaking process varies depending on the type of wine to be produced and includes all processing and fermentation stages from the delivery of the grapes to the final product.

Progressive cavity pumps are ideal for the various process stages as they convey the fluid throughout the entire process in a particularly delicate way, from the berry crushing stage through to the bottling of the wine. The tensile stress to which the pumped fluid is subjected is very limited compared to other pumping systems being pulsation-free above all with heterogeneous products such as for example pomace and crushed and destemmed grapes.

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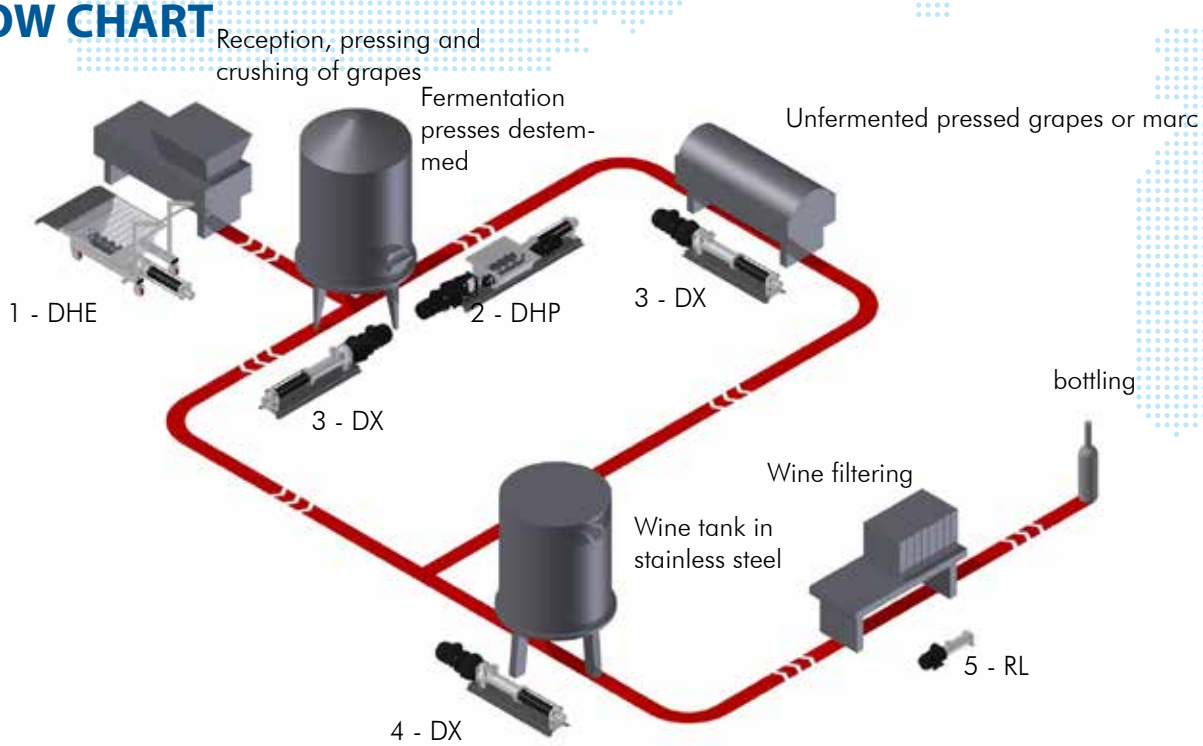
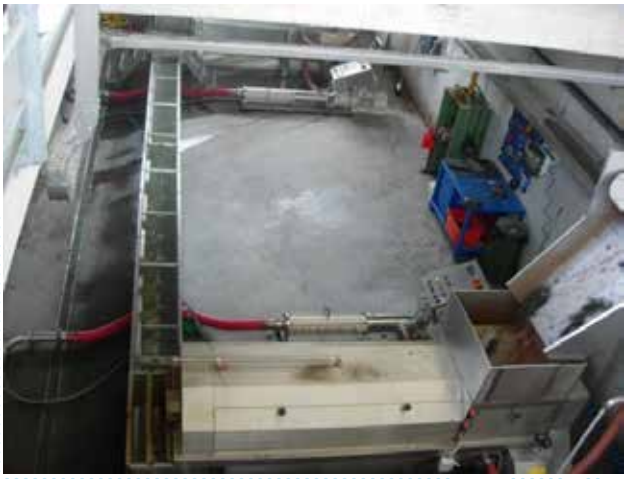


