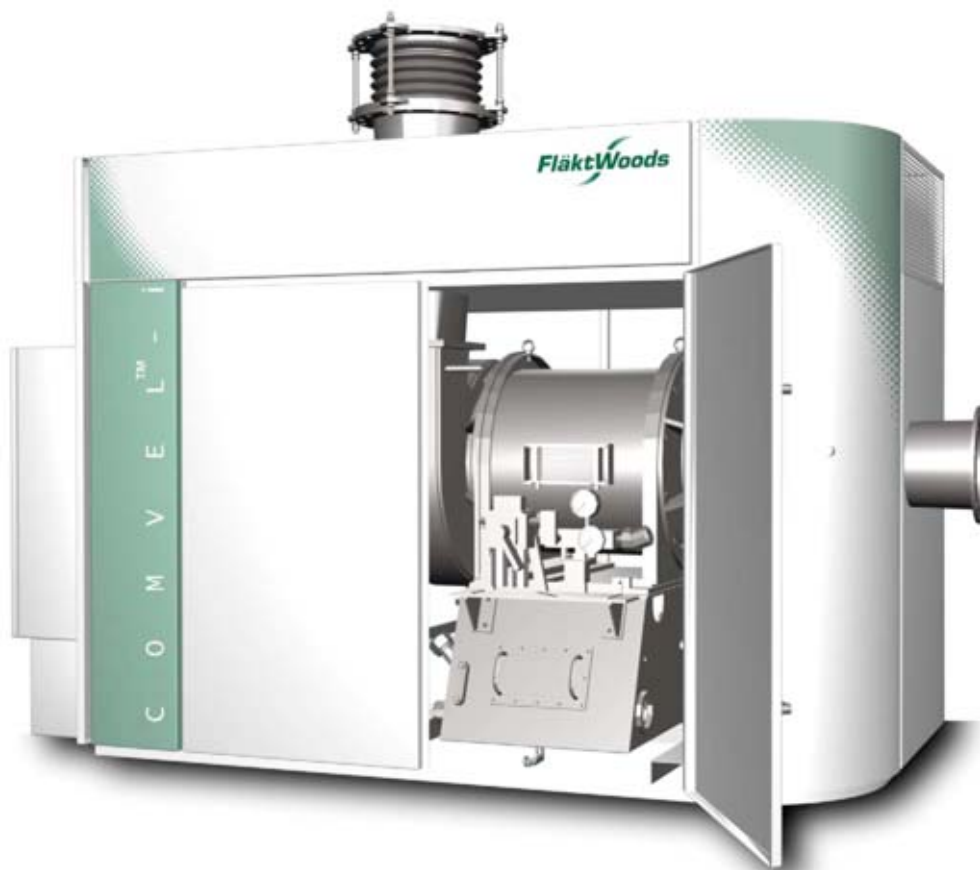


**ComVel-i™**  
**High performance compressors**





All mechanical and electric components have been placed into a sturdy and stylish enclosure for electrical protection and noise reduction. The enclosure has a separate control cabinet on one end and a service door in the middle to make it easy to inspect the lubrication unit.

## Cost-effective solution for various process applications

### Compact construction

We have developed the ComVel-i compressor to be an energy-efficient and reliable solution for air & gas movement in applications or processes requiring a pressure increase of 50–130 kPa.

The ComVel-i compressor is built around original innovations that offer major benefits by increasing the degree of integration between compressor components.

With its simple and functional design, Flakt Woods' ComVel-i compressor bridges the gaps be-

tween output power, reliability and cost, making it an energy-efficient solution for many different process applications.

### Quality components and excellent craftsmanship

All of our mechanical and electrical solutions have been engineered for reliable operation at speeds of up to 12,000 rpm. All of our components are thoroughly inspected in our factory and every machine is tested before delivery to ensure the highest quality and reliability.

### Multifunctional efficiency

Globally, the biggest ComVel-i application on a global scale is the biological wastewater treatment process utilised in both municipal and industrial plants. Other applications are flotation (the mining industry), fluidised bed boilers (power generation) and flue gas desulphurisation (power generation, i.e., oxidation blowers).

You can be sure that when your project calls for a cost-effective and reliable machine, ComVel-i will most likely be the best solution!



The impellers are manufactured from carbon fibre reinforced epoxy. There are two impellers in the ComVel-i unit, one for each stage.

The ComVel-i motor is a specially designed, asynchronous motor for high rotational speeds (5,000–12,000 rpm). High rotational speeds can be achieved by using a solid steel rotor on the motor combined with hybrid ball bearings and forced bearing lubrication.

## High-speed motor meets light composite impeller

### Pioneering inventiveness

Composite materials have been used for decades in aviation technology. A favourable strength to weight ratio also happens to be one of the main constraints when designing a compressor impeller.

