YOUR PARTNER FOR INNOVATIVE PUMPING SOLUTIONS

FOCUS MARKET:

SUGAR PROCESSING

VIKING PUMP
A Unit of IDEX Corporation

VIKING PUMP

Viking Pump has been a trusted partner in reliability at cane and beet plants around the world, as well as downstream terminals, feed mills and food processors, for more than a century.

Viking invented the internal gear pump, and has developed unique sugar industry models that handle everything from thick juice to massecuite, magma and molasses, to syrups, betaine and raffinate, with the same pump!

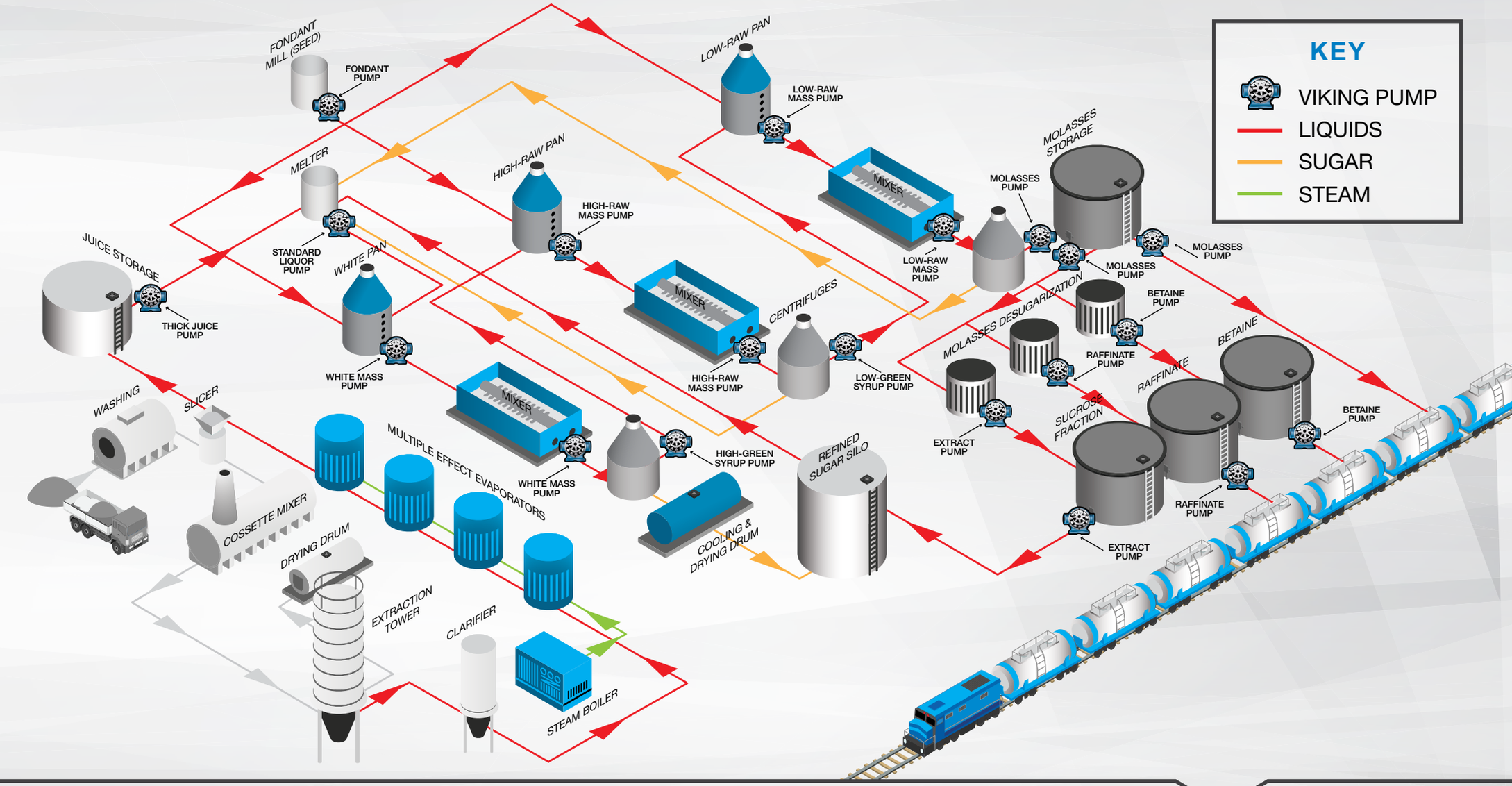
By changing speeds, internal clearances, and the idler gear (for magma and massecuite only), most manufacturing plants can cover all of their positive displacement pumping needs with one or two sizes of the same pump. This standardization simplifies plant operation and maintenance, while increasing reliability and uptime.