Application (refer to the above diagram):

1. DHE: pump designed specifically for the winemaking industry, used for pumping crushed and destemmed must from the crusher-destemmer to the fermentor
2. DHP: hopper pump with bridge breaker blades for pumping pomace that is prone to bridging from the fermentor to the pomace press
3. DX: pump designed specifically for the food industry used to convey the wine and must from the fermentor or from the pomace press to the stainless steel tank
4. DX: pump used to convey wine from the stainless steel tank to the subsequent wine filtering stage
5. RL: compact stainless steel wobble pump used to convey the filtered wine to the subsequent bottling stage

Applications

■ DN Pump
Transfer of wine from stainless steel tanks to wood barrels for aging.
The transfer occurs without any tensile stress and is pulse-free to retain the organoleptic characteristics of the wine.



■ DN Pump
Transfer of the must obtained from pressing the pomace to the tanks for the next aging stage.

■ DHE Pump
Transfer of the fermented pomace from the tank to the press
using a trolley-mounted press. The enlarged screw guarantees a constant flow rate.

■ DN Pump
Transfer of pomace and must from the crusher-destemmer using a hopper pump connected directly to the machinery.

WASTE AND SLUDGE TREATMENT

The sludge treatment industry arises from problems linked to the treatment of civil and industrial waste water. The use of abundant water generates a large quantity of waste water which requires special treatment to remove the harmful substances contained in it before it can be recycled back into nature. Purification plants were developed to remove the harmful substances contained in waste water by means of active or activated sludge thereby generating semisolid waste called thickened sludge, which in turn must also be disposed of. Over the years ongoing research and the use of new technologies have made it possible to dispose of and reuse waste material in many industries such as for example in biogas plants or to recycle it back into nature as fertiliser. Disposal plants, normally huge centralised plants, reduce the moisture content of the sludge through a process of thickening and densification in order to generate a dry material that is easier to store and use. This industry is the ideal application for progressive cavity pumps because of the nature of the treatment sludge, which has a high percentage of solids content that increases during the various treatment stages, tends to plasticize and has adhesive properties.

Progressive cavity pumps perform best in the various stages involving the transfer of this matter as they ensure effective and reliable performance, which are of vital importance for a waste disposal plant, and higher output levels compared to other pumping systems.

