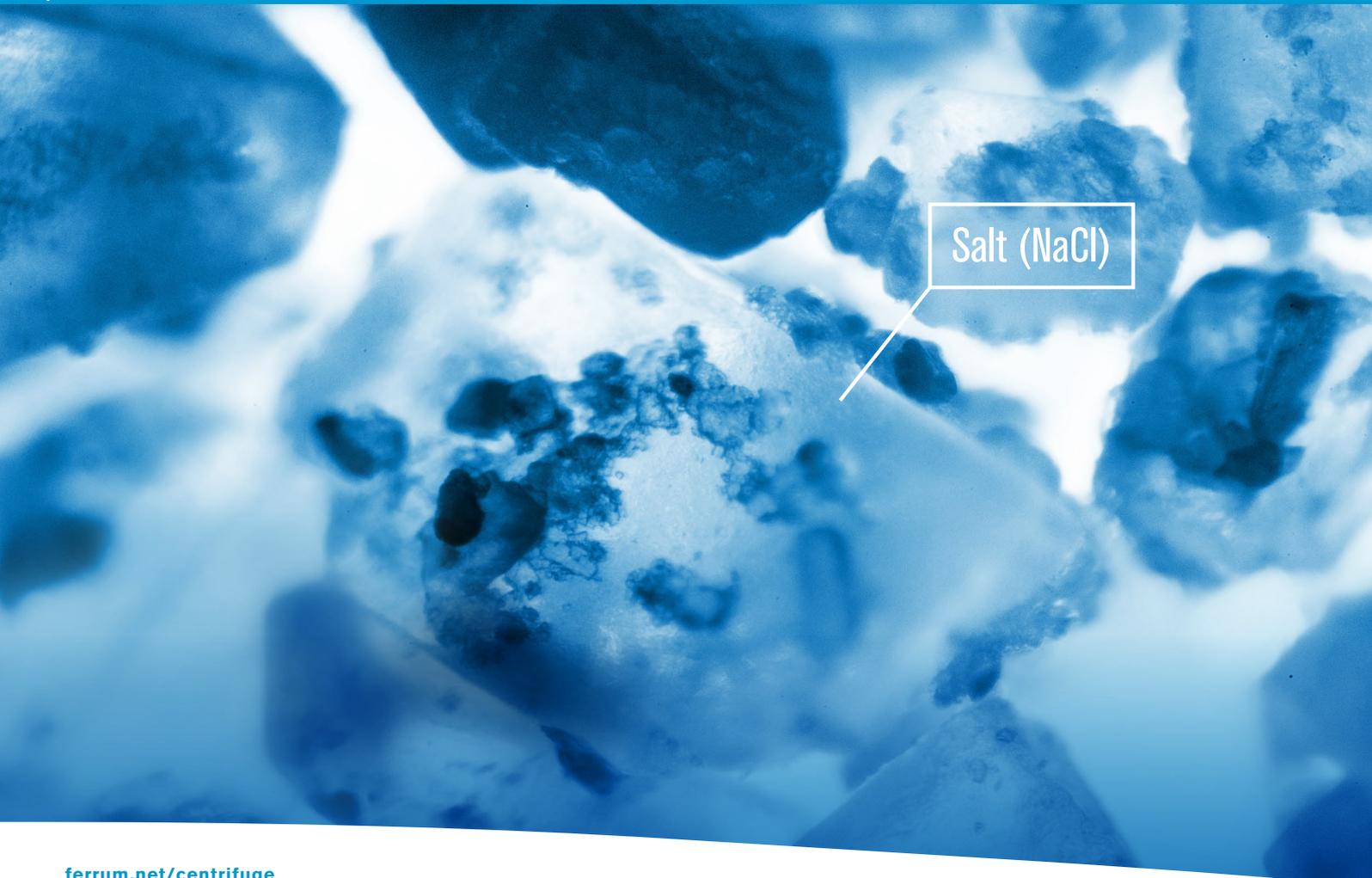


ferrum



**CENTRIFUGES: THE HEART OF YOUR PROCESS
UNLOCK EFFICIENCY AND LOWER YOUR COSTS**



GLOBAL SALT PROCESSING POWER

30'000 TONS PER HOUR

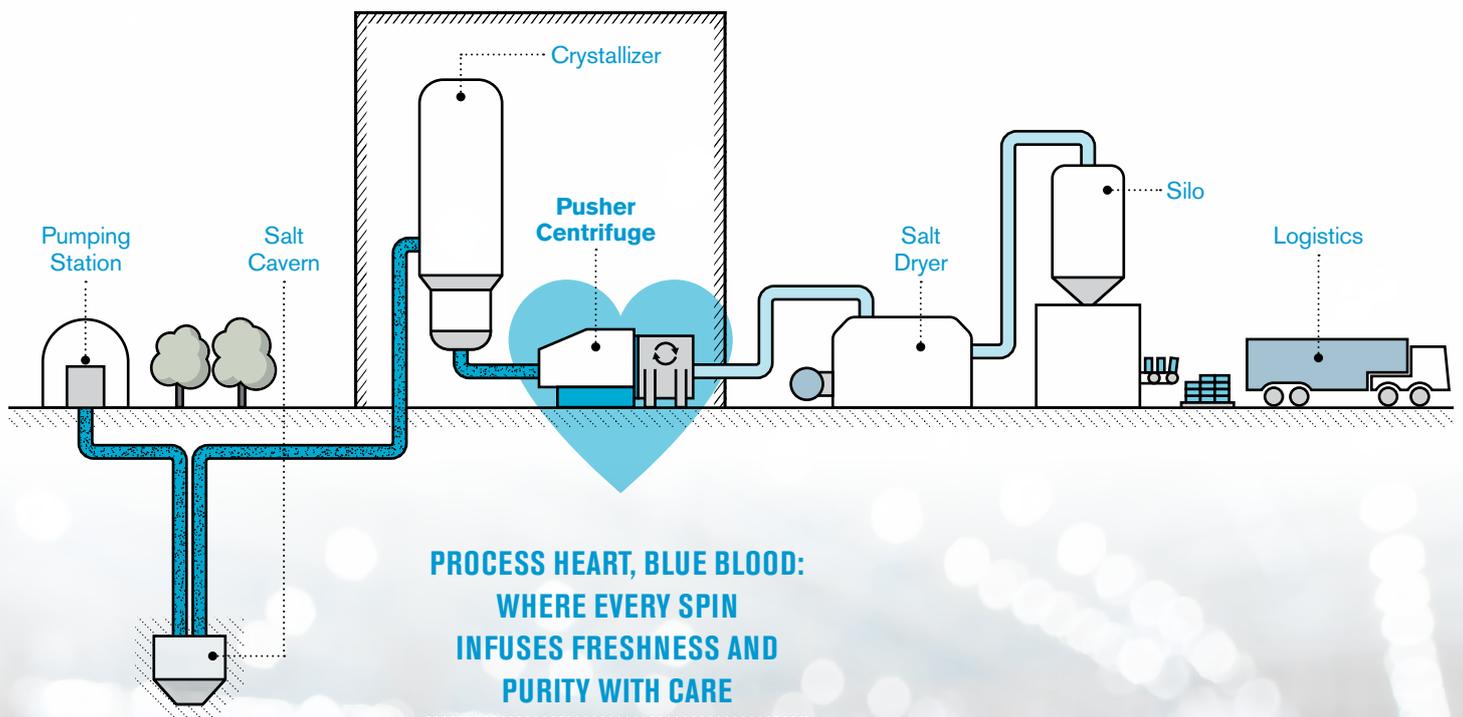
Sodium chloride is extracted from various sources such as rock salt, solution mining, sea salt, etc.

In rock salt, the solid salt is extracted manually from underground deposits, while in solution mining, water is injected into the underground salt deposits, creating brine, which is then evaporated.

In solar evaporation, solar energy is used to evaporate water from sea salt, leaving behind salt crystals.

Worldwide 30'000t/h salt is produced with Ferrum centrifuges.

