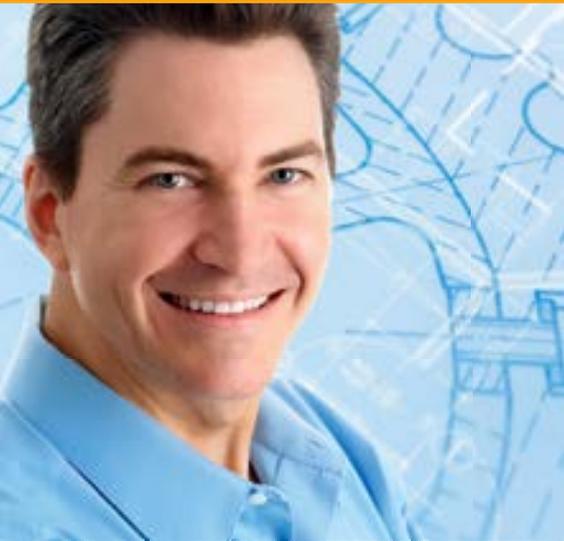


SAVE ENERGY, REDUCE COSTS,
PRESERVE THE ENVIRONMENT



HEAT RECOVERY

ALL COMPRESSED AIR STATIONS OFFER POTENTIAL FOR OPTIMISATION

An economical, energy-optimised compressed air supply is an important production and profit factor for your company and enhances its competitiveness.

These days, compressed air, an indispensable energy medium in industrial and trade companies, is used in almost all applications.

The reason for this immediately makes sense:

- Compared to electrical energy, compressed air can be used more flexibly and is easier to apply.

However: **the major proportion of the operating costs of a compressed air station is spent on electricity.**

Why not simply get back some of these costs!

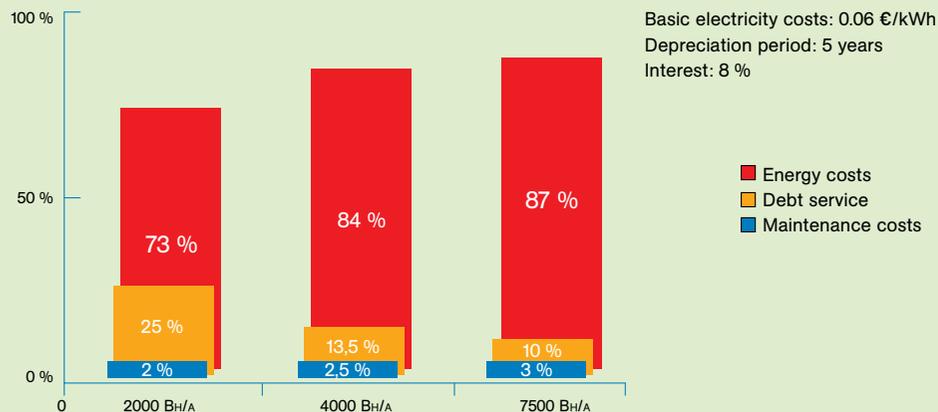
Heat for free!

The heat recovery of your screw compressor offers you considerable potential savings.

Did you know that the energy consumed for producing compressed air is all converted into heat?

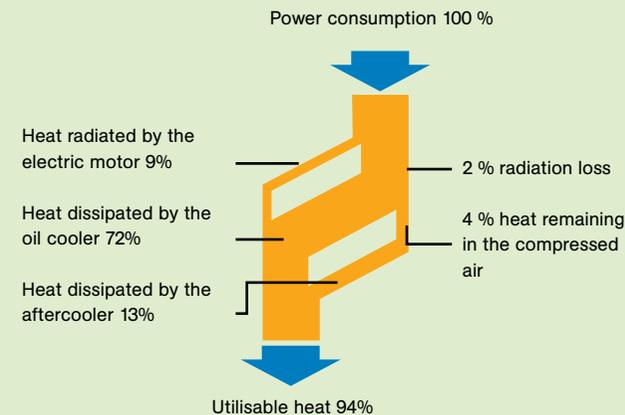
The heat diagram shows the amount of heat that arises in oil-injected screw compressors.