Some sugar process equipment companies also make pumps, but it's just an accessory to them. Viking is focused on our pump innovations. As the world's leading positive displacement process pump manufacturer, solving difficult liquid transfer problems is what we do. And it doesn't get more difficult than sugar, so rely on Viking's experience and expertise.

THE VIKING PUMP ADVANTAGE

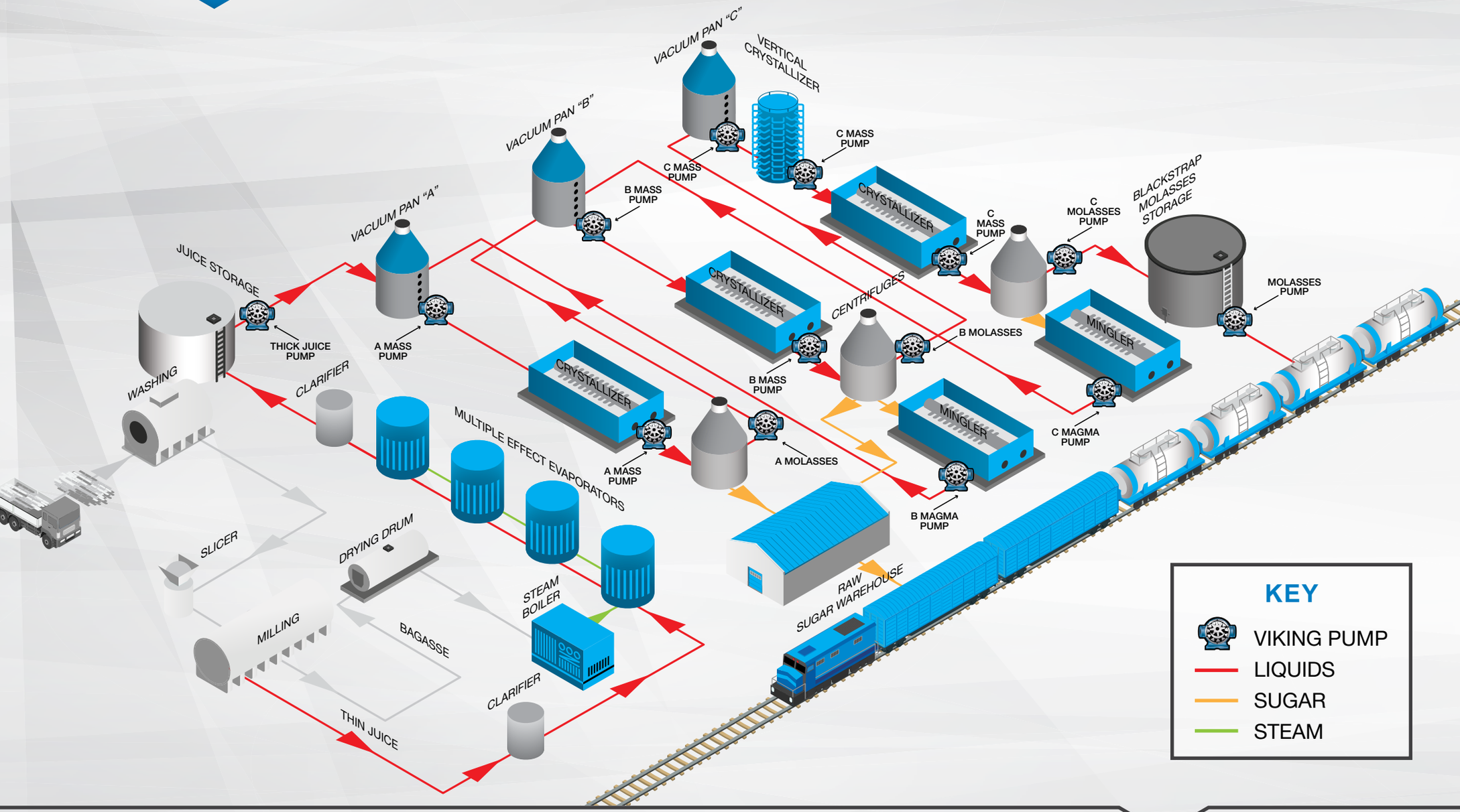
- Slow speed operation to minimize shear
- Optional ribbed idler gear to prevent crystal damage
- One shaft seal, either packing or hard-faced mechanical seal
- Seal between bearings limits radial and axial movement for longest seal life
- End clearance adjustable for viscosity or to compensate for wear
- Hard parts for longest life with abrasive crystals
- Thrust bearing positively maintains rotor position
- Constant flow without pulsation that can cause liquid/solid separation
- Reversible direction of flow to strip line after pumping to avoid solidification
- Robust design very forgiving of operator error
- Simple, in-house maintenance
- Stocking distributors worldwide provide local support