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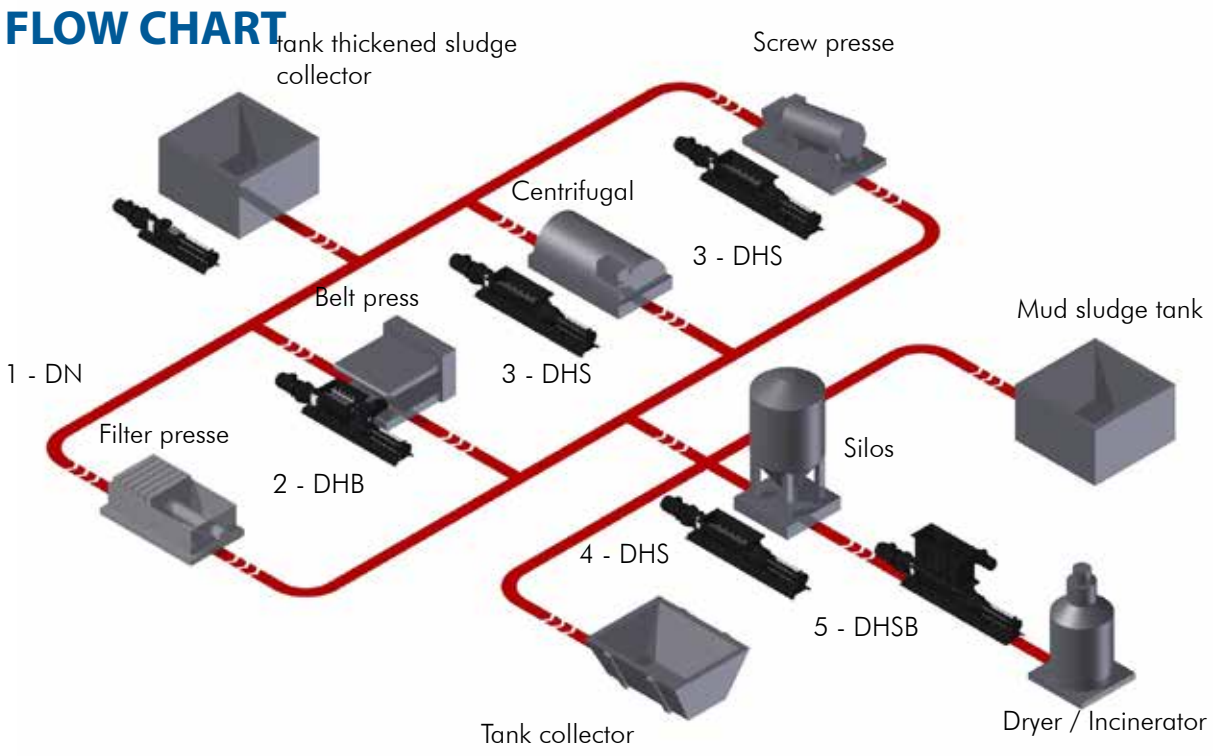

Application (refer to the above diagram):

1. DN: pump specifically designed for heavy-duty appllications, used for pumping from the thickened sludge storage tank to the various dewatering systems
2. DHB: hopper pump with double bridge breaker shaft for transferring treated sludge to silos, tanks or vats
3. DHS: pump used to transfer treated sludge from the centrifuge or screw press to silos, tanks or vats
4. DHS: pump coupled directly to the silo for pumping treated sludge
5. DHSB: DHS model pump fitted with "B" module for transferring sludge from a silo to a dryer or incinerator which is the final stage, that is, the removal of residual moisture, in the sludge treatment plant illustrated above5. RL: compact stainless steel wobble pump used to convey the filtered wine to the subsequent bottling stage

Applications

■ **DHS pump**
Hopper pump DHS series used after filter press for the recycling of the dried sludge into a collector tank.

■ **DN Pump**
DN series used for sludge transfer in a waste water treatment plant.

■ **DN Pump**
DN series used for chemical thickened sludge transfer to centrifugal treatment.

■ **DN Pump**
DN series used for transfer of polymer and sludge in a waste water treatment plant.

OLIVE OIL INDUSTRY

Olive oil is one of our most familiar, widely used products as it is the basis of the traditional Mediterranean cuisine. Olive oil cultivation and production techniques have origins dating back to Ancient Grecian times, subsequently adopted by the Romans who exported it to most of Europe as we know it today. Nowadays, the oil industry is widespread throughout Italy and countries such as Greece, France and Spain where favourable climatic conditions for olive growing prevail. The last century saw a shift from small-scale artisanal production, operated by the actual owners of the olive groves, to major industrial plants. The industry has invested in new processing techniques to constantly improve product quality, as well as to increase output.

Progressive cavity pumps perform best in the various process stages, as they convey the fluid throughout the entire process in a particularly delicate way, from grinding of the olives through to bottling of the oil. The tensile stress to which the pumped fluid is subjected is very limited compared to other pumping systems, being pulsation-free, above all with heterogeneous products such as for example the paste produced after the first grinding step. Integration of the pumps with the different processing machines ensures fast transfer times which is indispensable for the preservation of the organoleptic characteristics of the product needed to achieve a high quality oil.