Operating costs of a compressed air station



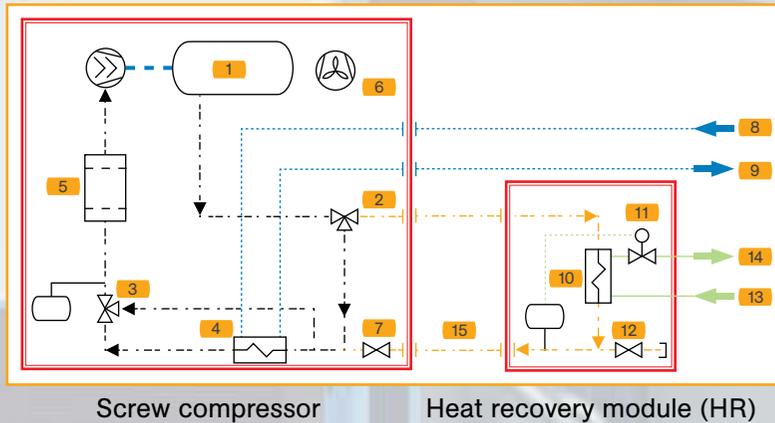
BRON: VDMA

Heat recovery



TECHNOLOGY AND ITS ENERGY SAVING POTENTIAL

Functional principle ...



- 1** Oil receiver
- 2** 3-way switchover ball valve
- 3** Thermostat valve on the oil side
- 4** Plant oil cooler
- 5** Oil filter
- 6** Fan
- 7** HR blocking valve
- 8** Cooling water inlet (on water-cooled compressors)
- 9** Cooling water outlet (on water-cooled compressors)
- 10** Plate heat exchanger HR
- 11** Thermostat valve on the water side
- 12** Draining
- 13** Water inlet (for HR)
- 14** Water outlet (for HR)
- 15** Connecting lead/hose

Hard facts!

A compressed air station requiring a 75 kW output consumes around 300,000 kWh of electricity at 4,000 operating hours per year.

Recover this output in the form of:

- Hot air to support the room heating
- Hot water for central heating or for service water
- Thermal energy for process water

How big are your potential savings?

By way of the example, below you can see an overview of the energy saving potential of the compressors

– depending on the respective installed rated outputs.

Have your own savings potential calculated by ALMiG!

Rated compressor output	Usable heat via the recovery systems	Annual heating oil savings*	Annual heating oil savings**
[kW]	ca. [kW]	[l/a]	[€/a]
37	27	6.720	4.704
45	32	8.170	5.719
55	40	9.990	6.993
75	54	13.620	9.534
90	65	16.350	11.445
110	80	19.980	13.986
132	95	23.980	16.786
160	115	29.060	20.342

* At 2,000 hours of heat recovery/year

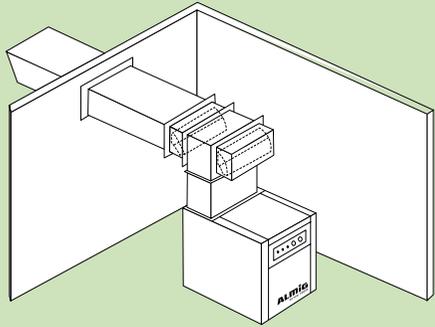
** At a heating oil price of 0.70 €/litre

... and this is your benefit ...

POTENTIAL FOR HEAT RECOVERY

Example types of use for profitable heat recovery

Hot air for the room heating



The heated cooling air is used to heat a room via a ductwork system. Temperature-controlled valves achieve a regulated, adjustable room temperature.

In winter the heat from the exhaust air is used entirely or partly for heating purposes.

In the summer it is blown out into the air via an exhaust air channel.

