Global Presence

Addresses of all business partners in 60 countries are available upon request or by visiting:

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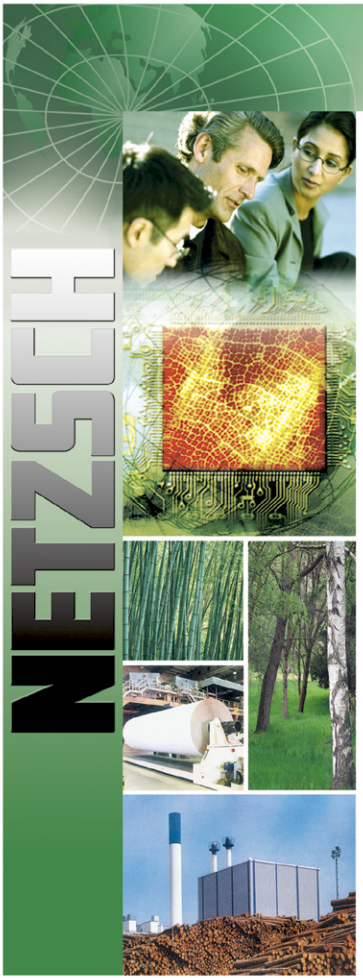


NETZSCH
The heart of your process

NEMO® Pumps
In Pulp and Paper Industry

NETZSCH

Paper——The witness of history, the carrier of the modern times, and the describer of the future

In the pulp and paper making industry, NEMO® pumps from the NETZSCH provides it with perfect conveying and control of materials in all stages of processing for its high quality pumps with excellent performance.

The continuously development of our NEMO® pump ensures the optimal solution for your individual application.

As market and technology leader we are in a position to offer you competent advice worldwide through our market orientated sales organization.

The control systems of dry running protection etc. are the complementarities of the pump products applying in paper industry.

With our customers, from all over the world we are able to incorporate the latest market trends and requirements into the development and improvement of our products.Therefore new possibilities for your manufacturing process continually arise.

NETZSCH TORNADO®

NEMO® PUMPS

NETZSCH Dry Running Protection System

Paper —— the symbol of the progress of mankind and the important means for acquiring knowledge and communication

Paper exists everywhere. If there were no paper, there would be neither books nor newspapers, children would not draw pictures, young persons would not write love letters, the old would have not cards for recreation; in the same way, if there were no paper, you would not see this brochure for introduction of NEMO® pumps that we proud of. Someone may rebut that all these could be reached without paper at the electronic era of information, therefore, no matter what substitute cannot replace paper that gives mankind a sense of close touch and reality.

At the present time, paper industry like aviation industry accounts for 2.5% of the total industrial amount of the world, and the demand for this is still rising. Therefore, the industrialized processing with high efficiency and low cost is playing a decisive role for all the enterprises. The lifetime of paper making equipment is about 15 to 25 years, and though the pumps only account for a small proportion in the investment, they play an important role for the complete operation time limit of the equipment.

Our pump products relying on their excellent performance will support your every procedure of processing in paper making from pulping to paper making, coating, and at last the sewage treatment, and they exist everywhere in your plant. Because of the incomparable reliability, NEMO® pumps have been the first selection for all the large-scale paper making factories in the world during the fifty years.

NEMO® pumps —— your motive force for success

The media you convey…

We can convey the following media for you

Chemicals for pulping

Steaming and boiling aids
Additives for steaming and boiling
Defoamer
Antiseptic
De-inking agent, etc.

Chemicals for paper making

Sizing agent in pulp
Retaining aids
Filtration aids
Dry strengthening agent
Wet strengthening agent
Defoamer in pulp
Softeners
Dispersant
Coloring
Exterior sizing agent
Exterior strengthening agent
Fluorescent brightener
Resin control agent
Fiber dispersant, etc.