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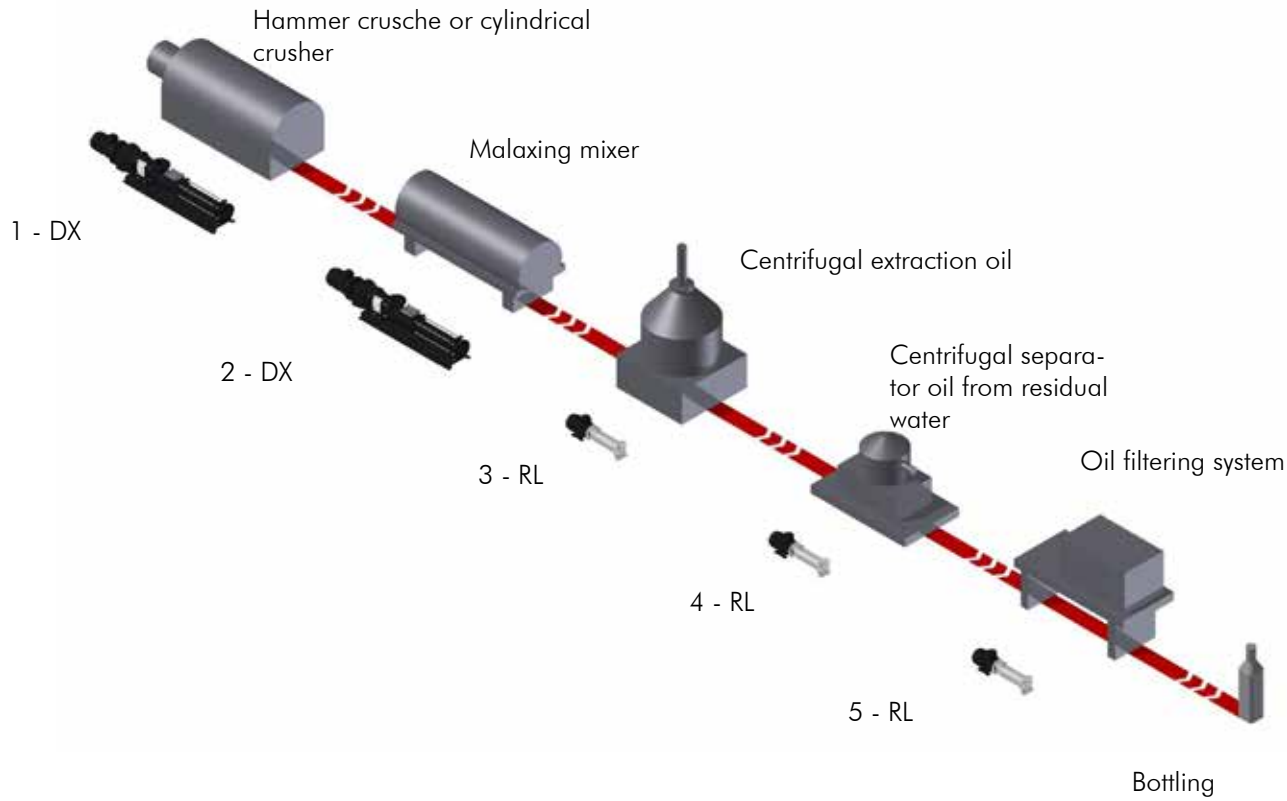
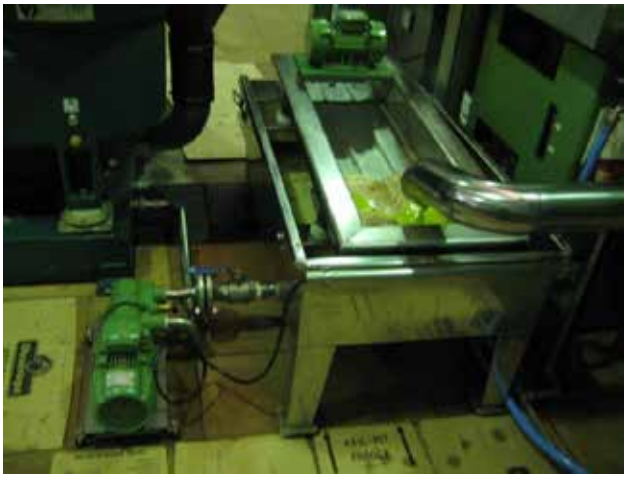


