



It all started on a small-scale

## IV Produkt celebrates 50 years!



**This year, IV Produkt is looking back on 50 years of developing and manufacturing environmentally sustainable, energy-efficient air handling units.**

Along the way, we have made major investments in everything from in-house manufacture of rotary heat exchangers to developing integrated cooling units and heat pumps, as well our latest expansion into our IV Produkt Innovation Centre, where we test our products and hold training courses.

Over the years, IV Produkt has embraced an innovative, long-term mindset that has resulted in strong and ongoing growth.

In the following pages, you can learn a little

more about our history, as well as our long-standing collaboration with Gekås, to whom IV Produkt has supplied over 100 units.

### 2019 – a historic year

For half a century now, IV Produkt has worked tirelessly to provide better indoor climates – something that our successful product Envistar Top has helped us to achieve. This year, our innovative unit solution celebrates 15 years. With duct connections on the top of the unit, up to 75 % of floor space can be saved in comparison to end-connected units. This is undoubtedly one of the reasons that the product proved so successful from the very beginning. Read an in-depth history of this unit series and the factors behind its success on page 4. Continue to page 6 for two examples of buildings where the dimensions for installation and the Envistar Top's integrated cooling unit have been crucial.

### ThermoCooler HP in the Envistar Top – a long-awaited innovation

With its smart installation concept, a top-connected unit with integrated reversible heat pump saves on both installation and operating costs. IV Produkt has developed the Envistar Top

with the ThermoCooler HP; a combination that offers major space savings, both inside the building and on the roof. This space can then be utilised for facilities such as offices or a pleasant roof terrace. Learn more about the possibilities on page 5.

### The new standard for air filters

Last year, the ventilation industry received an entirely new standard for classifying air filters. Learn more about the reasons behind this change and what it means to anyone handling air filters on page 7.

## Contents

The history of IV Produkt .....	2
Gekås – a long-term partnership .....	3
The new Envistar Top .....	4–6
Long-awaited launch .....	5
What's going on in the world of filters? .....	7
Find the latest news online .....	8

# Air handling since 1969

**This year, IV Produkt celebrates 50 years of innovation in the field of air handling. Since the company was established in 1969, many products have been developed to meet the market's growing demand for increased energy efficiency and better indoor climates. The rapid pace of development and growth has been made possible by dedicated employees, in-house production, and a series of smart investments.**



It is now 50 years since the company was founded by Irene Renkrantz and Per Wickman under the name Industriventilation. In 1974, the company's ownership structure changed and it was renamed Industriventilation Produkt AB. Now with six partners, at this point the company began to manufacture its first reversible heat pumps, which were sold to IKEA.

## In-house production of thermal wheels

Today, IV Produkt manufactures its own rotating heat recovery unit. Given that the first thermal wheel rolled off of the production line in 1975, there is a wealth of experience of the product within the company. To date, IV Produkt has delivered 75,000 thermal wheels in its air handling units. The first large delivery of thermal wheels was to Volvo BM in Eskilstuna, a manufacturer of plant such as backhoe loaders, tractors and dumpers. The late 1980s saw a major initiative to integrate control and regulation technology into the company's units.



In 1990, the company invested in new premises and machinery in order to increase capacity and reduce lead times.

## Early adopter of environmentalism

The company's current business idea was formulated in 1991.

## IV Produkt develops, manufactures and sells environmentally friendly and energy efficient air handling units.

In an industry largely focused on the lowest price, IV Produkt is a pioneer in environmentalism.

By 1997, the time was right for IV Produkt to launch the Envistar range, with integrated controls and cooling. Once the cooling unit is integrated in the air handling unit, there is no need for separate outdoor chillers.

Until 2004, IV Produkt had sold end-connected

units but now the company launched the Envistar Top, with duct connections on the top of the unit. This saves a great deal of valuable floorspace, while the top-connected unit is also easier to manoeuvre into buildings thanks to its compact dimensions.