Acceptable level for the temperature:
20–25 K above ambient temperature

Hot water for heating purposes

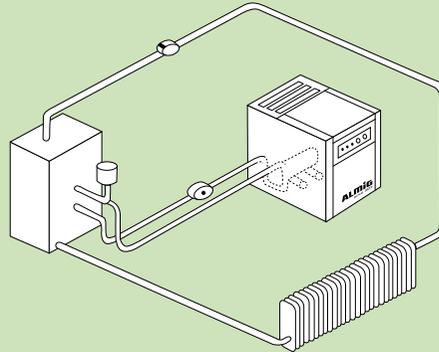
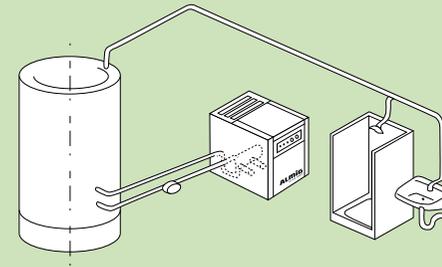


Plate heat exchangers are used to produce hot water.

The heating water runs through "plates" within a closed housing. The hot compressor oil flows between plates and housing and delivers its heating power to the hot water.

Acceptable hot water temperature:
up to 70° C

Heat for service and process water



The heat recovery process is the same as for heating water.

Shell-and-tube heat exchangers are used to prevent oil from penetrating the service water even if there are leaks.

Acceptable service water temperature: up to 70° C

HEAT RECOVERY – BY MEANS OF HEAT EXCHANGER SYSTEMS

We can offer you three alternative ways of saving money!

Integrated heat recovery



All components required for heat recovery are installed in the compressor during the production process.

Advantage:

- Simply connect up in the building and immediately start saving cash!
- Constant temperature regulation: Depending on the available heat, the water temperature on the customer's side will be kept at the desired temperature level.

Available for compressors:
15–355 kW

Preparation for heat recovery



If the order is for a new compressor, it will be prepared for heat recovery, i.e.:

- 2 ball valves on the oil tank outlet
- The space needed for heat exchangers etc. has been allowed for in the plant.
- The apertures for the connections have already been pre-drilled into the panelling.
- It can be completed at no expense at a later date by using a retrofitting set; this entails:
 - Heat exchanger
 - Control valve + temperature sensor
 - Hose connector / pipe coupling

Available for compressors:
15–355 kW

Heat recovery for (old) compressors previously installed



External modules for retrofitting previously installed compressors.

Advantage:

- Easy to connect to all compressors
- Fully equipped with all the necessary, highly efficient components and safety devices
- Minimal installation costs thanks to the intelligent ALMiG design
- Constant temperature regulation:

Available for compressors:
4–355 kW

ENERGY EFFICIENCY: A CRUCIAL PRODUCTION FACTOR

Heat recovery: energy for free!

The continuously rising costs for:

- Energy
- Fossil fuels such as heating oil and gas

have become an important factor for the energy balance sheet and competitiveness of companies.

Heat recovery increases energy efficiency and contributes to the company's profit!

Heat recovery, not just in winter!

- Heat for heating purposes:
For an average of 2,000 hours per year a greater or lesser amount of heating power is required. Not just in the winter months, but also in the months of transition.
- Heat for service and process water:
Almost everywhere that service water is heated, it is used in the months before and after winter.

Save money and spare the environment!