Flakt Woods pioneered the way in the mid-1990s by starting to use aerospace carbon fiber technology for its compressors. This effort has since made ComVel-i the perfect choice for anyone in need of both a powerful and an energy-compliant compressor.

Owing to its ability to sustain higher rotational speeds, a composite impeller will be able to generate more pressure increase than a conventional one will. It weighs just 20% of what a steel impeller does, allowing smaller shafts and bearings to be used.

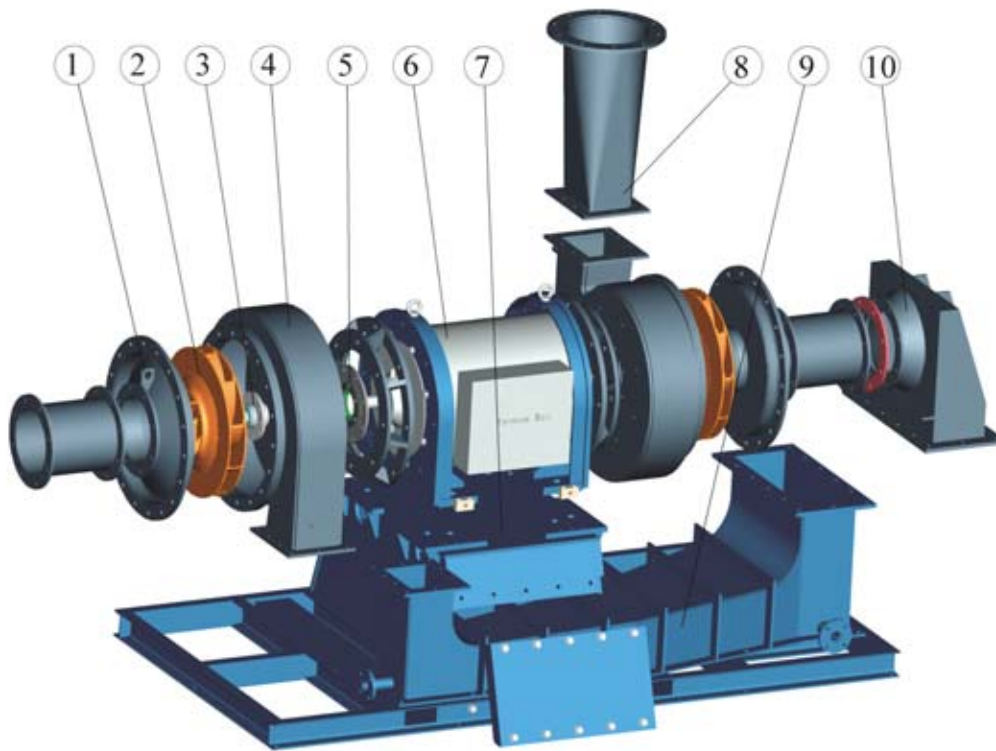
### A combination of technologies

What further elevated compressor technology to a new level was Flakt Woods' groundbreaking combination of composite impeller technology and a high-speed motor drive.

A high-speed motor, together with carbon fibre impellers, enables the construction of a two-stage integrated compressor driven by a Variable Speed Drive (VSD).

### Service need minimized

Omitting all unnecessary mechanical components has been a guiding principle when developing ComVel-i. It requires no sensitive high-speed gearbox or complicated control devices. This in turn means more reliable mechanics and less need for maintenance.



Standard delivery modules: 1. Combined inlet cone & casing front plate 2. Impeller 3. Impeller hub 4. Casing 5. Shaft seal 6. Motor & lubrication unit 7. Pedestal & oil tank 8. Diffuser 9. Intermediate channel 10. Suction chamber 11. Frequency converter (not in picture). Optional modules can be combined with a great number of permutations. Accessories available for ComVel-i include a filter unit, an inlet silencer, an outlet silencer, a blow-off line, a flexible joint, a check valve, a shut-off valve, an automation module and a sound enclosure.



The engineered compressor model range offers a wider variety of solutions than the pre-configured range does. It includes units both for larger operations and a chance to design a compressor for special purposes.

## Custom-engineered, factory-assembled, turnkey delivery

### Excellent product fit

ComVel-i compressors can be custom-engineered for the application it is to be used in.

This means that we can design a rugged and reliable machine for your application, while remaining very flexible in meeting your specific project, installation, and specification needs.

### Modular design

The compressor design is based on modular construction principles, where a fairly small number of

modules can be combined with a great number of permutations to provide the variation needed for different process requirements.

### Pre-configured and custom-engineered models

Pre-configured ComVel-i models have been engineered in advance so that all possible module configurations work together without the need for further design work.

If the compressor is required for a task that cannot be achieved using a pre-configured model however,

it is possible to engineer a customised unit that will meet the special requirements.

Fläkt Woods sales engineers will assist you in configuring both pre-configured and custom-engineered ComVel-i compressors.

