

Product Guide

NeoDry E Series

Sep 2015

Kashiyama Dry Vacuum Pump



Suitable Application

Kashiyama

**Helium /
Hydrogen
Vacuuming**

**Plasma
Cleaner**

**Sputtering /
Vapor
Deposition**

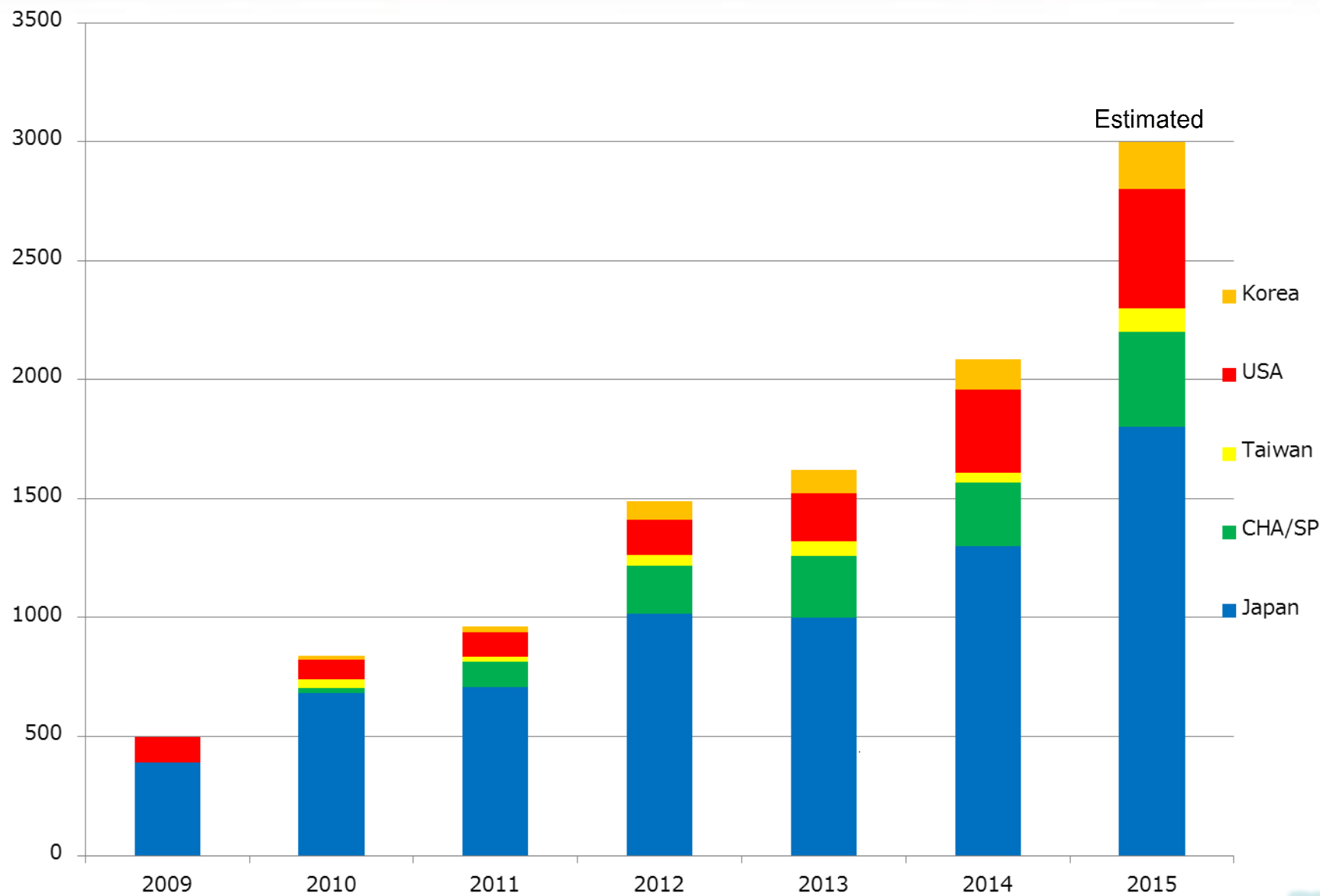
**Electronic
Microscope (EM)
/ Mass Analyzer**