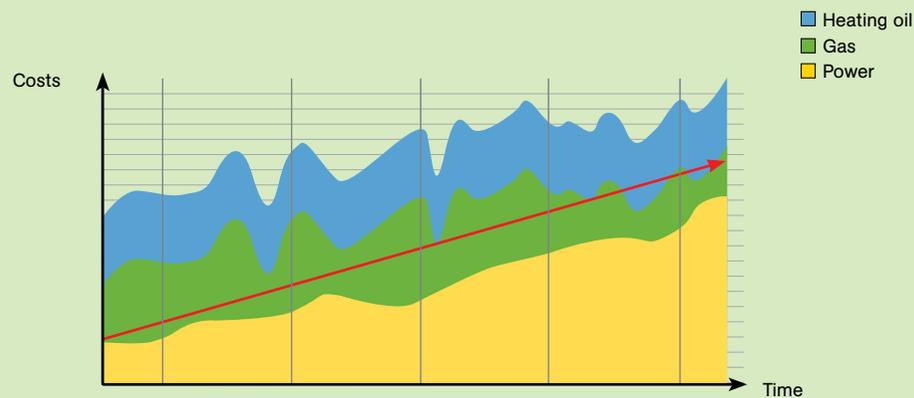
- Each litre of heating oil saved means ~ 2.8 kg less CO₂ emission.
- The payback time of heat recovery systems is approximately 0.5–1 year on average, depending on capacity utilisation and the costs of energy.

Perhaps the question could be: "Can you afford to use ALMiG heat recovery?", but:

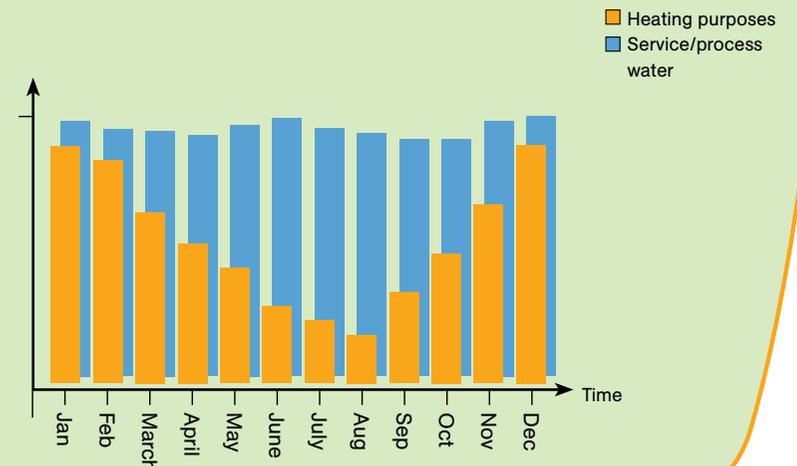


"Can you afford not to use ALMiG heat recovery?"