Application (refer to the above diagram):
1. DX: pump designed specifically for the food industry, used to transfer the product from the hammer crusher to the next step, malaxation of the paste consisting of solid fragments of pits, skins and pulp obtained after milling 2. DX: pump used to transfer the olive paste, after the malaxation process, to the centrifuge where the oil is separated from the water.
3. RL: wobble pump used for pumping the oil must as it flows from the centrifuge that separates it from the pomace, which is the solid part of the olive paste, and then passes to the next stage which is separation of the oil from the residual water.
4. RL: pump designed to pump oil obtained from the separation stage (oil from the residual water) to the filtering stage
5. RL: pump designed to pump filtered oil to the bottling stage

Applications



■ **DN pump**
DN pump used for transferring of pulp/olive paste from malaxer mixer to decanter to separate solid dregs and sediment to the oil

■ **RL Pump**
RL pump used to transfer the Virgin olive oil.

■ **Pump R**
Pump type R series with wobble stator for pumping vegetables waters.

BIOGAS INDUSTRY

The use of organic matter for fermentation to produce cheap, renewable energy has been one of modern society's main objectives for quite some time. The development of biogas plants for the production of electricity is the answer to this ever growing need. From an environmental point of view countless benefits result from it: waste materials from biochemical processes generated in a digester produce an excellent fertiliser, the digestate, which can be used within a shorter time frame than the original organic matter, and the heat extracted by various devices for the generation of electrical energy can be reused to create a cogeneration plant.

The first plants to appear, mostly in Germany, immediately brought to light various problems arising from the transfer of organic materials which can have very different, specific characteristics. The biomass used in these plants can derive from waste products, process waste (such as for example animal wastes, agroindustrial wastes or wastewater, agricultural processing waste) or from specially cultivated plants called "energy crops". These fluids that do not derive from controlled processes very often contain foreign matter and solids that could cause the system to break down if appropriate measures are not taken.

Currently, these plants are proliferating throughout Europe and in emerging countries like China and are incentivised by policies aimed at renewable energy sources and to the recent use of biogas which if properly treated can generate biomethane. This is then generally used to fuel vehicles or to generate electricity.

Should read? Progressive cavity pumps perform best in the stages involving the transfer of the organic matter as they ensure effective and reliable performance which are of vital importance for a production plant, considering the high costs incurred by downtime. In terms of consumption, a biogas plant must guarantee the lowest possible operating costs to avoid affecting the overall production, progressive cavity pumps can guarantee higher output levels compared to other pumping systems and are therefore the preferred pump type for these applications.

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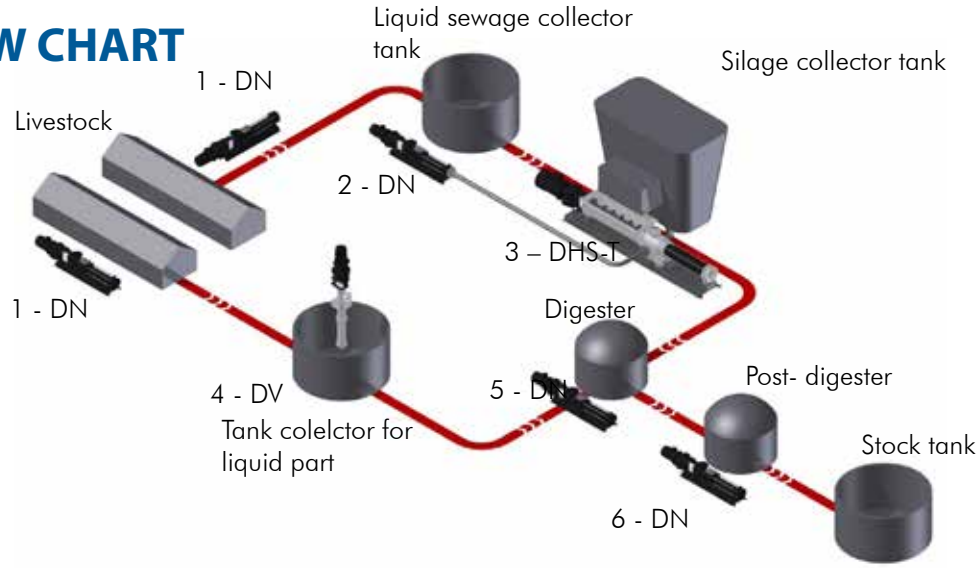