In 2005, Alf Sjöberg, then CEO, and Mattias Sjöberg purchased the company. Since then, the company has enjoyed successful growth that has facilitated new investments, including the expansion of the company's existing premises.

In 2007, the company had net sales of SEK 270 million and a new and ambitious goal was set: to reach a turnover of SEK 500 million within five years.

## Important investments during the financial crisis

IV Produkt was well-equipped to meet the challenge of the financial crisis when it arrived in 2008, and continued to make investments in product development and marketing that would prove important in the future. IV Produkt emerges stronger from the crisis.

In 2011, Home Concept was launched – customised air handling units with patented defrosting technology designed specifically for blocks of flats.

## The one billion journey

2013 proved to be an important year for IV Produkt in which the ambitious goal established in 2007 was achieved and a new goal of SEK 1 billion by 2020 was formulated. To achieve this, a number of vital investments will be required. Despite the fact that production space had only recently been expanded by 3,700m<sup>2</sup>, an investment programme was launched that would see IV Produkt invest SEK 200 million over the coming years. New offices, the IV Produkt Competence Centre and a new logistics hub were built. The company also installed the very latest sheet metal forming technology in the form of two new machines for punching and bending. Eventually, the company invested in more land in order to facilitate future growth.

In 2014, the company expanded further by



In 2005, Alf and Mattias Sjöberg purchased IV Produkt out of a strong belief in the company's future growth potential. Today, Mattias is the sole owner.

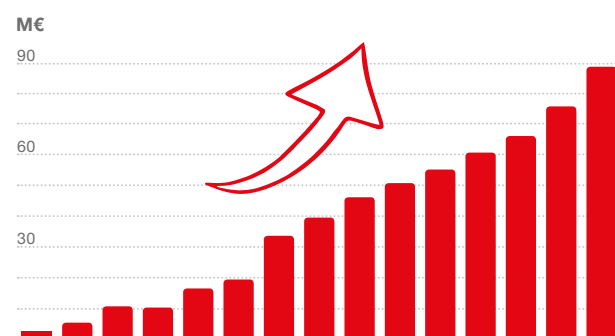
opening three subsidiaries; in Germany, the United Kingdom and Norway.

The IV Produkt Innovation Centre opened in 2016, containing a modern testing laboratory and facilities for practical training courses on air handling units.

"We are well-prepared, with premises and machinery that can cope with a billion kronor turnover; however, the crucial factor is that we have a dedicated, thriving workforce," says Mattias Sjöberg, CEO of IV Produkt.

"Thus far, we have succeeded in finding the right skills and we have the prerequisites for continued expansion.

It has been 50 years since IV Produkt was established and I can proudly state that we are doing better now, than ever before. We create a good indoor climate and save energy and when we reach the age of 100, this will be even more important for a sustainable future," concludes Mattias.



1980 1985 1990 1995 2000 2005 2010 2011 2012 2013 2014 2015 2016 2017 2018

The company's turnover has increased steadily throughout the 2000s.



The IV Produkt Innovation Centre opened in 2016. Investments totalling SEK 200 million over a five-year period have, among other things, resulted in the industry's most up-to-date testing laboratory, a large training centre, further office space and increased production capacity with modern sheet metal forming lines.

# Long-term collaboration with Gekås



For many years, Nils Perlhagen and Magnus Larsson have been involved in project managing Gekås' large collection of IV Produkt ventilation units, which now numbers over 100.

**Gekås was founded in a basement in Ullared in 1963. Today, it is Sweden's most visited attraction and is considered the largest department store in the world. Shopping, accommodation, food and events combine to create an extraordinary experience. The destination is inordinately popular and attracts guests from near and far. With five million visitors annually and 1,900 employees, demands on ventilation are naturally high in order to create a good indoor climate all year round.**

## A long-term relationship

The relationship between IV Produkt and Gekås began almost 30 years ago.