BEET SUGAR PROCESS: SIMPLIFIED FLOW



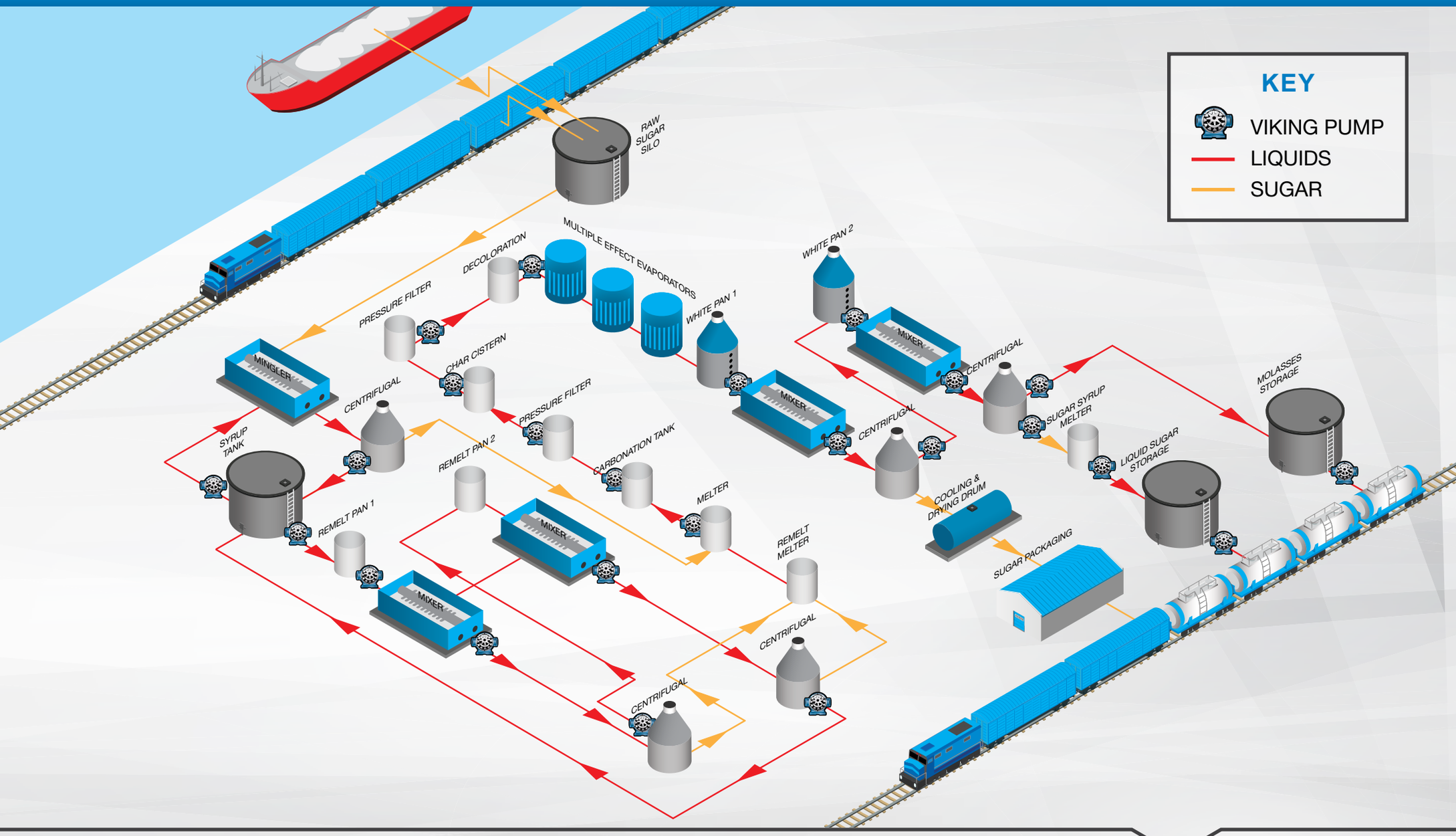
In beet plants, Viking pumps are typically found downstream of the evaporators – on thick juice, standard liquor, white pan massecuite, high-green syrup, high-raw massecuite, low-green syrup, low-raw massecuite, molasses, sucrose extract, betaine and raffinate, as well as metering fondant and processing liquid sugars and inverts. They are used in 24/7 process applications as well as loadout applications to packaging, trucks and railcars.

