



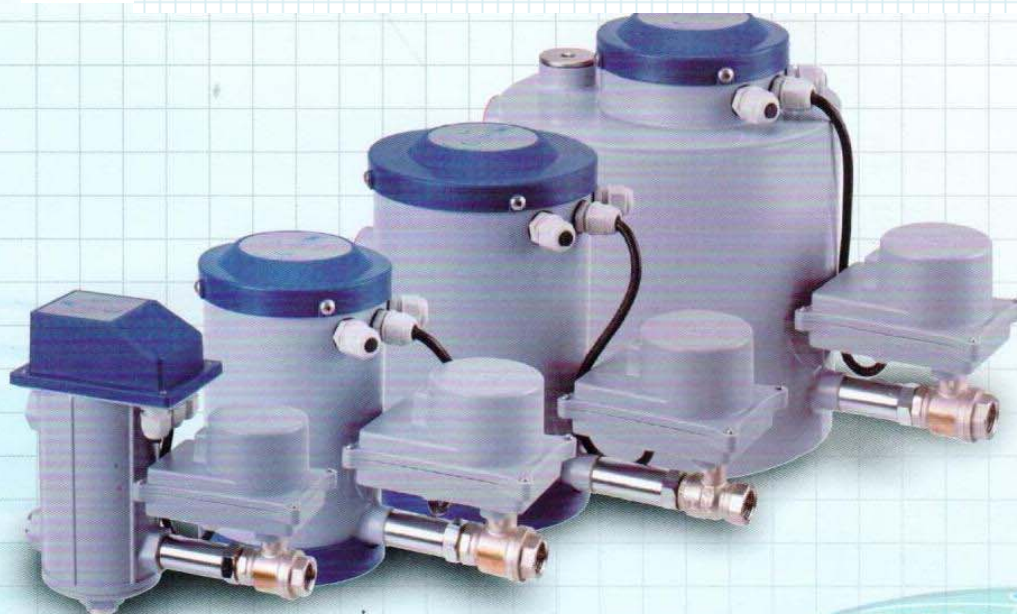
Air Saving

2013 Industrial Development Bureau,  
Ministry of Economic Affairs  
Promote Industrial Green Growth Plan

## ENERGY SAVING NO AIR LOSS AUTO DRAIN



Super Air Compressor Technology Co., Ltd.



### Feature:

Industrial Development Bureau, Ministry of Economic Affairs "Industrial Green Growth Plan," wish to help enterprises bringing in green and innovative ideas. Promoting efficient use of energy, reduce environmental impact, enhance added value of products, competitiveness and features. The catalogue of this program is to introduce innovative ideas of green technology, products, and services



Industrial Development Bureau,  
Ministry of Economic Affairs  
Foundation of Taiwan Industry





High humidity - Blade corrosion



High humidity - Rusty pipeline



High humidity - Filter damage

## Problems and Situation

- Generally, drainage channels of auto drains are narrow and curve, it's easy to be pounded. Moreover, rubber parts in water storage tank are easy to be aging and damaged, clogging the narrow channel and leading the drain to failure or discharge.
- It caused vibration problems or blade damage if condensate water goes into the second or third compression chamber of air compressor.

## Technical Features

This product/technology is "Energy Saving No Air Loss Auto Drain." Our features are:

### Reliability:

- Water tank made of stainless steel.
- Operating pressure 0 ~ 16 bars.
- Drainage body and components are 1/2" ball valve, stainless steel ball.
- Drain channel diameter 10mm, no clogging.
- Drain passage in straight line, high drainage patency.

### Safety:

- Easy installation, without bypass pipe.
- Automatically decontamination when clogging.
- Automatic emergency drainage when alarm light is on.
- Visually drainage.
- Warning function can connect an external signal.



## Applicable Conditions and Objects

Industry of using compressed air system and compressor equipment.

## Results and Cases

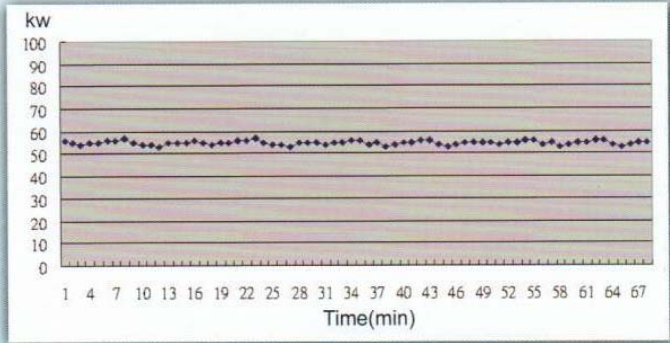
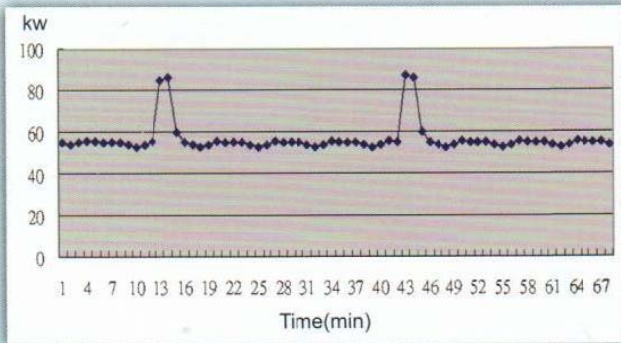
### Screw Manufacturing