HVAC consultant Nils Perlhagen has designed over 100 units for Gekås. Nils explains that it was in the late 1980s that Gekås realised the enormous benefits to be reaped by investing in its indoor climate, and therefore ventilation equipment.

"Investments were made in improved air

handling units combined with comfort cooling, making it possible for the store to maintain an even indoor temperature all year round," says Nils.

"The units installed at Gekås are over-dimensioned to ensure a good indoor climate and to be as energy-efficient as possible," continues Nils.

"Now, 30 years later, the mindset remains the same and, when we design a new unit, there is always a large margin in terms of spare capacity. All in order to provide an optimal indoor climate with optimal operating costs, energy savings and unit life-cycle," concludes Nils.

The average visitor spends 4.5 hours in the store and Gekås places a great deal of emphasis on always delivering a well-ventilated, comfortable indoor climate on even the hottest summer days. This benefits customers and also helps staff to maintain the highest levels of service.

## Needs-adapted ventilation

"Previously, all units ran on full power all day; however, for the past seven years all units have been fitted with frequency control, so that we can control the speed of fans," says Magnus Larsson, property technical manager at Gekås.

"Even older units have been updated for speed control and to measure carbon dioxide and temperature with multiple sensors," continues Magnus. "We now work entirely with demand controlled ventilation in our premises, so that we can adapt to the number of visitors in the store. This has allowed us to optimise operating costs and extend the working life of units, as they are not working at maximum flow around the clock. This has been an extensive project that we have greatly profited from," says Magnus.

## A reliable partner

Gekås purchased its first unit from IV Produkt in the 1990s, the KPVI reversible heat pump. They now have over 100 units in fan rooms covering a total of 10,000 m<sup>2</sup>.

"We continue to purchase units from IV Produkt because they offer a reliability that we value highly. We are now larger and have in the region of 110 units, so we are dependent on everything working. IV Produkt's service and control system support has demonstrated a high level of competence and availability; a collaboration that has worked very well over the years," eulogises Magnus. "For example, the IV Produkt service department was on site in only two hours to replace a broken fan. It is vital that we have a partner that can meet our needs and our high demands on ventilation," says Magnus.

## Comfort cooling crucial to a comfortable indoor climate

The latest units delivered to Gekås from IV Produkt are fitted with the integrated EcoCooler cooling unit.

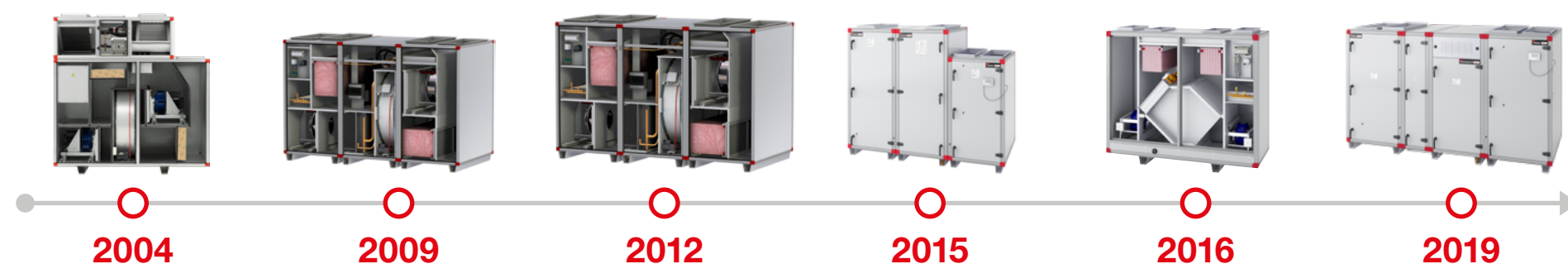
"Integrated cooling means shorter construction times and easier installation of the unit on our part, which is another crucial factor in choosing IV Produkt as a supplier," says Magnus.