CANE SUGAR MILLING: SIMPLIFIED FLOW



In cane mills, Viking pumps are typically found downstream of the evaporators – on thick juice, "A, B & C" massecuite, "A, B & C" molasses, magma, and on imported cane juice molasses.

CANE SUGAR REFINING: SIMPLIFIED FLOW



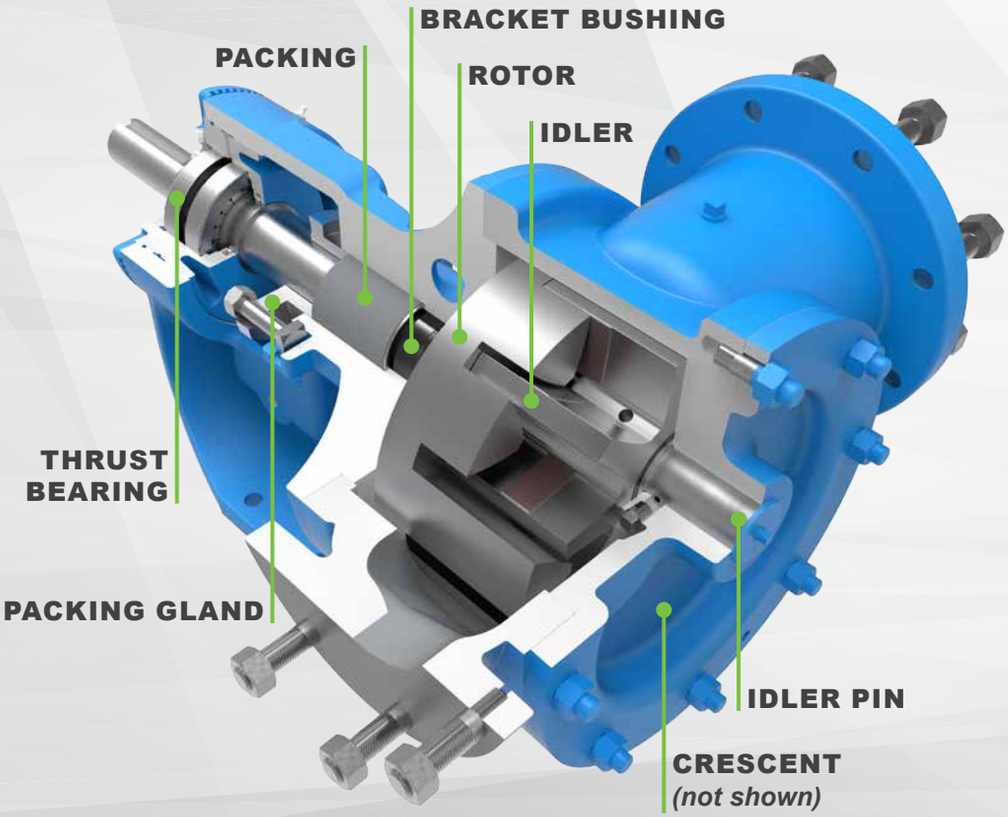
Viking pumps are found throughout the process of refining raw sugar into finished sugar and liquid products. Applications include affination syrup, magma, fine liquor, massecuite, refiners' molasses, liquid sugar and invert.