**(Particle)
Accelerator**

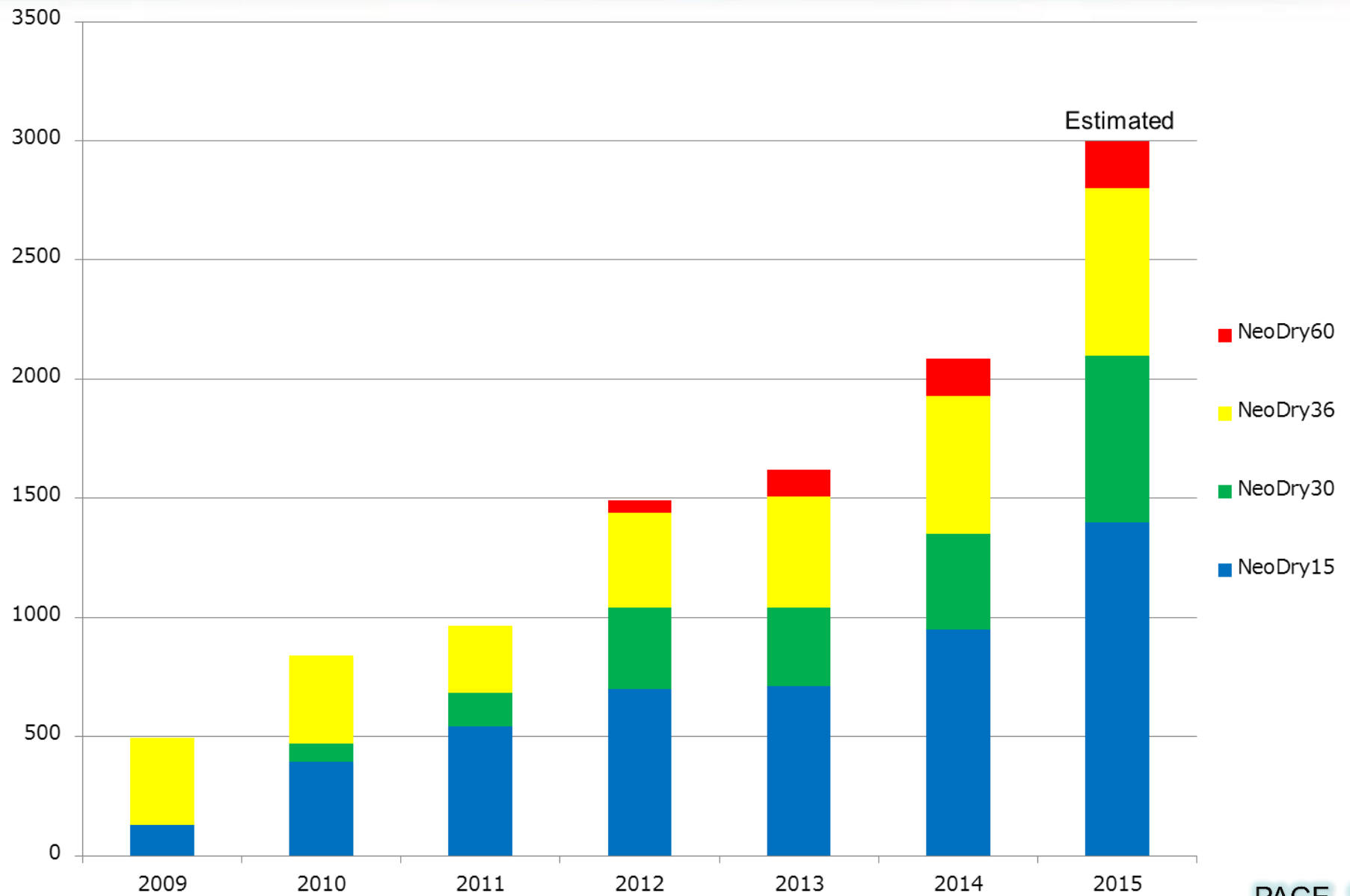
Vacuum Drying

**Vacuum
Defoaming**

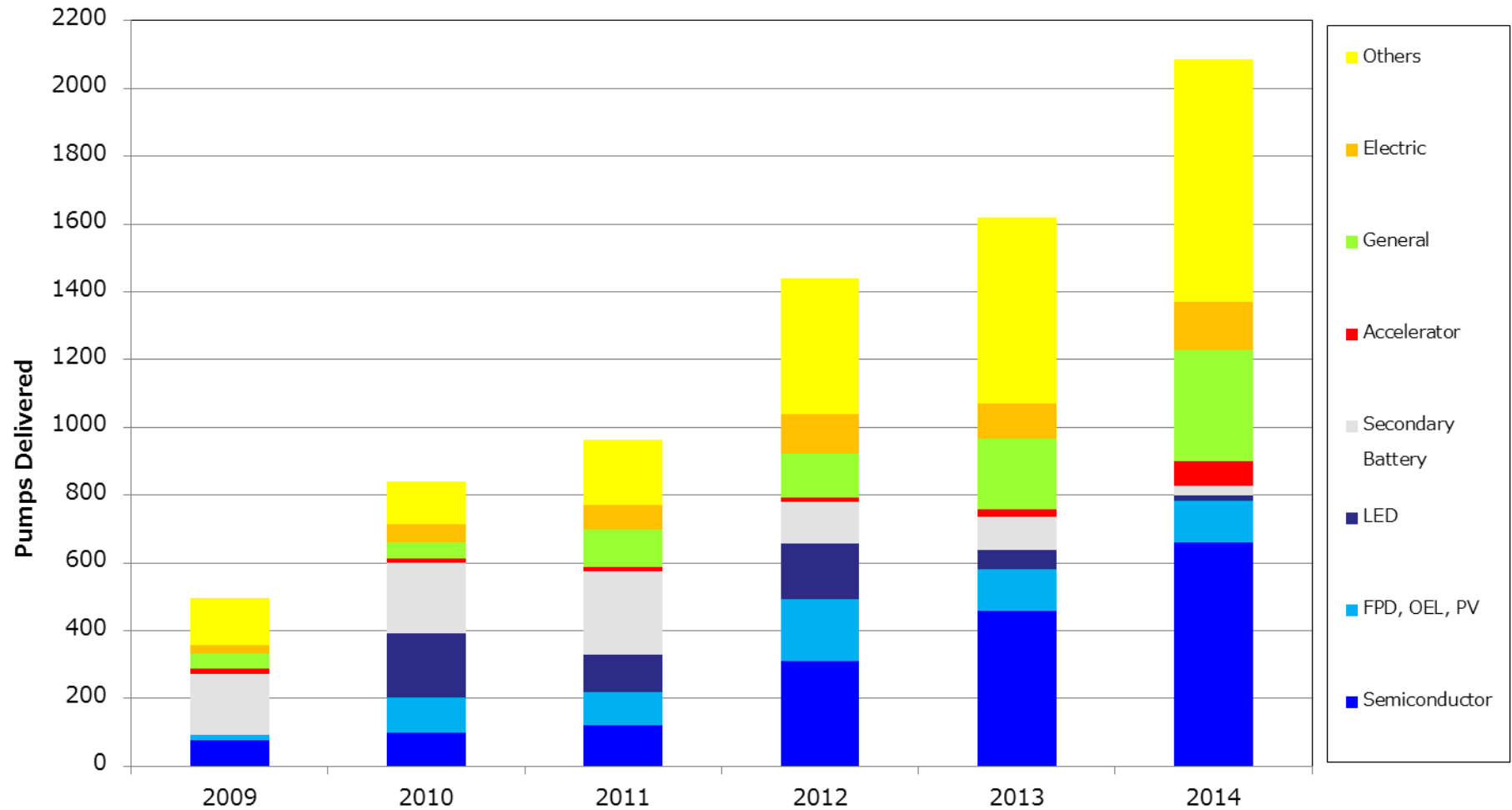
Sales by Region



Sales by Model



Sales by Industry



Main Characteristics of NeoDry Series

i) Multi-stage roots system : Clean vacuum and long service life

- ⇒ The pump is designed with non-contact (**no tip-seal**) structure and no grease used in the pumping area.
- ⇒ No oil contamination and dust in pumping room enable **clean exhaust**.
There is no dust & oil contamination even if there is back stream caused by unexpected pump failure.
- ⇒ No wear parts in pumping area and no performance degradation even if running for a long period of time.
- ⇒ **Maintenance cycle; roughly once in 3 years** (when air/N₂ is used)

ii) Low noise, low vibration

- ⇒ Use of high quality precision parts enables the structure with high accuracy.
- Noise [dB(A)] ; NeoDry15E, 30E ≤ 56 / NeoDry36E ≤ 58 / NeoDry60E ≤ 60
- Vibration [$\mu\text{m-p}$] ; NeoDry15E, 30E, 36E, 60E ≤ 8

iii) Superior water vapor exhaust

- Use of gas ballast mechanism.
- ⇒ Achieved great moisture (water vapor) exhaust performance.
250g/hr ; NeoDry15E&30E 350g/hr ; NeoDry36E 600g/hr ; NeoDry60E