De-inking agent for waste paper

De-inking agent is a kind of aqueous emulsion packed by oil emulsified from organic solvent of chain hydrocarbon and other hydrocarbon categories, exterior activator, water and aid.
Appearance: white emulsion
pH: 6 ~ 7
Adhesive viscosity: ≤ 35 (25℃)

Pulp

Amount of solids: 10 %
Appearance: white fiber status
Temperature: 40 ℃ ~ 60 ℃
Viscosity: 3000 ~ 5000 mPas
pH: 7.0 ~ 7.5

Recycled pulp

Amount of solids: 10 ~ 12 %
Flow rate: 160 m^3 / h
Temperature: 80 ℃ ~ 90 ℃
Viscosity: 20000 mPas
Pump type: NM180SF (the pump operates continuously 24 hours a day and 365 days all the year round)

Rosin size

Rosin size is a kind of organic acid with large molecules, and a brown transparent solid substance without certain shape. Through saponification, emulsification, dispersion, and dilution, it will become a kind of white glue with about 1.6 % ~ 2.0 % of concentration, and the dissociated rosin is separated into small grains of 0.5 % ~ 3 μm.

Alkaline sizing AKD

Alky Ketene Dimer, doesn't dissolve in water, so dispersant and emulsifier are required to put in.
Appearance: white emulsion
Granularity: ≤ 0.5 μm
Amount of solids: (15 ± 1) %
Concentration: 20 %
pH: 8.2

Precipitated calcium carbonate

It is made from milk of lime by putting in carbon dioxide
Chemical composition: 98.6 % $CaCO_3$
Solid Content: 70 % ± 1
Viscosity: 500 mPas
Granularity: 0.1 ~ 0.35 μm
Shape of grain: fine lozenge
pH: 8.5 ~ 10.5
Work temperature: 40 ℃

Talcum powder

The fineness is required that 98% of the material should pass through 200 meshes of screen.
Appearance: white powder appearing scaly particles and feeling the fine and smooth handle as soap lubrication.
Chemical composition: 30.6 % MgO 62 % SiO_2
Granularity: 0.25 ~ 5.0 μm
Relative density: 2.7
Shape of grain: fine flakes

Kaolin (also named as porcelain clay)

It is alike the talcum powder in characteristics
Chemical composition: 39 % Al_2O_3 45 % SiO_2
Viscosity: 500 mPas
Granularity: 0.5 ~ 10.0 μm
pH: 6.5 ± 0.5
Work temperature: 40 ℃
Relative density: 2.58

Calcium carbonate

Chemical composition: $CaCO_3$
Granularity: 0.1 ~ 0.35
Viscosity: 500 mPas
Amount of solids: 70 % ± 1
Work temperature: 40 ℃
Relative density: 2.65 μm
Shape of grains: fine round

Titanium dioxide (also named as titanium whitening)

It is a kind of high-grade fillers
Chemical composition: 98 % TiO_2
Granularity: 0.15 ~ 0.3 μm
Specific gravity: 3.9
Shape of grain: fine lozenge

We can convey the following media for you

Chemicals for processed paper

- Filler for coating
- Densifier
- Blind for coating
- Coating aid
- Oil-preventing agent
- Adhesive-prevent agent
- Waterproof agent
- Anti-static agent
- Lotion
- Antirust
- Lubricant
- Model removing agent, etc.

Sewage from the process of pulping, Paper Making and Coating

Fluorescent brightener

Main chemical composition: ramification of styrene
Appearance: amber transparent liquid
Density: 1.1 ~ 1.2 g
Viscosity: ≤ 85 mPas
pH: 8.5 ~ 10.5

Water protective agent: aqueous solution of metamorphic polythene imine

Density: 1060 kg / m³
Amount of solids: 23 % ~ 25.5 %
Viscosity: 500 ~ 1000 mPas
pH: 7.8 ~ 8.7
Solubility: it can be mixed and dissolved with cold water at any proportion

Cationic starch, metamorphic starch

Appearance: white powder without peculiar smell
Viscosity: 1500 mPas
Concentration: 10 %
pH: 6 ~ 8
Temperature: 60 ℃