"I'm sure we all remember last summer. We had a long period of outdoor temperatures in excess of 30 degrees but were still able to have a temperature of 23 degrees inside the store thanks to well-designed units," concludes Magnus.



As early as the 1990s, Gekås realised the importance of its indoor climate. Nils Perlhagen is seen here in a plant room with then building and property manager Tommy Johansson.

# Innovation and a rapid pace of development are the hallmarks of the Envistar Top series



**This year sees the 15th anniversary of the launch of IV Produkt's Envistar Top series. From its inception, the series proved to be a success with the market.**

In developing Envistar Top, IV Produkt's intention was to offer a top-connected unit with the same high levels of quality as the company's larger end-connected units; a unit with proven integrated control equipment, efficient low-noise fans and the very best components. Since then, the series has developed year on year to meet needs and demand, resulting in a wide and flexible range of products.

## Customised sizes

In 2004, Envistar Top was launched in three sizes with an air flow of up to 1 m<sup>3</sup>/s. This proved to be an immediate success and by 2009, IV Produkt had delivered 2,500 top-connected units. When the market began to demonstrate a need for a larger top-connected unit, the size 16 was launched.

There was then a demand for a unit with the largest possible air flow but that would still fit through a standard door opening. Ease of transport inside buildings is an important parameter for

IV Produkt products. In 2012, the company therefore launched the size 21, with a capacity of 2 m<sup>3</sup>/s and with a module size designed to fit through a 900 mm opening.

In 2016, the Home Concept series was supplemented with a top-connected unit with a counter-flow exchanger.

## Three reasons behind the success

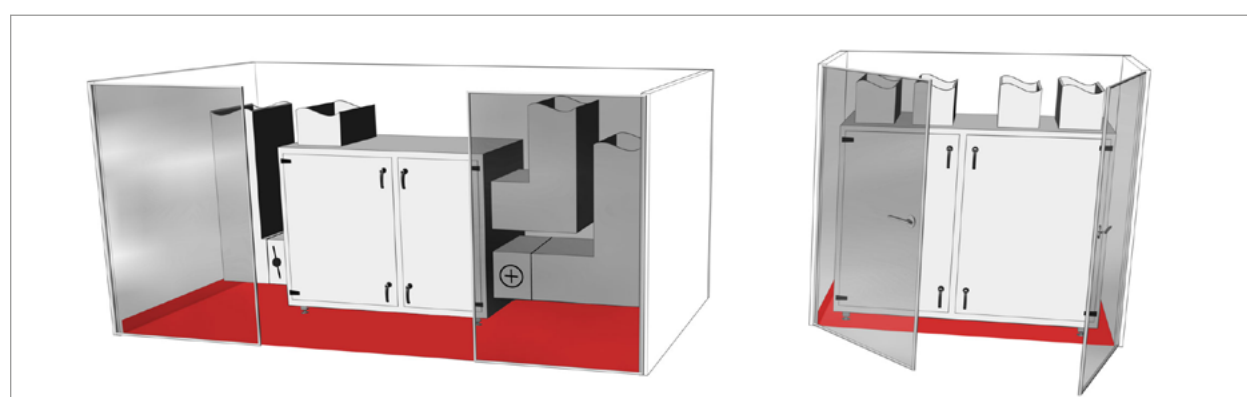
With hindsight, IV Produkt sees three main reasons behind the success the Envistar Top series has enjoyed on the market.

The first is the saving in floorspace. Many units connect with ducts at the side of the unit. This demands considerably more space around

the unit than for top-connection.

The second reason for the series' excellent results is that it is fitted with an integrated cooling unit. Instead of installation on facades or rooftops, the cooling unit is integrated in the air handling unit itself, saving energy and space as well as making installation easier and more cost-efficient.

The third reason for success is considered to be the high quality and value for money offered by the series. All of this has combined to make Envistar Top the natural choice for many projects all over Europe. To date, IV Produkt has supplied 13,000 top-connected units.