iv) Air-cooled design

- Use of air-cooled system ⇒ No need of cooling water

Structure of NeoDry Pump

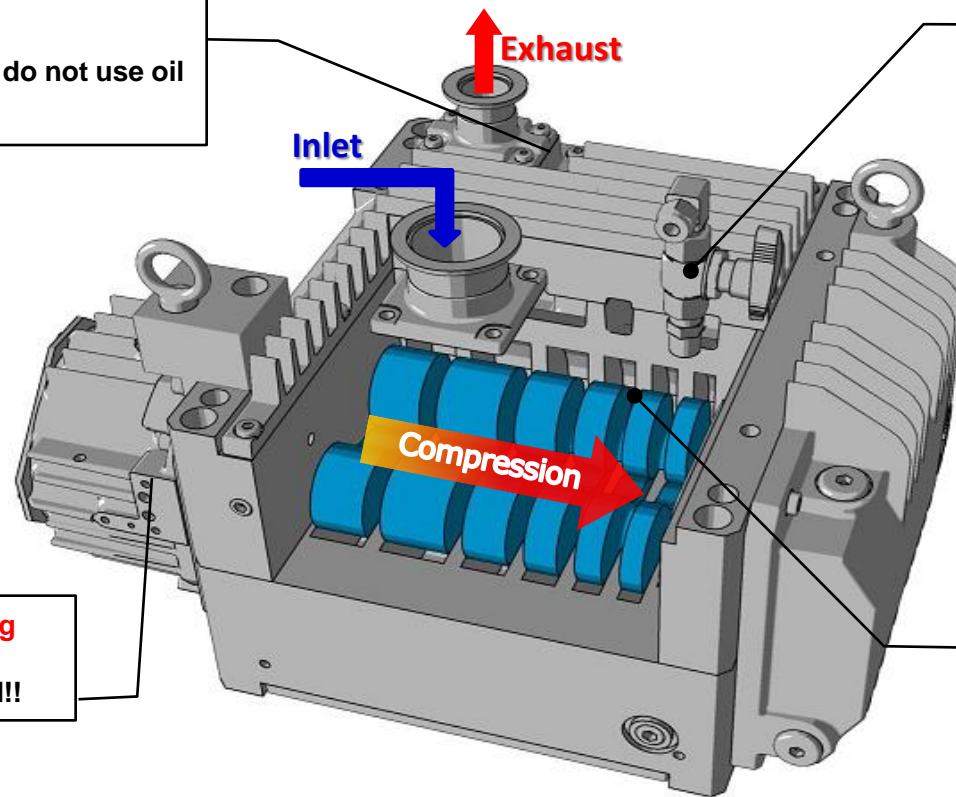
Principle

6 multi stage Rotor-Roots rotate without contacting other parts and compress exhaust gas to latter stages.

"Clean Vacuum"

Dry method of which do not use oil in pumping room

Introducing gas from **Gas Ballast Mechanism**(Option), lower the partial pressure of condensable gas to exhaust as it is gas state (not solid form.)