Below is a general description of the solution mining method, whereby the centrifuge plays an important role in the processing:



The slurry, as the process' «blue blood», holds essential ingredients for quality separation. The centrifuge, acting as the heart, spins it into purity, driving efficient and precise separation at the core.

ENHANCE PRODUCTIVITY AND CUT YOUR COSTS WITH EXPERT SOLUTIONS

Identifying and addressing processing challenges – such as consistent residual moisture levels, minimizing crystal breakage, and achieving optimal purity – is at the forefront of our operations. Ferrum's comprehensive approach significantly reduces operational costs and boosts efficiency.

PAIN POINT

FEATURE

BENEFIT

HIGH PURITY



- Achieve the highest purity levels by efficiently removing impurities and expertly washing the salt cake

- Ferrum's innovative washing system
- Single to multi stage basket design

- Precisely calibrated washing ensures thorough impurity removal, enhancing purity
- Efficiently calibrated washing system reduces water usage
- Selecting the correct number of stages improves salt purity without increasing capital and operational costs

EFFICIENT PROCESSING



- Avoid crystal breakage and achieve low residual moisture as well as high yield

- In-house precision manufactured sieves
- Gentle feed distributor
- State-of-the-art mechanism

- Optimum cake formation enhances filtration efficiency, minimising loss of fines for a higher overall yield
- Uniform slurry distribution minimises crystal breakage, delivering reliable quality and performance
- Reduced thermal energy consumption for the thermal dryer due to the significantly lower moisture content

LOW TCO



- Coping with fluctuating process parameters like solids concentration, slurry temperature, and dissolved impurities from diverse sources

- Integrated pre-thickener
- Wide range of material selection considering the client's need to prevent corrosion and abrasion

- Process solid concentrations as low as 15% without the need for additional equipment
- Engineered for durability and wear resistance, ensuring minimal maintenance and a long service life

OPERATIONAL EXCELLENCE



- Get a comprehensive support, expert advice, and integrated remote monitoring to boost operational efficiency

- ferruCare Centrifuges
- Smart centrifuge monitoring

- +50 years of expertise at disposal
- Achieve the perfect balance between throughput, residual moisture and yield
- Streamlined operation with remote monitoring

CUTTING-EDGE TECHNIQUES

CORROSION



TESTING



SOLID/LIQUID SEPARATION

$$q_f = \frac{\Delta p}{\eta_f h_c} \frac{1}{\rho_s (1-\varepsilon)} \frac{1}{\alpha}$$

$$\frac{P_{cat} \Delta P (\Delta p_0)^{-nc}}{\eta_f v h_{co}} = \frac{P_{cat} h_c + P_{co} h_{co}}{P_{co} h_{co} + P_{co} h_{co}}$$

DATA ANALYTICS

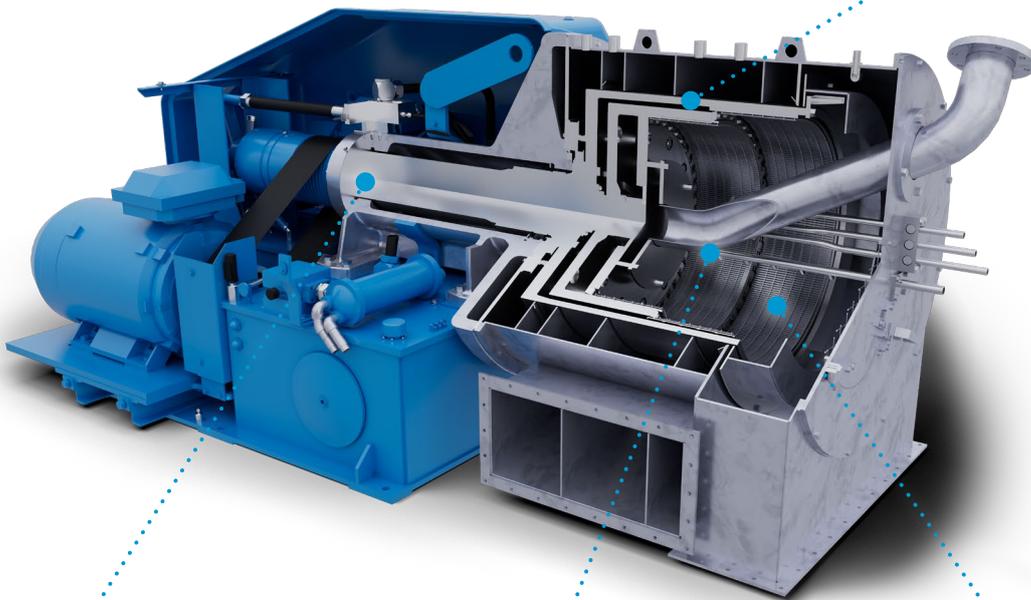
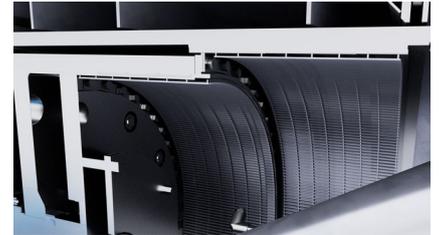