The Envistar Top from IV Produkt saves up to 75 % in floorspace compared to a traditional end-connected air handling unit.

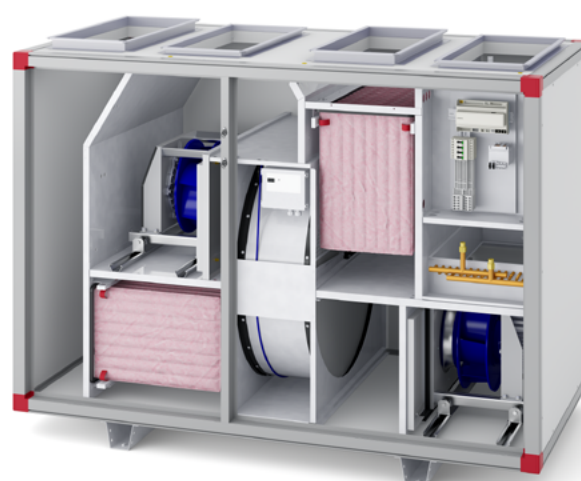
# NEW Envistar Top – even more energy efficient

**This year sees the launch of a new generation of Envistar Top, making the series even more flexible and energy efficient.**

Fredrik Wolff, senior vice-president of product development at IV Produkt, explains: "The series has undergone an energy optimisation review, with a number of measures implemented to reduce pressure drop, including increasing the duct connection dimensions and thermal wheel diameters and optimising batteries. Thermal wheel operation now also uses less energy and can be regulated more accurately. This, together with more fan alternatives, has resulted in increased energy efficiency. Added to this, the series has been made even more flexible with the addition of the new size 09, which is optimised for ease of transport into the building," concludes Fredrik.

**Air flow range 0.1–2.0 m<sup>3</sup>/s**

**The new generation of Envistar Top consumes up 9 % less energy: 3 kWh/m<sup>2</sup>/year**



## Hand-held touchscreen terminal

A new hand-held terminal with touchscreen is now available as an option with the Envistar series.



# Long-awaited launch of reversible heat pump for top-connected units

2017 saw the launch of the ThermoCooler HP for IV Produkt's Envistar Flex series. With a smart installation concept and low energy consumption, the integrated reversible heat pump creates completely new possibilities. High demand has now led to the ThermoCooler HP also being made available for the Envistar Top series.

An immediate success when launched in the market two years ago, the ThermoCooler HP has now been supplied to many projects in Europe. This reversible heat pump offers optimal functionality during both winter and summer. The combination of a top-connected unit with an integrated reversible heat pump has been eagerly awaited by the market, and IV Produkt is confident of yet another success.

"Considering the great demand and the high quality of the product itself, we fully expect a strong introduction to the market," says Mattias Sjöberg, CEO of IV Produkt.

## Savings thanks to smart installation concept

As with the successful EcoCooler cooling unit, the ThermoCooler HP offers a great many benefits when integrated with the Envistar Top series. Reduced installation and operating costs are two of these. Without cooling installations on the roof, expensive duct installation is avoided, while the efficient components provide much lower energy consumption. In fact, cooling an office block can demand as little as 3–4 kWh/m<sup>2</sup>/year.



On a cold winter night with temperatures of -20°C, the Envistar Top with integrated ThermoCooler HP is capable of blowing in a room temperature of 20°C with a return air temperature of 22°C without additional heating. If the thermal wheel has an efficiency of 83 %, the ThermoCooler HP reversible heat pump together with the thermal wheel can achieve a dry temperature efficiency in excess of 90 %.



## Obvious and unexpected space-saving opportunities

A large end-connected air handling unit, in combination with a roof-mounted cooling unit, is often installed to ensure a comfortable indoor climate. By instead installing an Envistar Top with a ThermoCooler HP on each floor, a floorspace saving of 75 % can be made. This also avoids any installations on rooftops.