#### Improvement plan

#### Screw Compressor Adopted Timer Drain Change to No Air Loss Auto Drain

**Before:** Power diagram of Timer Drain

**After:** Power diagram when using Super Trap



#### Power Consumption of Automatic drain mode

	Timer + Solenoid Valve	Super Trap- Ball Valve No Air Loss Auto Drain
Average Energy Consumption	57 kW/unit	55 kW/unit
Number of Units	6	6
Annual Power Costs	57 kW x 8,000 h/y x NTD3/kWh = NTD 1,368 thousands/year = USD 45,600/year	55 kW x 8,000 h/y x NTD3/kWh = NTD 1,320 thousands/year = USD 44,000/year
Investment Costs	NTD 2,500/unit = USD83.34/unit	NTD 15,000/unit = USD 500/unit
Energy efficiency ratio $[(57-55)/57] \times 100\% = 3.5\%$		
Annual savings in electricity costs of replace six unit: $6 \times (57-55) \text{ kW} \times 8,000 \text{ h/y} \times \text{NTD}3/\text{kWh}$ = NTD 288,000/year = USD 9600/year		
Payback period: $\text{NTD } 90,000 / 288,000 = 0.3 \text{ year}$		



#### Improving performance

Mounted on the air tank and refrigerated compressed air dryer

- Investment Costs: about NTD90,000 (USD3,000)
- Economic Value: The savings of electricity 96,000kWh/year  
The savings of electricity costs NTD288,000/year (USD9,600/year)
- Payback period: about 0.3 year
- Carbon Reduction Performance: decrease approximately 51 metric tons of CO<sub>2</sub>e / Year



## Improvement plan

## Screw Compressor install No Air Loss Auto Drain

## Before:

- Manual control to switch ball valve drain caused a large number of compressed air loss
- The average energy consumption ratio: 0.1476 kWh/m<sup>3</sup>

## After:

- Install Super Trap no air loss auto drain
- The average energy consumption ratio: 0.1428 kWh/m<sup>3</sup>, effectively reduce energy consumption

日期	用氣量(m <sup>3</sup> )	空壓機用電(kWh)	能耗比(kWh/ m <sup>3</sup> )
6/1	198,250	29,186	0.1472
6/2	185,190	27,502	0.1485
6/3	196,000	28,903	0.1474
6/4	194,400	28,678	0.1475
6/5	241,770	34,354	0.1421
6/6	231,600	33,860	0.1462
6/7	192,250	28,501	0.1482
6/8	159,080	24,099	0.1514
6/9	125,220	20,724	0.1655
6/10	131,810	20,997	0.1593
6/11	140,290	21,727	0.1548
6/12	183,180	27,300	0.1490
6/13	183,990	27,350	0.1486
6/14	239,070	35,001	0.1464
6/15	211,780	31,156	0.1471
6/16	195,660	28,999	0.1482
6/17	204,560	30,011	0.1467
6/18	282,850	39,079	0.1382
6/19	216,100	31,199	0.1443
6/20	207,350	30,346	0.1463
平均	196,020	28,949	0.1476

日期	用氣量(m <sup>3</sup> )	空壓機用電(kWh)	能耗比(kWh/ m <sup>3</sup> )
6/26	243,250	34,350	0.1412
6/27	242,590	34,355	0.1416
6/28	195,189	27,903	0.1429
6/29	195,800	27,866	0.1423
6/30	229,798	32,564	0.1417
7/1	231,598	32,760	0.1415
7/2	191,980	28,065	0.1461
7/3	209,080	30,059	0.1437
7/4	196,002	28,203	0.1438
7/5	185,950	27,997	0.1505
7/6	186,775	28,198	0.1509
7/7	210,330	30,056	0.1428
7/8	183,993	26,350	0.1432
7/9	245,180	34,601	0.1411
7/10	212,060	30,157	0.1422
7/11	195,960	28,311	0.1444
7/12	204,560	29,412	0.1437
7/13	262,850	35,579	0.1353
7/14	242,100	34,259	0.1416
7/15	231,350	32,746	0.1415
平均	214,820	30,690	0.1428