LEVERAGING EXPERIENCE FOR SALT

Almost 100 years of hands-on expertise serve as our guiding compass, enabling us to deftly navigate and refine traditional extraction processes to achieve unparalleled operational performance and product purity.

DURABLE DESIGN

Our durable designs ensure high machine availability. This guarantees long operational lifespans with minimal interruptions.



INNOVATIVE MECHANISM

A precisely adjustable system tailors processes to meet specific requirements. This maximizes performance and enhances efficiency.



PRE-THICKENER

With a solid concentration as low as 15%, no additional upstream equipment is required. This saves resources and reduces capital costs.



EFFICIENT PROCESSING

Our optimized processes achieve superior purity while delivering high yield. Efficiency and quality are always the top priorities.

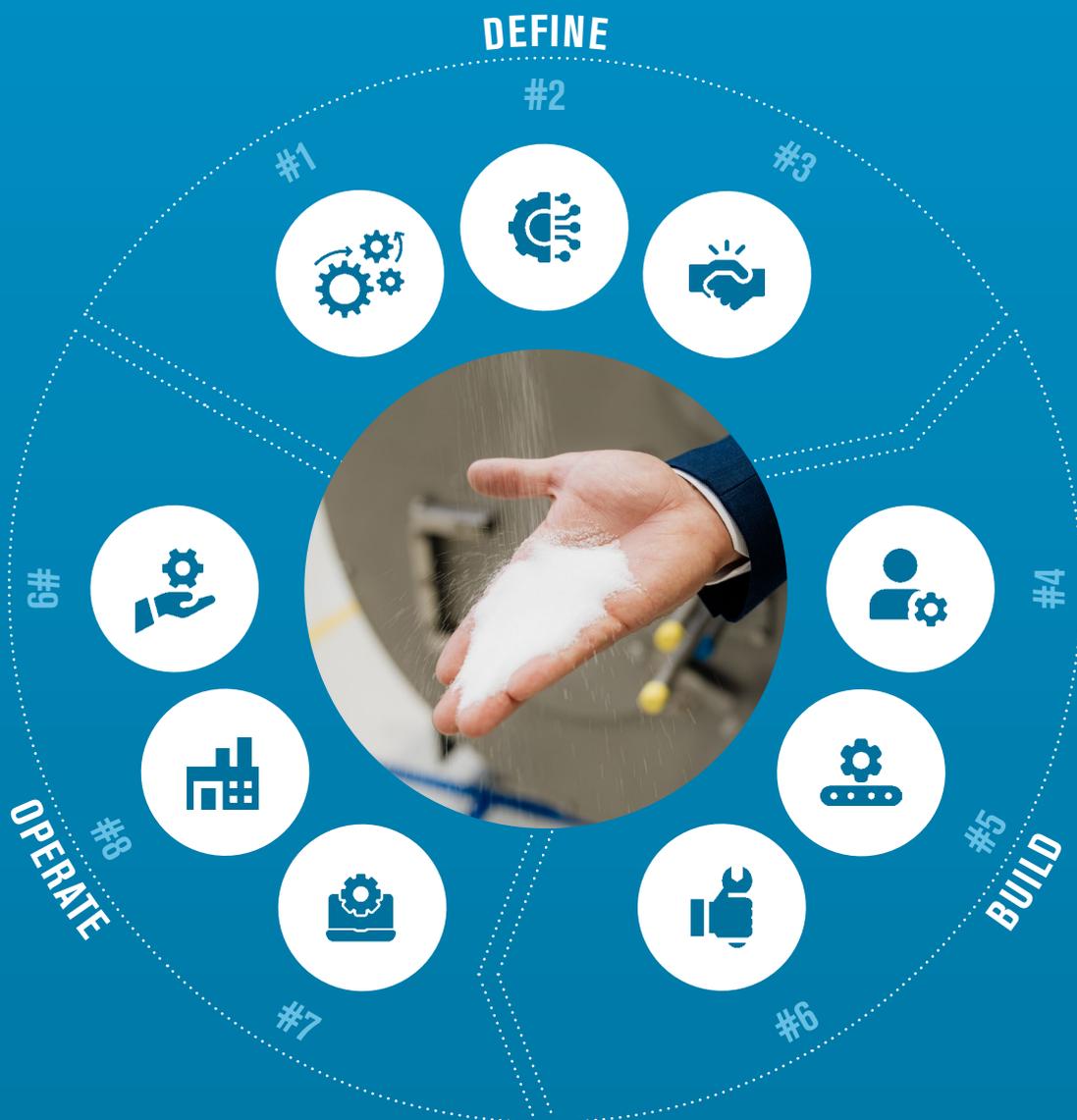


360° METHODOLOGY FOR EXCELLENCE

Our dedication to process optimization shines through our meticulous approach, seamlessly blending data analysis, technical evaluations, and focused experimentation. The result is a suite of solutions tailored specifically to the unique demands of NaCl production.

DEFINE

- #1 TEST SAMPLES IN LABORATORY
- #2 MACHINE CONFIGURATION BY PROCESS ENGINEERING
- #3 SALE OF PERFECT-FIT MACHINE FOR PEAK EFFICIENCY



OPERATE

- #7 FACTORY ACCEPTANCE TEST (FAT)
- #8 SITE ACCEPTANCE TEST (SAT)
- #9 CUSTOMER SUPPORT (ferruCare Centrifuges)

BUILD

- #4 PROJECT MANAGER AS A SINGLE POINT OF CONTACT
- #5 IN-HOUSE MANUFACTURING OF CRITICAL PARTS
- #6 ASSEMBLY

FERRUM CENTRIFUGES: YOUR TRUSTED SOURCE FOR QUALITY SALTS