The units are located behind double doors and the adjacent area can be used for service and inspection. This solution provides each floor with individual temperature regulation and individual electricity bills if so desired.

This space saving creates the opportunity to either build fewer square metres or to use the space for something considerably nicer, such as more offices and a functional roof terrace. These kinds of changes increase the value of property and provide the potential for further investments.

◀ While one end-connected unit requires a 30 m<sup>2</sup> fan room, the equivalent area for three top-connected units may be as little as 10 m<sup>2</sup>. This also releases valuable rooftop space that can be better utilised, for example as a roof terrace.

# Easy transport into the building and integrated cooling were crucial

Hamburg, Germany's second-largest city, lies on the lower course of the Elbe. This port city serves as the financial and cultural centre of northern Germany. The grand Bieberhaus stands on solid foundations in the pulsing heart of the city, its beautiful facade providing a window on the past. However, when property developer Alstria acquired the building, it became apparent that the interior could not entirely measure itself against the exterior. The time was nigh to perform a complete renovation and at the same time to replace the existing ventilation with an FTX system. IV Produkt was entrusted with delivering eight units from its Envistar Top series.

Renovations were completed in 2011 and the building now houses everything from office space on the upper floor to award-winning shops and a historic theatre on the ground floor. In other words, Bieberhaus has many diverse tenants – something that places high demands on ventilation given that offices, shops and theatres all have different needs.

## Integrated cooling, increased comfort

Thanks to a close collaboration with the consultant, IV Produkt was tasked with delivering eight units from its Envistar Top series, all with the integrated cooling unit EcoCooler. Given the lack of space for central ventilation and chillers on the rooftop, a decentralised solution was deemed



The grand Bieberhaus in Hamburg is ventilated by eight Envistar Top units.

perfect for the project. This meant that each floor would be equipped with a minimum of two units with integrated cooling. Plant rooms are small and located in open-plan office landscapes screened by doors. Envistar Top convinced with its smart dimensions for ease of transport into the building, as well as taking up less space in the plant rooms. The high-performance units are also very quiet and energy efficient.

## Top-connection a popular choice

It is not only at Bieberhaus that top-connected units are proving to be a great success. They are

being delivered to large parts of Germany, with their popularity attributable to two reasons; firstly, they save up to 75 % floorspace compared to traditional end-connected units and secondly, the units are adapted for ease of transport through tight passages, something that is far from guaranteed when using end-connected units. When combined with the relative novelty of the concept on the German market, this has provided the Envistar Top series with strong sales and a good reputation.

# Efficient ventilation and architectural conservation

**In 1931, an architectural competition was announced for the design of the new town hall in Sønderborg, Denmark. The competition was won by architect Holger Mundt, whose new building stood ready in 1933. This traditional building on Rådhusstorget would go on to become one of the major works of Danish neoclassicism and is still the administrative centre of Sønderborg Municipality.**

Over the years, the town hall has been renovated on a number of occasions. The latest project included an overhaul of the ventilation system. In the interests of creating a pleasant indoor climate, one of the requests was for comfort cooling in the building, the principal drawback of which was that the installation of a chiller on the roof would be an unwelcome change to the building's beautiful architecture.

## Envistar Top with EcoCooler

The contractor and property owner took great care in selecting the right solution, one component of which was the ThermoCooler HP reversible heat pump. They also decided to install a number

of Envistar Top units with integrated EcoCooler cooling units. As the entire cooling process is integrated in the air handling unit, there was no need to install unsightly chillers on the roof. The beautiful exterior of the town hall could therefore be preserved. No only that, but the more efficient use of floorspace and the significantly less complicated installation saved money. Transport into the building was also easier as the units could be delivered in sections.