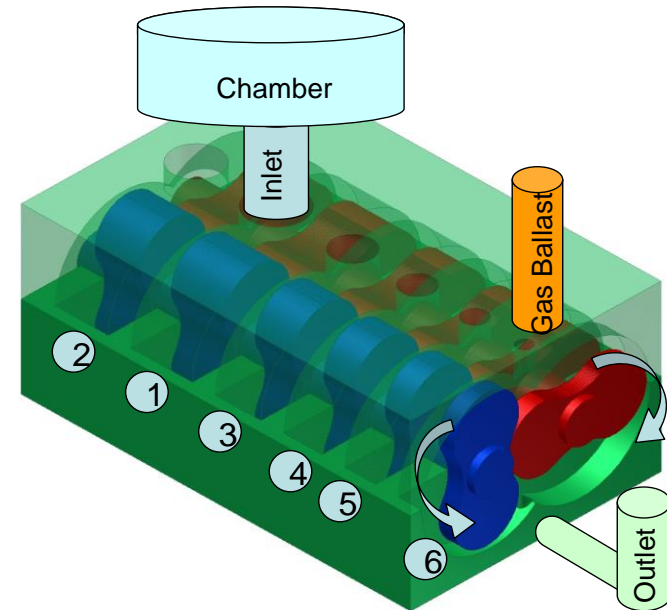
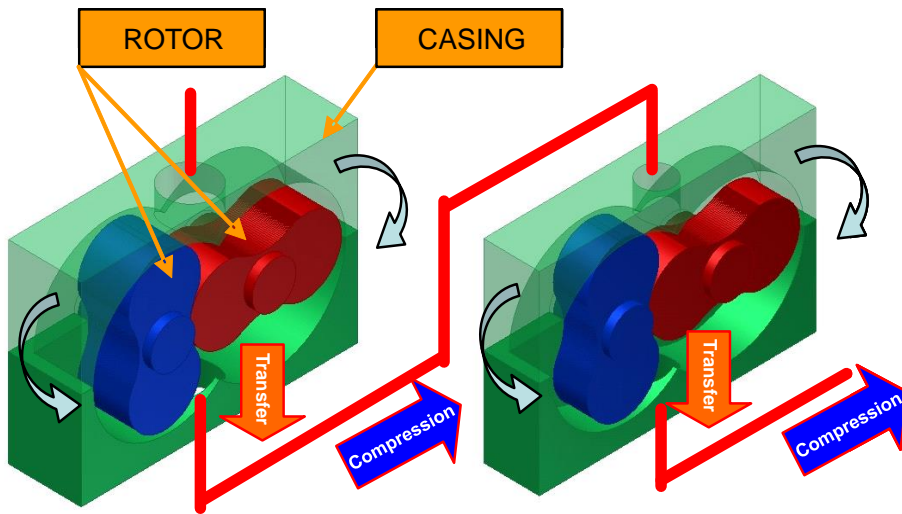
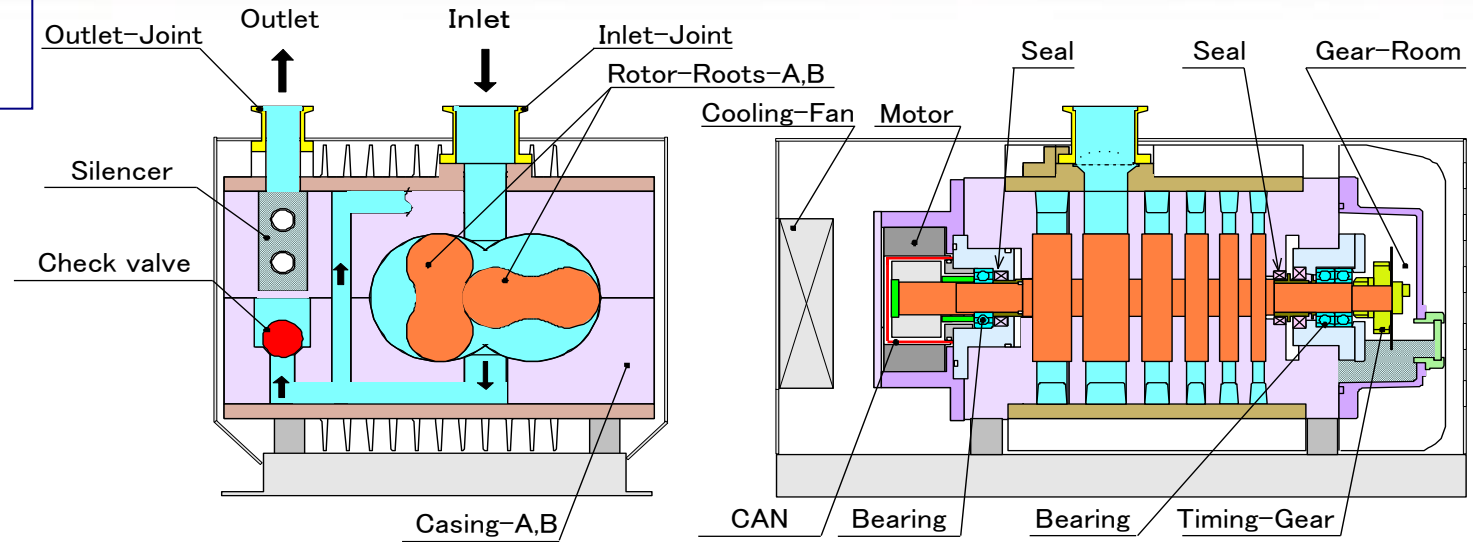
Adopted **Air-Cooling Mechanism**.
PCW is not required!!

Rotor-Roots rotate without contacting other parts, thus, there is no wearing parts.
"Long life without performance degradation."

Structure of NeoDry Pump-2

Multi-Stage Roots Pump NeoDryE-Series

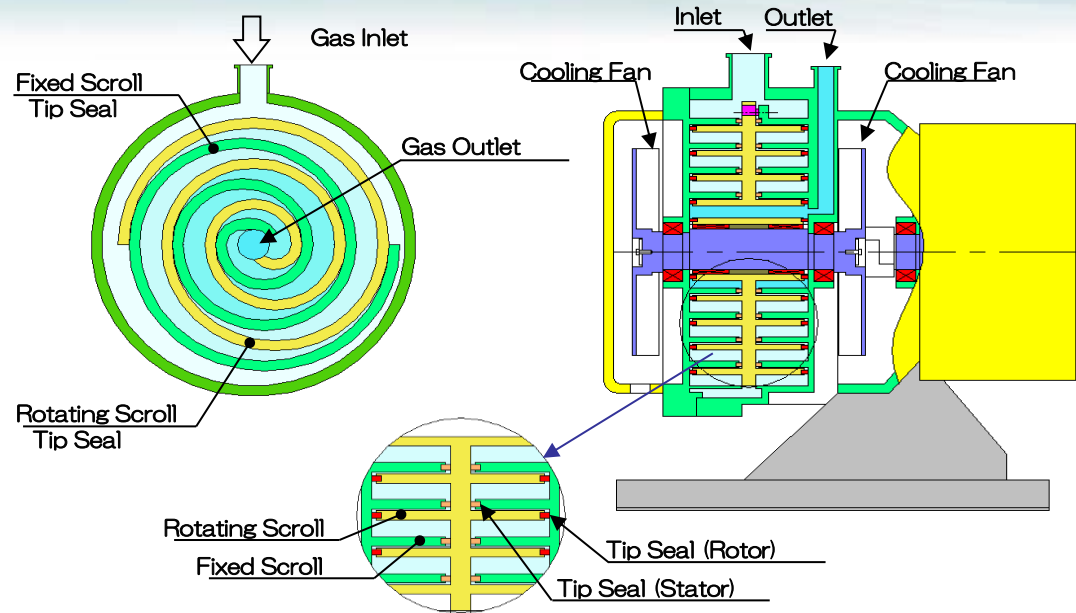
**No parts worn away
because pumping
part is non-contact.**