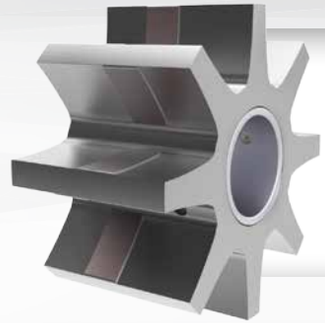
THE VIKING PUMP SOLUTION

INTERNAL GEAR PUMPING PRINCIPLE - HOW IT WORKS

The pump rotor turns at slow speeds within the casing. The idler gear rotates on an idler pin, mounted on the pump head. As the rotor turns, it turns the idler gear. The crescent, also part of the pump head, separates the liquid into two streams. As the gears re-mesh, the liquid is forced out the discharge port. The rotor is positioned radially by a fluid-lubricated bracket bushing just behind the rotor, and a pair of anti-friction bearings in the bearing housing. By locating the seal between bearings, it greatly extends seal life. The anti-friction (thrust) bearings also position the rotor axially, and are located in a rotatable housing to enable adjustment of rotor end clearances without removing the pump.

Pumps are long coupled to a gear reducer or gearmotor, or may be belt- or chain-driven for speed reduction. Flow rate is directly proportional to speed, so variable speed drives may be used for precise process control.





A special ribbed idler gear was developed for massecuite and magma. This idler ensures that 80% of the gear flank does not contact the rotor gear, to ensure that crystals are not damaged by gear contact.

MATERIALS OF CONSTRUCTION:

Iron, steel or stainless steel

BUSHINGS (BRACKET & IDLER):

Hardened iron or tungsten carbide

SEALS:

Packed gland or hard-faced cartridge mechanical seal with flush or quench (single or double seal)

OTHER OPTIONS:

Jacketing, internal pressure relief valves, special porting

PERFORMANCE:

VIKING PUMP SIZE	FINAL MOLASSES, MASSECUITE & MAGMA			THICK JUICE, A & B MOLASSES, HIGH GREEN & LOW GREEN SYRUP		
	Max RPM	Nominal Flow Rate		Max RPM	Nominal Flow Rate	
		GPM	m^3/h		GPM	m^3/h
L/LQ	139	32	7.2	370	85	19
LL	139	39	8.8	370	106	24
LS	139	46	10.4	370	128	29
Q	104	63	14	278	176	40
QS	104	92	21	278	258	58
M	83	84	19	222	228	51
N	83	134	30	222	380	86
R	57	219	50	153	600	136
RS	57	327	74	153	890	202