## Remote control via the cloud

Sønderborg Town Hall was able to retain its beautiful exterior and now enjoys a good indoor climate with comfort cooling. The ventilation units are also connected to IV Produkt Cloud, allowing remote control and monitoring via the cloud. This service provides the user with a clear overview of all units, as well as the ability to easily adjust values in real time in order to increase energy efficiency.



Thanks to integrated cooling in the air handling units, Sønderborg Town Hall was able to retain its beautiful architecture.

# What are the implications of the new ISO 16890 air filter standard?

On 1 July 2018, the ventilation industry was presented with a completely new standard for classifying air filters. What though was the reason behind this change and what are the implications for those who handle air filters?

## Two standards replaced by one

Previously, there were two standards for classifying air filters in ventilation equipment; EN 779: 2012, which was used in Europe, and ASHRAE 52.2, which applied to the North American market. In December 2016, the International Standardization Organization published the new standard ISO 16890 on air filters for general ventilation, to replace the previous standards globally as of 1 July 2018.

Based on the new standard, European industry association Eurovent prepared recommendations for those handling air filters, in particular HVAC consultants, property owners and manufacturers of ventilation units.

## Health risks the primary cause of the new air filter standard

Few can have missed the fact that air quality impacts on human health. According to studies, poor air quality is linked to both asthma and

other diseases. This is something that effective air filtering can change for the better. Particulate matter (PM) affects humans more than other airborne pollutants and the smaller these particles are, the more they affect us.

The main purpose of the new standard is to increase awareness of the negative health effects of poor-quality air. The standard provides the necessary guidance in choosing the correct filter for the foreseeable future. With its more demanding testing procedures, it will also lead to more efficient filters, which in turn will improve indoor air quality (IAQ).

## How are filters classified in the new standard?

The transition to ISO 16890 means that designations such as M5, F7 and F8 will no longer apply, as these will be replaced by new ISO filter classes. The new classification makes it easier to choose filters based on geographic location and desired particle tolerance in the supply air. The particle level in the supply air should be lower than the desired tolerance in the indoor air. Particles also occur indoors; for example, as a result of food preparation, candles and open fireplaces, meaning that the dilution principle must be applied.

ISO 16890 filter class	ePM1	ePM2,5	ePM10	Coarse
Separation capacity	50 – 95 %	50 – 95 %	50 – 95 %	No requirement
Particle size	up to 1 µm	up to 2,5 µm	up to 10 µm	all sizes

The above table shows the new filter classes. In order to be classified, a filter must separate at least 50 % of particles by weight. The percentage figure shows the separation capacity rounded down to the nearest five. The figure after PM shows the permitted size of particles in micrometres (µm). Particles up to 1 µm can be found in, for example, diesel and smog, while particles between 1 and 10 µm are typical of tyre wear and mould spores. Pollen and dust may contain even larger particles.



## Comparison between EN 779 and ISO 16890

EN 779 filter classes	Equivalent ISO 16890 class
M5	ePM10 60 %
M6	ePM10 75 %
F7	ePM1 50 %
F8	ePM1 75 %

In order to ease the transition to ISO 16890, IV Produkt has prepared a table showing the equivalents to previous filter classes in the new standard.

## Tougher Ecodesign requirements increase the importance of energy-efficient filters

In addition to filtering out hazardous particles, air filters have another important characteristic – they need to have the least possible air flow resistance. Lower resistance results in a lower pressure drop in the air handling unit, reducing the total energy consumption of the ventilation system. It is increasingly important to choose energy-efficient

components in order to comply with 2018 Ecodesign requirements, and air filters are very much one such component.

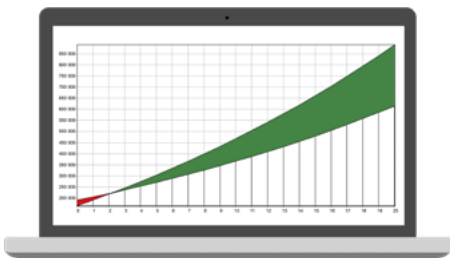
IV Produkt welcomes the introduction of the new standard and foresees major, long-term positive effects in terms of indoor air quality and human health.