Comparison of Scroll and Oil Rotary Pump

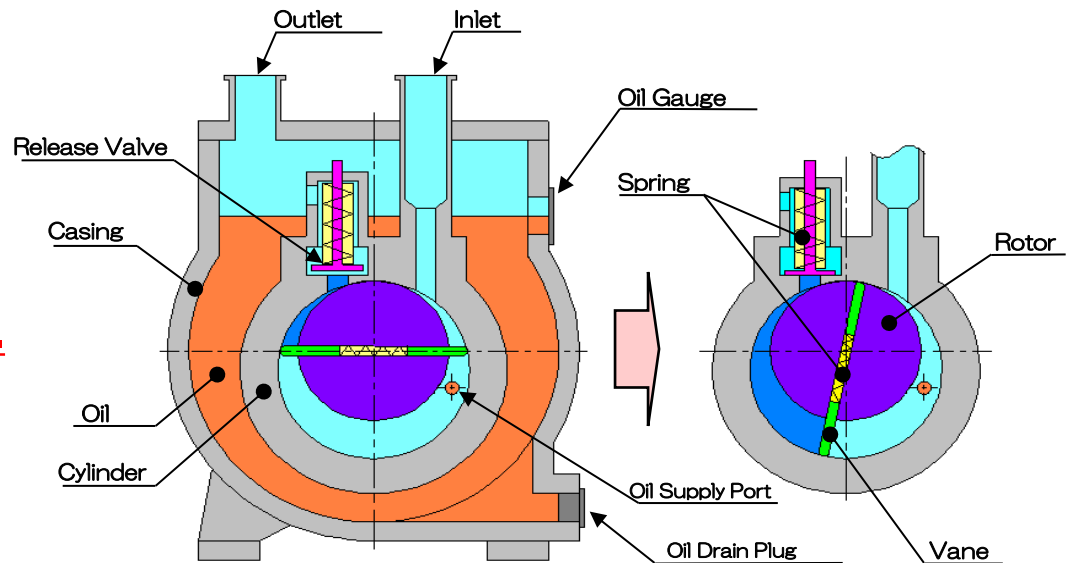
Scroll Pump

Tip Seal in pumping part is contact structure, so that it worn away.



Oil Rotary Pump

Oil exists in the pumping room.



NeoDry vs Scroll Pump

Item	NeoDry Series Roots Dry Pump		Scroll Pump	
Pump Life	○	Longer ▪ Non contacting internal components, sustain initial performance for long period.	△	Shorter ▪ Contact tip seal at seal part. This causes wear of seals.
Maintenance	○	▪ Maintenance free	△	▪ It requires frequent tip seal replacement
Maintenance Cost	○	▪ 3 years maintenance cycle for clean gas pumping ▪ Low maintenance cost. ▪ Less replacement parts makes its overhaul less expensive ▪ No internal parts replacement required	△	▪ Annual overhaul required ▪ High tip seal cost ▪ Tip seal wear deteriorates its performance ▪ Major parts may need to be replaced frequently as well
Performance of Water Vapor Pumping	○	▪ High pumping performance against water vapor. 600g/hr : NeoDry60E 350g/hr : NeoDry36E 250g/hr : NeoDry15E&30E ▪ Influence of gas ballast to the performance is minimal. (w/ Gas Ballast on : 10Pa or less)	△	▪ Water vapor pumping is not suitable due to tip seal design. ▪ Tip seal wear accelerates