## Improving performance

- Investment Costs: about NTD480,000 (USD16,000)
- Economic Value: The savings of electricity 344,400kWh/year  
The savings of electricity costs NTD964,000/year (USD32,133.34/year)
- Payback period: about 0.49 year
- Carbon Reduction Performance:  
Decrease approximately 138.2 metric tons of CO<sub>2</sub>e/year

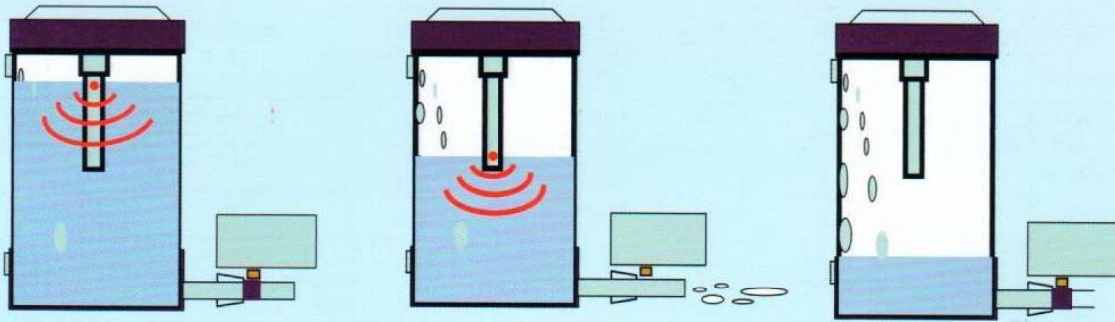
**Note:** 1. The average air consumption: 205,000m<sup>3</sup>/day 2. Working days: 365days/year  
3. The average electricity unit price: NTD2.8/kWh (USD0.093/kWh)



**Comparison with The Existing Technology**

	Drain from oversea	Super Trap
Structure	1) Solenoid valve diaphragm damaged easily, leak and waste of energy. 2) Drainage channels are too narrow and curve, easily clogging leading the drain to failure or discharge. 3) Aluminum	1) No diaphragm no damage, no leaking and saving energy. 2) Drain channel diameter 10mm and straight, no clogging. 3) Stainless steel
Technical level	1) Easy switch positioning 2) Low technical level	1) Complex switch positioning 2) High technical level, high R&D costs
Technology Source	Overseas	Taiwan -- Super Air
Drain efficiency	Low (Single displacement: 75cc/300cc/3,500cc)	High (Single displacement: 200cc/500cc/3,500cc)
Price	NTD 22,000~70,000 (USD 733.34~2333.34)	NTD 15,000~45,000 (USD 5,00~1,500)

**Super Trap Operation**

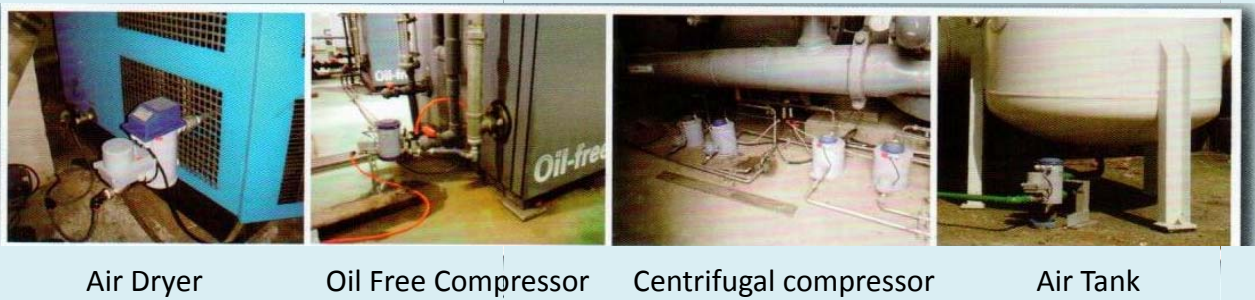


Sensor detects increased water level and automatically signals the ball valve to open,

Sensor signals the valve to close when condensation decreases.

Water Seal prevents air leakage when valve closed.

**Installation of Super Trap**



Air Dryer

Oil Free Compressor

Centrifugal compressor

Air Tank



# Technical Certification. Patents and other Technical supporting information

The technology is developed and manufactured by ourselves in Taiwan. With high product stability, we obtain product patent certification from Taiwan, China and Germany.



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