Application (refer to the above diagram):

1. DN: pump designed specifically for heavy-duty applications, used for pumping liquid livestock manure to collection tanks
2. DN: pump used for injecting liquid manure from the collection tank to the DHS-T pump
3. DHS-T: feed pump for the digester from the biomass collection tank, manure is introduced by the DN pump to make the fluid pumpable
4. DV: for pumping zootechnical waste from the collection tank to the digester
5. DN: for pumping partially fermented biomass from the main digester to the post-digester
6. DN: for pumping digestate from the post-digester to the final storage.

Applications

■ DHS-T and DN pump
DHS-T pump for transferring biomass to the digester with phase liquid injection. The injection occurs via the DN pump that draws the liquid manure from the storage tank that is mixed with the biomass, usually consisting of solid materials with a high percentage of dry matter such as corn, grass, fresh rye, vegetable waste and food waste.

■ DV Pump
Vertical pump DV, installed in a tank containing liquid manure. The machine is immersed directly into the product therefore there is no need for suction pipes which reduces the footprint to the minimum..

■ DN Pump
DN pump used for transferring liquid manure mixed with 5% silage from a storage tank directly to the digester.

■ DN Pump
DN pump used for pumping zootechnical waste in a farm equipped with a grilled collection system. The installation is placed under the stable flooring to ensure a minimum footprint .

PAPERMAKING INDUSTRY

Papermaking has ancient origins which are still not completely known. According to tradition paper was produced for the first time in China in the year 105 A.C. using paper mulberry bark. It spread to various other countries at a much later date, in fact after 500 years, as the Chinese were determined to defend their secret. It was not introduced to Europe until around the C9 th by Arab merchants and production did not begin until after the C10th .

Italy was one of the first and most important papermaking countries in Europe. In fact, some of our historical mills dating from their origins in the C12th are still operating today.

The growing use of paper over the course of history HAS led to the search for more and more efficient production processes, developing from a manual method to an industrial method, and from rags to cellulose as the main raw material. Currently the papermaking industry is a driving sector in continual growth that is investing heavily in the development of new techniques with the aim of guaranteeing higher productivity and lower manufacturing costs.

