Potato granule lines
Thickener or starch substitute
Complex production lines
Whole or sliced potatoes

Toroidal product motion for high heat and mass transfer rates
Potato granules have a fine texture and can often be used interchangeably with dehydrated potato flakes. They are usually found in instant mashed potatoes and in fabricated snack foods, such as chips and crackers. Granules are an excellent substitute for other starches and are used as a thickener in mayonnaise and other products. Production lines for granules involve complex processes that require careful engineering. Important aspects such as reduction of energy consumption and waste water, food safety, hygiene, automation, and reduction of maintenance cost form the basis for these process stages.

Process description
The raw product is taken from storage and brought to the cyclone de-stoner by means of a belt conveyer. The water carries the potatoes into the washing drum, which contains an (adjustable) layer of potatoes, thus causing the individual potatoes to rub together intensively. The washing process is enhanced by overhead showers in the drum. A screw conveyer subsequently transports the potatoes to the weighing hopper, which doses a pre-set quantity of potatoes into the steam vessel. Steam pressure is built-up in the vessel and maintained for a pre-set time, while a rotating arm stirs the potatoes. Then the steam is released very quickly into the expansion vessel.

As a result, the skin detaches from the potatoes explosively. The batch is emptied into the extraction screw conveyer, which transports the potatoes to the dry peel remover. In the counter-flow screw washer, the remaining peel, sand, and other foreign matter are washed off. The specifications of the final product determine whether the potatoes are sliced or processed whole. Sliced potatoes pass through the vibrating screen washer. The free starch removed is collected in a concentration pocket and evacuated continuously for further treatment in a starch recovery system. After the slicing unit and the vibrating screen washer, the potatoes are fed into the blancher and subsequently to the cooler, or they bypass this step via the flume system to reach the even flow screw conveyor. In the cooler, the product is cooled with water in a counter-current flow.

The potatoes are fed in batches to a cooker, where the condensate is removed continuously. At the end of the cooking section, the potato mash drops into screw conveyors for delivery to the powder back-mixer. Additives are blended together in the additive station and pumped to the inlet of the back-mixer. Wet product is dosed to the back-mixer onto the powder coming from the silo, which is already inside the back-mixer. Rotating shafts with paddles mix the wet, cooked potatoes and the dry powder gently. A moving belt transports and holds the product mixture for an adjustable period of time to balance out the moisture content in the powder. At the end of the belt, the product drops into a post-mixer to loosen the wet powder before it enters the
Turnkey solutions
From raw intake to packaging

Coarse scalper screen for removal of coarse product. The sieved fraction drops into a product transport system that carries it to the primary dryer. In the dryer, the product flows downwards in a spiral into the mixing zone above the blade ring in the bottom section where hot air (high temperature) is introduced. The water is partly evaporated and discharged with the used (and cooled) drying air through the central opening in the top of the chamber.

Depending on particle size and air velocities, fines are removed with the process air and recovered in the cyclones. The coarser and heavier product, with a higher moisture content, drops through an opening in the short cylinder at the inside of the blade ring and below the cone into the discharge hopper with screw discharge for dosing into a product transport system. The fine powder separated in the cyclones is also brought to this transport system. All incoming process air is filtered and passes through a glass-tube type heat exchanger. The supply air fan feeds the air to the dryer via the special blade ring arrangement. The energy for drying is recovered from hot air. An exhaust air fan draws the air through a set of cyclones and discharges it to the outside. The fans are equipped with frequency controllers for adjustment of air flows and static pressures at vital parts in the installation.

A product transport system brings the powder from the primary dryer to the secondary dryer. The process in this unit is identical to the process in the primary dryers. The powder from the secondary dryer is dosed to the pneumatic cooling transport system. At the end of this system, the powder is discharged from the cyclones onto the fraction sifters. Powder discharged from the cooling system passes through sieves for separation of non-granulated, oversized product, and the sieved powder is transported to a silo for intermediate powder storage. The potato powder is transported from this silo to the back-mixer, while the surplus powder is sieved once more via another discharge and then dried to the desired residual moisture content for packaging. After the drying process, the powder is cooled. The oversized particles coming from the final sieves are returned to the silo. At the final dryer, the cooler is located below the dryer chamber and has a similar set-up, but without the heater.

Benefits
- Hygienic design
- Handles products with a wide particle size distribution
- Excellent control of product temperature and moisture content
ANDRITZ Gouda

ANDRITZ Gouda has been implementing complete process solutions for the environmental, chemical, and food industries for over 100 years. As a machine manufacturer as well as process solutions expert, ANDRITZ Gouda is able to handle all of the stages involved in designing and building plants, including engineering, service, installation, and commissioning.

ANDRITZ Gouda, as part of the international ANDRITZ GROUP, has several pilot plants available to test new materials, generate design data, and provide representative product samples. The proven calculation model for scaling up to industrial size ensures successful application in full-scale processing.