The salt we provide originates from the precise separation process conducted by our Ferrum centrifuges. This process ensures a high level of purity and quality in the salt crystals.

Each crystal undergoes meticulous separation and purification, resulting in a product that reflects our commitment to precision and excellence in production.

From the centrifuge chamber to various applications, our salt represents a reliable and high-quality choice for diverse uses.



DE-ICING ROAD SALT

The salt extracted from rock salt mines is primarily used for de-icing purposes. High purity is not required and it contains large particles.

Ferrum centrifuges with in-house manufactured screens and a state-of-the-art pusher mechanism offer a perfect combination of throughput and residual moisture.



CHEMICAL INDUSTRY SALT

Salt is essential for chlor-alkali processes, soda ash production, and other industrial uses. High purity and high quality salt is of utmost importance. Ferrum centrifuges are designed to meet the required high purity and quality standards with minimal crystal breakage, low filtrate loss and constant residual moisture.



FOOD GRADE SALT

A person needs about 3–5 g salt per day. The salt must meet food safety standards and shall be of high-purity.

The solution mining and sea salt method is generally used to extract food grade salt. The construction of our centrifuges guarantees safe cleaning and the innovative design allows maximum performance to meet the safety standard.

FERRUM PROCESS SYSTEMS ALWAYS WITHIN REACH



- LOCATIONS
- REPRESENTATIVES
- SERVICE PARTNER

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LEARN MORE ABOUT
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