NeoDry vs Oil Rotary Pump

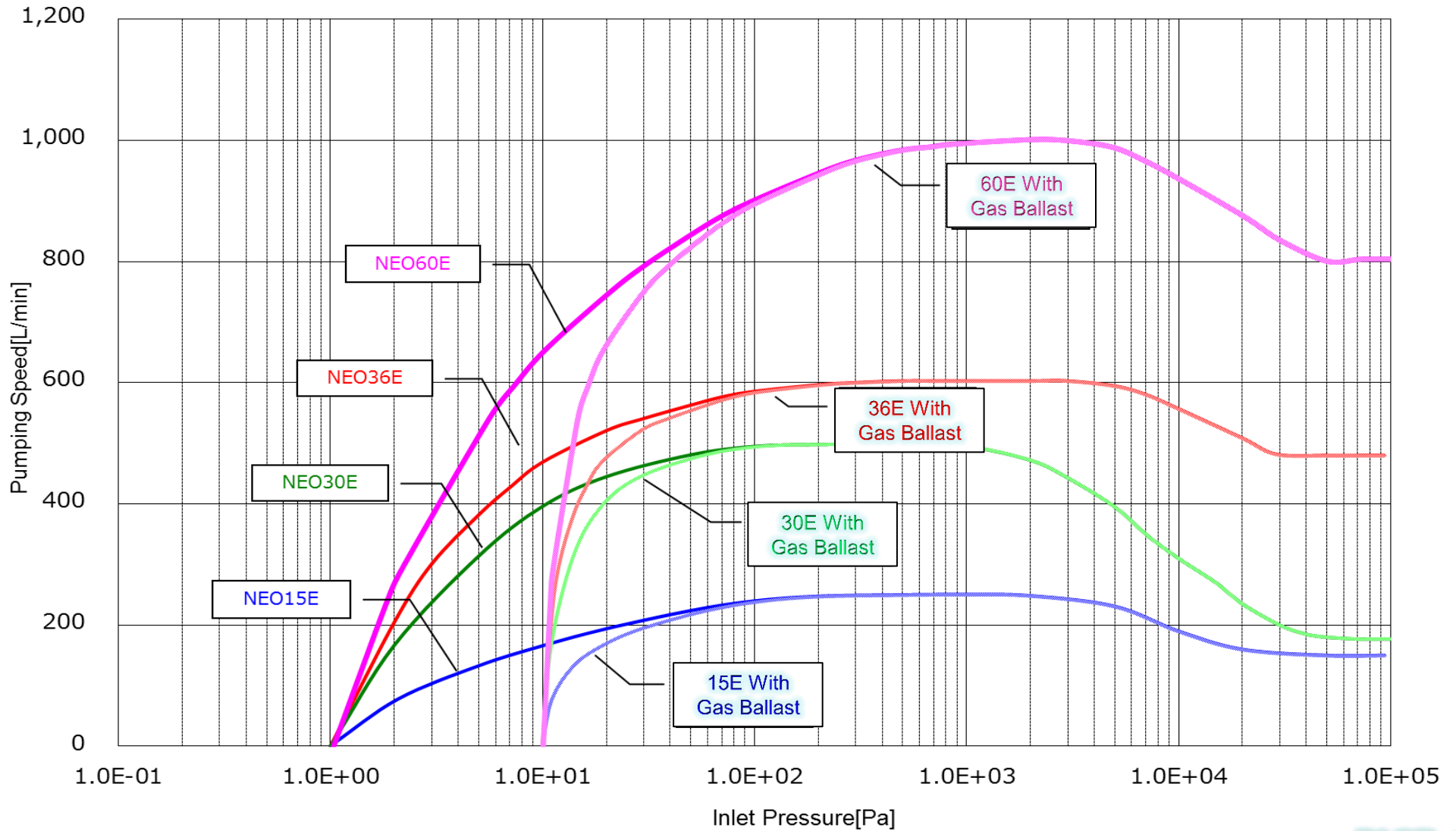
Item	Neo Dry Series Roots Dry Pump		Oil Rotary Pump	
Pump Life	○	<ul style="list-style-type: none"> • Provide clean vacuum because of dry pumping mechanism (Liquid seal is not used.) 	△	<ul style="list-style-type: none"> • Unable to provide clean vacuum because of oil usage for sealing. • Oil mist spreads from outlet. • Oil may be deteriorated by mixing in vapor and solvent. • Environment becomes oily.
Maintenance	○	<ul style="list-style-type: none"> • Maintenance free 	△	<ul style="list-style-type: none"> • Due to oil degradation, oil exchange regular basis (Depending on process, oil exchange is required frequently.)
Maintenance Cost	○	<ul style="list-style-type: none"> • 3 years maintenance cycle for clean gas pumping • Low maintenance cost. • Less replacement parts makes its overhaul less expensive • No internal parts replacement required 	△	<ul style="list-style-type: none"> • Oil change on a regular basis/ (Fluorinated oil is expensive) • Vane and Valve need to be exchanged (Vane is the contact part)
Initial Cost	△	<ul style="list-style-type: none"> • A bit more expensive than oil rotary pump 	○	<ul style="list-style-type: none"> • Less expensive than dry vacuum pump.
Utility Cost	○	<ul style="list-style-type: none"> • Oil mist trap is not required. 	△	<ul style="list-style-type: none"> • Oil mist trap is required. • Oil pan is required.

