



CARBON NEUTRALITY

EMISSIONS REDUCTION PROPOSALS



7 AFFORDABLE AND
CLEAN ENERGY



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



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Carbon Neutral Technologies

These are examples of utilizing KOSMEK products that contribute to CO₂ reduction during production.

HIGH-POWER PNEUMATIC SWING/LINK CLAMP

MODEL

WHE
WCE

AIR LOCK

AIR RELEASE



CO₂
Reduction

Compared to
the past.

34%

Comparison
with Conventional
Standard Pneumatic
Clamp: per Fixture

**5 kg-CO₂ Reduction
in CO₂ Emissions**



**Electricity
Savings of**

12 kWh

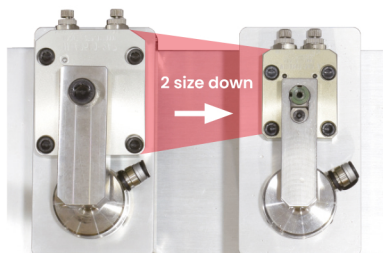
Calculated by
Kosmek (per year)

This is an estimation comparing the fixture using four units of model WHE clamp (cylinder output 0.6 kN) and the fixture using our company's standard pneumatic clamp. Model WCE will reduce 24% (3 kg-CO₂, 7 kWh).

- # No Hydraulic Use
- # Built-In Mechanical Lock

High-power pneumatic clamps have powerful clamping force and holding force with air pressure + mechanical lock. The boosting mechanism allows for downsizing of the body, reducing air consumption and contributing to reducing CO₂ emissions.

Our
Conventional
Standard
Clamp



**High-
Power
Clamp**

The smaller high-power clamp exerts the equivalent force to the larger conventional clamp.

SCREW PUMP

MODEL

AYN0010

GENERATES
HYDRAULIC PRESSURE
(FOR SINGLE-ACTION)



CO₂ Reduction

Compared to
the past.

75%

Comparison with
Nut Runner Fixture:
per Fixture

7 kg-CO₂ Reduction
in CO₂ Emissions



Electricity
Savings of

16 kWh

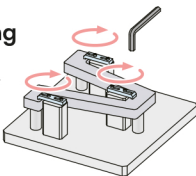
Calculated by
Kosmek (per year)

This is a comparative estimate assuming that the operation time for the smart fixture and nut runner fixture is reduced by half.

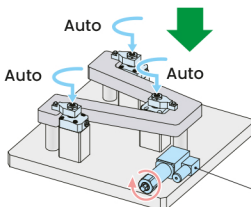
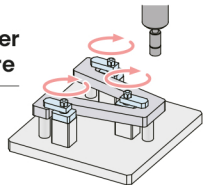
Localized Hydraulic Supply # Power Source-Free

A screw pump generates hydraulic pressure by converting external rotational force from a wrench. Unlike manual or nut runner methods, a smart fixture that integrates a screw pump, a pressure reducing valve, and single-acting clamps can quickly actuate multiple clamps with equal force from a single point of operation. This innovative system enables automatic clamping for large workpieces and equipment without an external hydraulic source.

Manual
Tightening
Fixture



Nut
Runner
Fixture



With a
smart fixture
utilizing a
screw pump

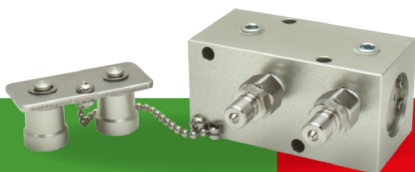
Screw Pump

AIR NON-LEAK COUPLER / VALVE

MODEL

BWA
BWB
BWQ

AIR



CO₂
Reduction

Compared to
the past.

51%

Comparison of Air
Source, Intermittent
vs Continuous Oper-
ation and Air Leak-
age: per Fixture

**16 kg-CO₂ Reduction
in CO₂ Emissions**



**Electricity
Savings of**

36 kWh

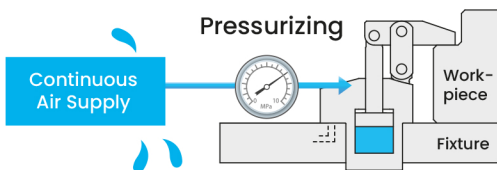
Calculated by
Kosmek (per year)

This is an estimation comparing two scenarios: one where the fixture is disconnected by the air non-leak function with the air source being intermittently supplied, and another where 20% of the factory air is lost due to leakage with continuous supply.

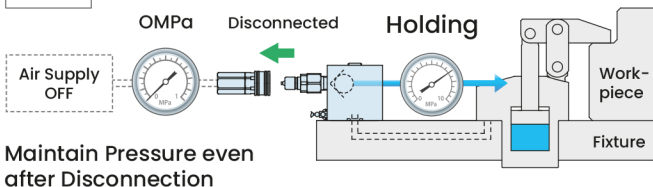
Disconnected Intermittent Supply # Factory Air Leakage Amount

The air non-leak coupler and pilot check valve are designed for automatic connection and maintain air pressure even after being disconnected from the air source. By intermittently supplying air to the fixture upon disconnection, these models minimize factory air loss and help reduce CO₂ emissions.

Before



After



SINGLE-ACTING HOLE CLAMP

MODEL

SFG

HYD. LOCK

SPRING RELEASE



CO₂ Reduction

Compared to the past.

57%

Comparison
Double-Acting
Clamp vs Single-
Acting Clamp:
per Fixture

7 kg-CO₂ Reduction
in CO₂ Emissions



Electricity
Savings of

16 kWh

Calculated by
Kosmek (per year)

Number of Clamps: 4. This is an estimation comparing a fixture using single-acting hole clamps and a fixture using double-acting hole clamps.

Single-Acting # Five-face Machining

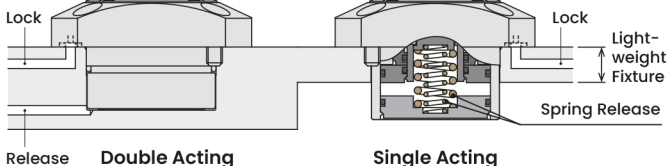
The single-acting hydraulic hole clamp features a hydraulic lock and a spring release. It grips the workpiece hole and pulls it down along the Z-axis onto the seating surface. By integrating processes and eliminating tool interference through five-face machining, this clamp helps reduce machine downtime. Moreover, compared to a double-acting hole clamp, it requires fewer hydraulic circuits, which helps reduce CO₂ emissions.

Before

After

2 Ports

1 Port



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