Polyvinyl alcohol (PVA) solution

It can be made into exterior sizing by mixing with starch oxide
Appearance: transparent liquid
Concentration: 10 % for bond paper and 3.5 % ~ 4 % for banknote paper
Viscosity: 20 ~ 30 mPas
pH: 5 ~ 7

Dispersant

Appearance: whitely granular
Viscosity: 600 mPas
Concentration: 40 %
pH: 7 ~ 9

Defoamer

Emulsified liquid of compound of aliphatic base and mixture of hydroxide category

Density: 980 kg / m³
Viscosity: 950 mPas
Amount of water: 70 %
pH: 10
Requirement for temperature: 45 ~ 55 ℃

Neutral sizing ASA emulsified liquid

Chemical name: Alkene butane diacid anhydride (ASA)
Appearance: yellow oily material
Dynamical viscosity: 5.6 (mm² / s) 20 ℃

Coating for lightweight coated paper

The LWC paper is made from blending calcium carbonate (precipitated calcium carbonate, i.e., PCC with the granularity less than 2 μm), porcelain clay, carboxyl methyl cellulose (CMC), cation starch, and latex. Thus the coat possesses excellent rheological property, water protective property, and also the capacity of lubrication and scraper, so as to ensure the quality and reliability of the coat processed. According to the different varieties to be processed, if the coating is changed, the blend device and the pipelines should be cleaned thoroughly lest the deposit left will bring disadvantageous and side effects to LWC paper.

Pigments coating

The main coatings are: taking the white pigments of porcelain clay, calcium carbonate, and titanium dioxide as the main body, and dispersing them into the solution of sizing, then blend them with various aids according to the requirements.
Formulation of coating liquid: different formulations are required for different paper products, coaters, and properties of coatings. Generally, pigments account for 75 % ~ 90 %, sizing 10 % ~ 25 %, and the total solids 30 % ~ 70 %.

Resin coating

It takes various resins as the main component of coating. Hardener, brightener, and plasticity enhancer will be added according to the requirements. The coating is blended as the procedures: dissolving the resin or dispersing it in organic solvent or water, and then the dispersoid or latex be made.

We have the same target

Pulping is a process of separating plant fiber from raw materials. The main processes are: stock of raw materials-boiling and steaming-washing-riddling-bleaching, in which the process of boiling and steaming is the most important.

Separation of waste liquor and washing of paper pulp: the waste liquor from the alkali pulping is called dark liquor, the waste liquor from the acid pulping is called red liquor, and they all called waste liquor from boiling and steaming, in which the degraded materials of wood elements and saccharide and other impurities are retained and they must be separated from the paper pulp as much as possible after boiling and steaming in order to ensure the purity of the paper pulp.
The washing of paper pulp is a process of separation of fiber from non-fiber impurities. In order to raise the washing degrees of waste liquor and pulp materials in washing process of paper pulp, more and more organic macromolecule aids are used in the production process.
Bleaching of pulp: the whiteness of pulp can be improved by adding in bleacher for removing colored substances or changing colored clots.

NEMO® pumps can be used for pumping the waste liquor of bleacher and various aids in above mentioned process.