NeoDry E Series Specification

Pump Model		NeoDry15E	NeoDry30E	NeoDry36E	NeoDry60E
Pumping Speed	[L/min]	250	500	600	1000
Ultimate Pressure ※1	[Pa]	1.0	1.0	1.0	1.0
Joint	Inlet	NW25	NW40	NW40	NW40
	Exhaust	NW25	NW25	NW25	NW25
Dimension W × H × L	[mm]	210 × 246 × 385	210 × 246 × 385	298 × 275 × 475	298 × 275 × 530
Power (50/60Hz)	V	1Ph 100~115 1Ph 200-240 3Ph 200-240	1Ph 100~115 1Ph 200-240 3Ph 200-240	1Ph 100~115 1Ph 200-240 3Ph 200-240	3Ph 200-240
Water Vapor exhaust amount	g/hr	250	250	350	500
Consumed Power	[kW]	0.34	0.34	0.55	0.9

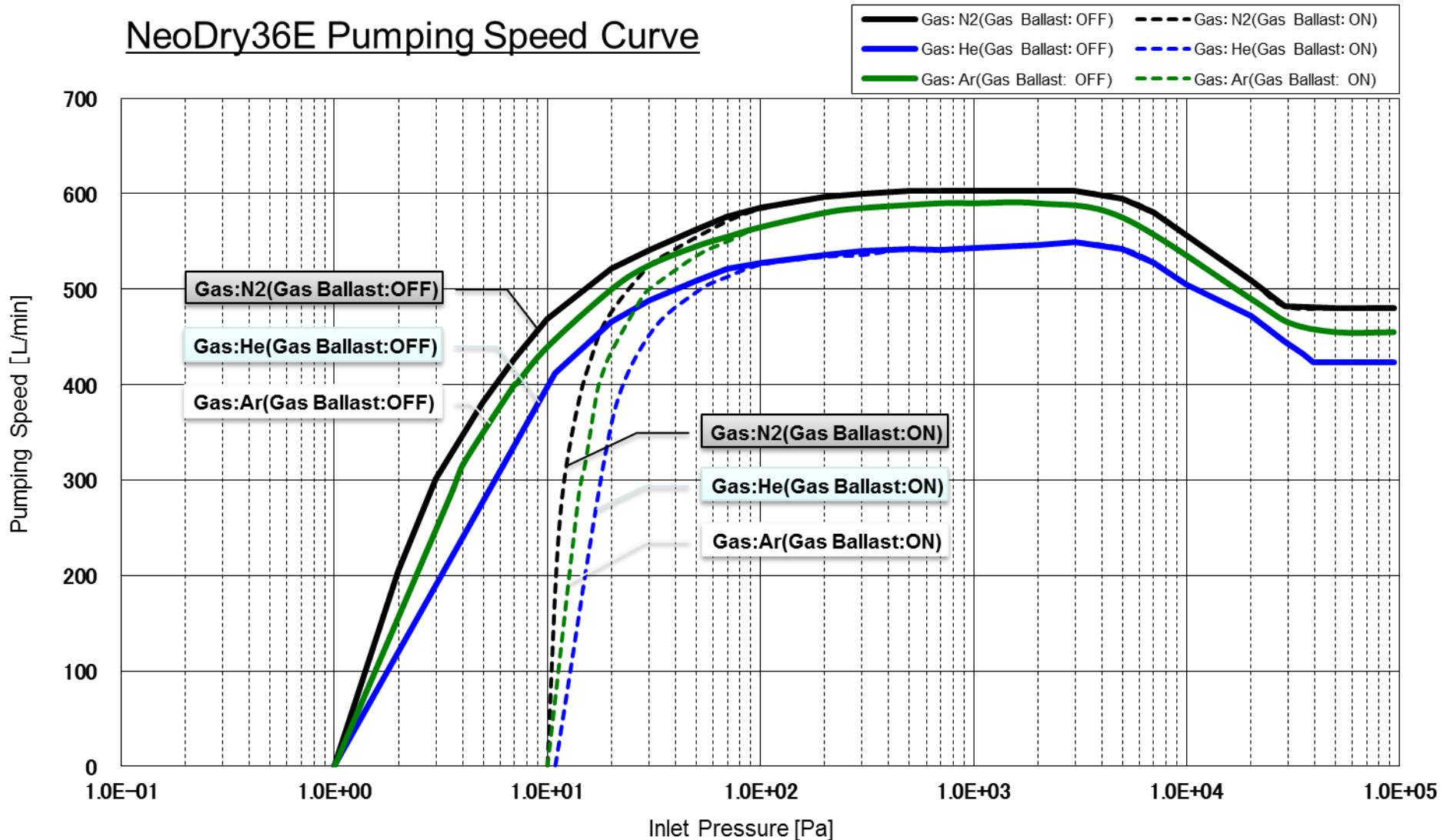
NeoDry E Series Performance

Reference data



NeoDry 36E Pumping Speed Curve

NeoDry36E Pumping Speed Curve



Kashiyama