### Complete package assemblies

The ComVel-i compressor comes as a factory-assembled, turnkey delivery that minimises the need for engineering and automation work when integrating various compressor modules into the process.

# Commercial breakthroughs in ComVel-i™ WWT deals

As with all long-term investments, the long-term operating costs are a significantly more important factor in the wastewater treatment business than one-off investment expenses are. This is exactly the aspect that has sealed the deal for Fläkt Woods on many occasions. In the end, Fläkt Woods' offer has been the most advantageous in terms of overall economy. The ComVel-i compressors' energy-efficiency and low maintenance costs will ultimately mean a faster return on investment.

## Tallinn, Estonia Wastewater treatment plant

ComVel-i compressors' efficiency, energy economy, robust construction and low operating costs were some of the facts that helped tip the scales in Fläkt Woods' favour in the Tallinn deal in 2004. The delivery included two 350 kW compressors ideal for the aeration carried out in the oxidation phase of the biological wastewater treatment process. Their smooth deployment and reliable operation ever since has turned out to be a good calling card on the global market.

## Daqing, China Wastewater treatment plant

At the end of 2005, three 160 kW ComVel-i compressors were shipped to the contractor of a wastewater treatment plant in northern China. The compressors were up and running in 2006. The delivery is an important reference on the Chinese market.

## Tripoli, Lebanon Wastewater treatment plant

Fläkt Woods and one of the largest subcontractors in the business signed a contract in 2005 to deliver four ComVel-i compressors to a wastewater treatment plant in Tripoli. The delivery of two 815 kW and two 429 kW compressors is an important reference and an excellent bridgehead for Fläkt Woods on the Middle East market.

## Kirkniemi, Finland Industrial wwt process

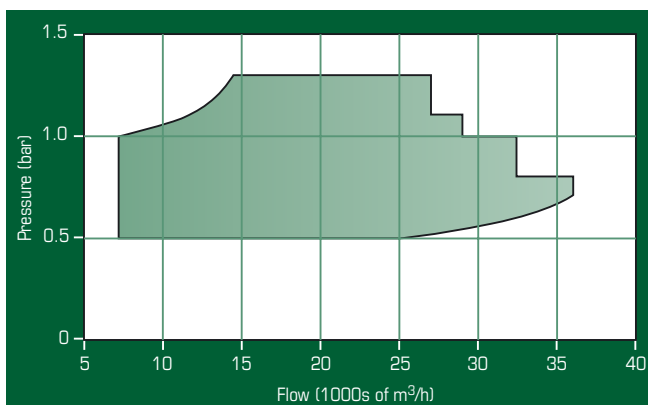
The fourth commercial breakthrough was made in late 2005 when Fläkt Woods and Finnish paper giant M-real signed an agreement to modernise the compressor at the wastewater treatment plant at M-real's Kirkniemi paper mill. A modern ComVel-i high-speed motor and composite impellers were fitted to the long-serving 400 kW equipment to boost its capacity and economy.



## Other ComVel-i applications

- Fluidised bed boilers
- Flotation processes
- Pressurised air systems
- Desulphurisation processes
- Power plants
- Chemical industry
- Mineral wool production

# Excellent controllability throughout the operating range



## ComVel-i unit ratings

Volume flow	2–10 m³/s	4200–21000 cfm
Pressure	50–130 kPa	7–19 psig
Power range	200–1100 kW	270–1485 hp
Supply voltage	400–690 V ± 10%	

ComVel-i compressors combine durability, operational reliability, low noise levels and compact size with respect to power. Because they are equipped with a frequency converter, the starter current required by the compressor is minimal. Consequently, the loading on the electrical grid is also reduced in start-up situations, leading to substantial savings in electrical components' investment costs.

# We bring air to life



## Customer satisfaction is our first priority

Fläkt Woods has many years of experience and a proven track record in supplying superior compressor and fan products and services, making us the most trusted supplier in the world.

Fläkt Woods has an extensive worldwide service network of both direct employees and regional service partners who can provide the service and support right when you need it.

Services include installation, start-up and commissioning supervision, maintenance contracts, repair/rebuild of original equipment, vibration analysis, performance testing and more.

Fläkt Woods Oy is a part of the Fläkt Woods Group, one of the world's leading companies in the Air Movement & Treatment industry.

The business has a total turnover of more than EUR 600 million. The Fläkt Woods Group has operations in more than 30 countries and employs over 4,000 people.

Fläkt Woods has the skills and resources to be your most trusted supplier of air & gas handling equipment.

For more information on our sales offices around the world, visit our website at [www.flaktwoods.com](http://www.flaktwoods.com)



Fläkt Woods Oy's quality system is certified by Det Norske Veritas and conforms to the standards of ISO-9001 (ed. 2000) and ISO-14001.

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