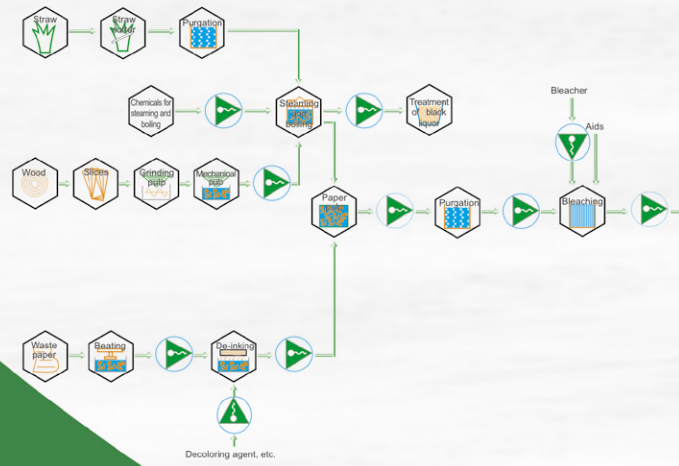
Many kinds of chemicals are required in papermaking. Besides some basic chemical materials (such as alkali, sodium sulfite, sodium sulfide, etc.), some special chemicals are also needed to add in, such as sizing, retaining aids, de-inking agent, and defoamers, etc. In addition, some universal chemicals are also required to add in, such as surfactant, metamorphic starch, inorganic and organic fillers, natural latex, etc. Most of the special and universal chemicals have the characteristics of containing high solids content, abrasion, corrosion, thixotropy, toxicity, and hard to pump, and NEMO® pumps are the best choice for excellent performances in pumping such media.
Besides fillers, the amount of the added chemicals for papermaking generally accounts for 1 % ~ 2 % of the total amount of the paper, they are playing an important role for the properties of the paper made. Because the NEMO® pumps with the advantages of free of cutting and pulsation can ensure the physical and chemical properties of the fiber media in pumping, they have been widely applied in the processes of papermaking in recent fifty years.

The pumps in papermaking are normally operating in very difficult conditions. In fact, The paper machines must operate incessantly 7 days a week, 24 hours a day, and their shutdown hours should be the shortest. The factors that restrict the paper industry are mainly the characteristics of the raw materials used, pollution, erosion, and abrasion. Therefore, in any conditions, the reliability and low-cost maintenance of operation of equipment become the most fundamental requirements.

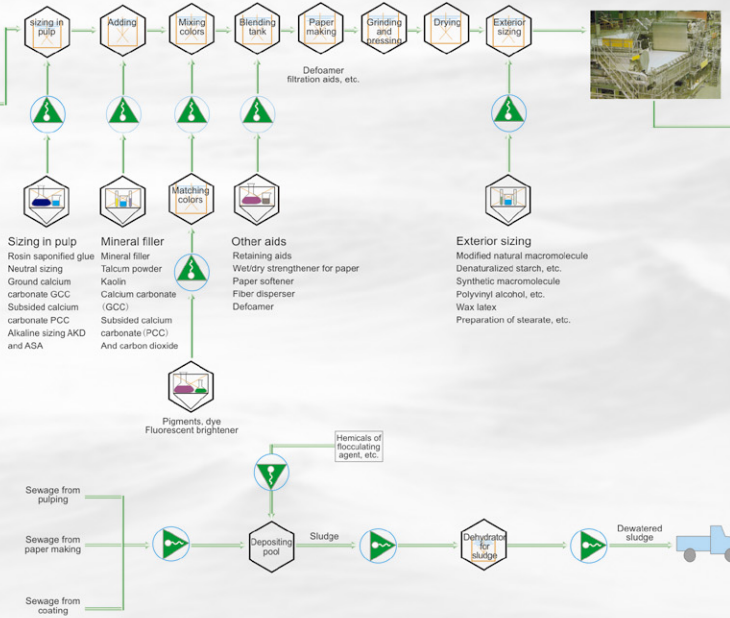
Converted paper is reprocessed after papermaking, and various converted paper can be got.
The coating kitchen is actually a chemical mixing plant, where all the compositions of the coating mixtures are blended together. The most commonly used component of the coatings is kaolin, and calcium carbonate and titanium dioxide are also used. Once the mixing complete, pumps are used for transiting them to coaters; NEMO® pumps can be applied for preparation and distribution of coatings and also for measurement. The coatings prepared from the mixing have the characteristics of high viscidity and solids content, and containing gases, the pumping should be stable and pulsation-free, and only the NEMO® pumps can perfectly satisfy the requirements.