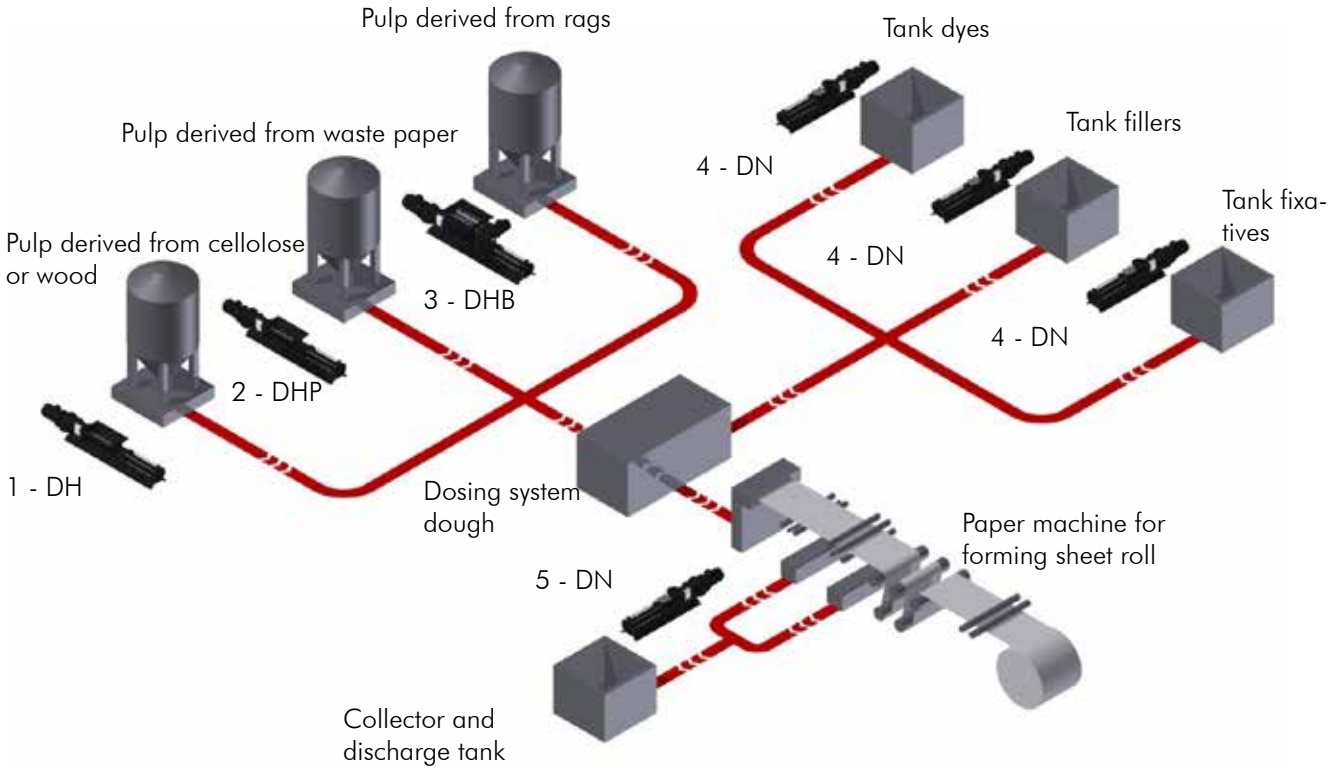
Progressive cavity pumps perform best during the various processing stages, as they ensure reliability of use and efficient fluid conveyance throughout the entire production cycle, from the transfer of pulp to the transportation of waste water from the various forming and coating processes to the subsequent purification treatment.generate electricity.

Should read? Progressive cavity pumps perform best in the stages involving the transfer of the organic matter as they ensure effective and reliable performance which are of vital importance for a production plant, considering the high costs incurred by downtime. In terms of consumption, a biogas plant must guarantee the lowest possible operating costs to avoid affecting the overall production, progressive cavity pumps can guarantee higher output levels compared to other pumping systems and are therefore the preferred pump type for these applications.

FLOW CHART

Application (refer to diagram on the other side):

1. DH: hopper pump used to transfer cellulose pulp to the metering system. The cellulose pulp obtained through a mechanical or chemical procedure for separating the cellulose fibres from the wood, can be pumped regardless of the procedure from which it is obtained, thanks to the vast availability of special materials in contact with the product used to make the pump.
2. DHP: hopper pump with bridge breaker blades for pumping pulp obtained from waste paper. The blades, with a separate drive unit, prevent bridging and ensure an optimum feed to the auger screw.
3. DHB: pump with double bridge breaker shaft used for pumping paper pulp obtained from rag pulp, with long or short fibres.
4. DN: industrial pumps that transfer dyes, fillers and fixatives to the pulp metering system from the various tanks. The DN pumps enable a pulse-free transfer and precise metering of the pumped substances.
5. DN: industrial pump used for transferring the waste waters obtained from the various paper forming stages for the subsequent purification treatment. These substances can come from any of the pressing , filtering , bleaching or coating processes.



Applications

■ DN pump
The DN pump with high quality cartridge seal system. Seal system engineered for the Diamond series has the fundamental advantage of being quick to replace and easy to maintain

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