Development of energy costs



Heating energy required in the course of the year



Series	Integrated HR	Preparation for HR	HR Retrofitting set	External HR (complete module)	Utilisable heat via recovery systems (approx)	Annual oil saving at 2.000 op hrs p.a.	Annual saving at 0.7 EUR p. litre	Annual CO ₂ -saving equivalent (approx)
					[kW]	[l/a]*	[€]	[kg/a]
BELT 4–15	○	●	○	●	2.9–10.8	730–2730	Up to 1.910,-	Up to 7630
BELT 16–37	●	●	●	●	10.8–26.6	2730–6720	Up to 4.700,-	Up to 11820
BELT 38–75	●	●	●	●	26.6–54.0	6720–13630	Up to 9.540,-	Up to 38150
BELT 76–132	●	●	●	●	54.0–95.0	13630–23980	Up to 16.790,-	Up to 67140
BELT 133–200	●	●	●	●	95.0–144.0	23980–36330	Up to 25.430,-	Up to 101730
BELT 201–250	●	●	●	●	144.0–175.0	36330–45420	Up to 31.800,-	Up to 127150
GEAR 30–45	●	●	●	●	21.6–32.4	5450–8180	Up to 5.730,-	Up to 22890
GEAR 55–75	●	●	●	●	39.6–54.0	10000–13630	Up to 9.540,-	Up to 38150
GEAR 90–132	●	●	●	●	64.8–95.0	16350–23980	Up to 16.790,-	Up to 67140
GEAR 160–200	●	●	●	●	115.2–144.0	29100–36330	Up to 25.430,-	Up to 101730
GEAR 201–250	●	●	●	●	144.0–180.0	36330–45420	Up to 31.800,-	Up to 127150
GEAR 355–400	●	●	●	●	255.6–288.0	64490–72660	Up to 50.870,-	Up to 203450
DIRECT 16–22	●	●	●	●	7.9–15.8	2000–4000	Up to 2.800,-	Up to 11190
DIRECT 37–55	●	●	●	●	26.6–32.4	6720–10000	Up to 7.000,-	Up to 27980
DIRECT 75–90	●	●	●	●	54.0–64.8	13630–16350	Up to 11.450,-	Up to 45780
DIRECT 132–160	●	●	●	●	93.6–115.2	23980–29100	Up to 20.370,-	Up to 76290
DIRECT 280	●	●	●	●	201.6	50870	Up to 35.610,-	Up to 142410
FLEX 6–15	○	●	○	●	2.8–7.6 **	700–1910	Up to 1.340,-	Up to 5340
FLEX 16–30	○	●	○	●	7.6–15.1 **	1910–3820	Up to 2.670,-	Up to 10680
VARIABLE 16–34	○	●	○	●	8.1–19.2 **	2030–4830	Up to 3.380,-	Up to 13530
VARIABLE 35–70	●	●	●	●	20.2–42.8 **	5090–10800	Up to 7.560,-	Up to 30260
VARIABLE 90–130	●	●	●	●	50.4–65.6 **	11450–16520	Up to 11.560,-	Up to 46290
VARIABLE 150–210	●	●	●	●	75.6–105.8 **	19100–26710	Up to 18.700,-	Up to 74770
VARIABLE 260–355	●	●	●	●	131.0–178.9 **	33060–45150	Up to 31.600,-	Up to 126390

INTELLIGENTE DRUCKLUFT MADE IN GERMANY

In line with the customer's needs

With our innovative system concepts we offer customised solutions for almost all applications. Our endeavour lies not only in supplying compressors, we

offer ourselves as a competent system provider capable of offering solutions to all users of compressed air. That does not only apply to the consultation and installa-

tion phase of your new compressor(s), but naturally continues in all areas of service, maintenance and visualisation.
Challenge us!

Screw compressors 3-500 kW	Piston compressors 1.5-55 kW	Turbo compressors 200-2.000 kW	Blower 1.5-55 kW	Complete accessories	Control, regulate, monitor
<ul style="list-style-type: none"> • Fixed speed • With energy-saving speed control • Oil-free, with water injection • Oil-free, 2-stage <p>Available drive types:</p> <ul style="list-style-type: none"> • V-belt • Gearbox • Direct 	<ul style="list-style-type: none"> • Oil-lubricated • Oil-free • Normal pressure, medium pressure, high pressure • Booster • Mobile/stationary <p>Available drive types:</p> <ul style="list-style-type: none"> • V-belt • Direct 	<ul style="list-style-type: none"> • Oil-free • Radial, 3-stage compression • With/without sound-absorbing housing <p>Available drive types:</p> <ul style="list-style-type: none"> • Gearbox 	<ul style="list-style-type: none"> • Fixed speed • With energy-saving speed control <p>Available drive types:</p> <ul style="list-style-type: none"> • V-belt • Direct 	<ul style="list-style-type: none"> • Refrigerant dryers • Desiccant dryers, heatless and heat-regenerative • HOC (heat of compression) • Activated carbon adsorbers • Filters, all particle sizes • Condensate management • Heat recovery systems • Pipework systems <p>All components are optimally matched to the compressors.</p>	<ul style="list-style-type: none"> • Base load changeover controls • Consumption-related controls • Visualisation (we display your compressed airstation on the PC) • Telemonitoring (the hotline of your compressed air station)

Our quality standards mean you can rely on our machines



ISO 9001



ISO 14001



IRIS



Partner of the Engineering Industry Sustainability Initiative



DNV



Your expert advisor

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