NEMO® pumps in the processes of pulping, papermaking, and coating

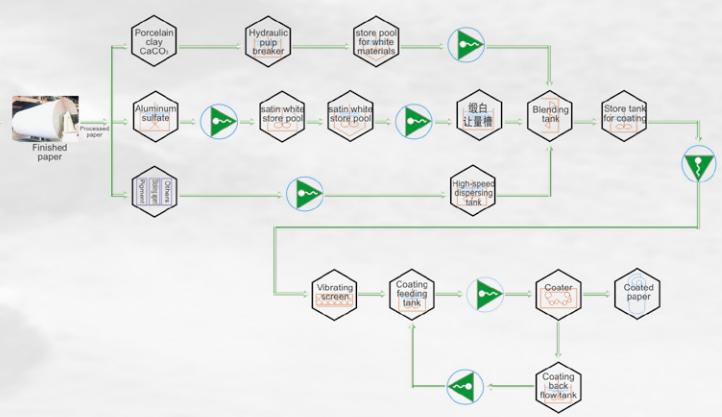
Flow Chart of pulping



Flow Chart of Paper Making

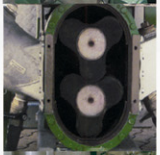


Flow Chart of Coating



NEMO® Pump

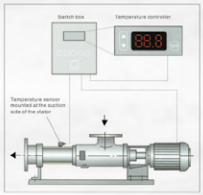
Whenever the NEMO® pump cannot be installed in narrower space, the NETZSCH TORNADO® pumps can be applied to replace it in most processes.



Dry Running Protection System and NETZSCH TORNADO®

STP–2A Dry Running Protection System

- Evaluation of difference in temperature between stator and rotor
- LED Display of operating temperature
- Individual shutdown adjustment
- Shutdown of pump drive if maximum temperature is exceeded
- Suitable for all and varying products with constant temperature
- For operation in the Ex-Area
- Temperature controller with safety barrier in areas
- Free from Ex-hazards
- Temperature sensor with in the Ex-Area



NETZSCH TORNADO® Industrial Rotary Lobe Pumps

Wide Spectrum of Applications

This pump is normally used for products having the following properties:

- with or without solids (max. size of solids up to 70 mm / 3 ")
- low to high viscosity (1 mPas ~ 1 million mPas)
- thixotropic and dilatant
- shear-sensitive
- abrasive
- non-smearing and smearing
- flow rates from 2 up to 700 m³ / h (8.8 up to 3,100 gpm)
- for pressures up to 12 bar (170 psi)

Further Features

- high suctoion capability of up to 8 mwc (26 ftwc)
- resistant to dry-running
- direction of rotation, thus, direction of flow reversible
- installation in any position
- vibration free and quiet running
- low life cycle cost and srevice friendliness

General Properties of NEMO® Progressing Cavity Pump

NEMO® progressing cavity pumps are normally used in paper plants for pumping fluids with the following properties:

- low viscosity or compacted
- solids content up to 50 % and solids size up to 150 mm
- fibrous
- adhesive
- thixotropic
- abrasive
- corrosive and aggressive
- lubricating and non-lubricating
- varying temperatures
- high gas content
- toxic

Large Capacity and Pressure Range

- flow rates up to 700 m³ / h
- pressures up to 48 bar

NEMO® Progressing Cavity Pumps

Advantages

- variable, modular system
- robust and compact block desigh also available with bearing housing
- four rotor / stator geometries and an extensive range of materials
- the most suitable joint for every application
- mechanical seal ad standard, other seals optional

Additionally, for high viscosity pumps

- various hopper dimensions with and without force feed chamber
- bridge breaker (optional)

Special features

- continuous, almost pulsation-free conveyance independent of pressure and viscosity
- high dosing acuracy even at low rotational speed
- high suction and pressure capability (- 0.9 bar up to +48 bar), no valves
- reversible direction of flow
- stator inlet with taper for optimal entry of the fluid into the conveying chamber
- patented, positioned feeding screw for viscous products
- pumps for fluids with high dry solids contents
- low life cycle cost due to high operational reliability and simple service requirements