## KNOW-HOW

One of IV Produkt's greatest motivations is to disseminate knowledge within the industry. This is such an integral part of the company's DNA that it finds expression both in our logotype, which references life cycle cost, and our graphic profile which includes an illustration of the Mollier diagram.

## Why calculate life cycle cost?

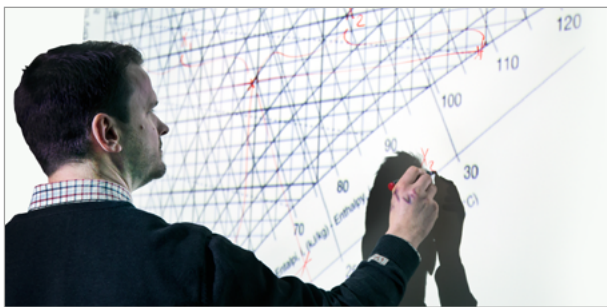
Every day, municipalities, regional authorities, businesses and others procure enormous amounts of products with high energy consumption. Historically, procurement processes have focused on obtaining the lowest possible purchase price in the belief that this represents the best investment. With time, the mindset has altered and it has become increasingly common to look at the life cycle cost (LCC) of a product when deciding which products to buy.



The IV Produkt Designer product selection program allows customers to simply calculate life cycle costs for energy (LCC<sub>E</sub>) for a given air handling unit.

Making a decision based on LCC is smarter than prioritising a low purchase price, in terms of both long-term finances and environmental impact. A product that consumes energy, a ventilation unit for example, costs money to operate and has a long working life, often in excess of 20 years. A unit that consumes less energy will cost significantly less to run. This is part of the model used to calculate a product's life cycle cost.

Learn more at [ivprodukt.com/knowledge](https://ivprodukt.com/knowledge)



## The Mollier diagram – a part of IV Produkt's identity

In order to dimension the components in an air handling unit, one needs to know the relationship between air temperature and moisture content. The Mollier diagram helps us to generally describe and understand how air changes state when we cool or heat it. This is why the Mollier diagram is part of IV Produkt's identity and is at the core of our day-to-day work.

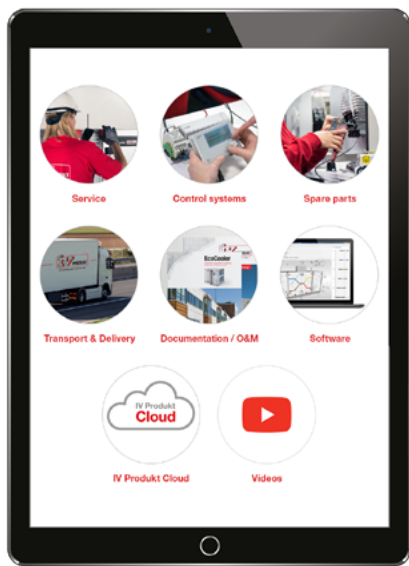
The Mollier diagram uses various scales and curves to illustrate the state of the air, allowing us to see the relationship between air temperature, moisture and energy content.

The diagram was designed in 1923 by the German professor Richard Mollier.

# Find all the latest news on air handling on our website



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Need help with service, control systems, spare parts or transportation? Visit [ivprodukt.com/support](http://ivprodukt.com/support)



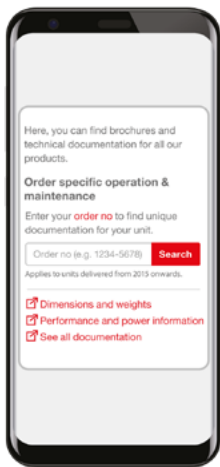
How does the indoor climate affect performance? Find out about this and much more at [ivprodukt.com/knowledge](http://ivprodukt.com/knowledge)



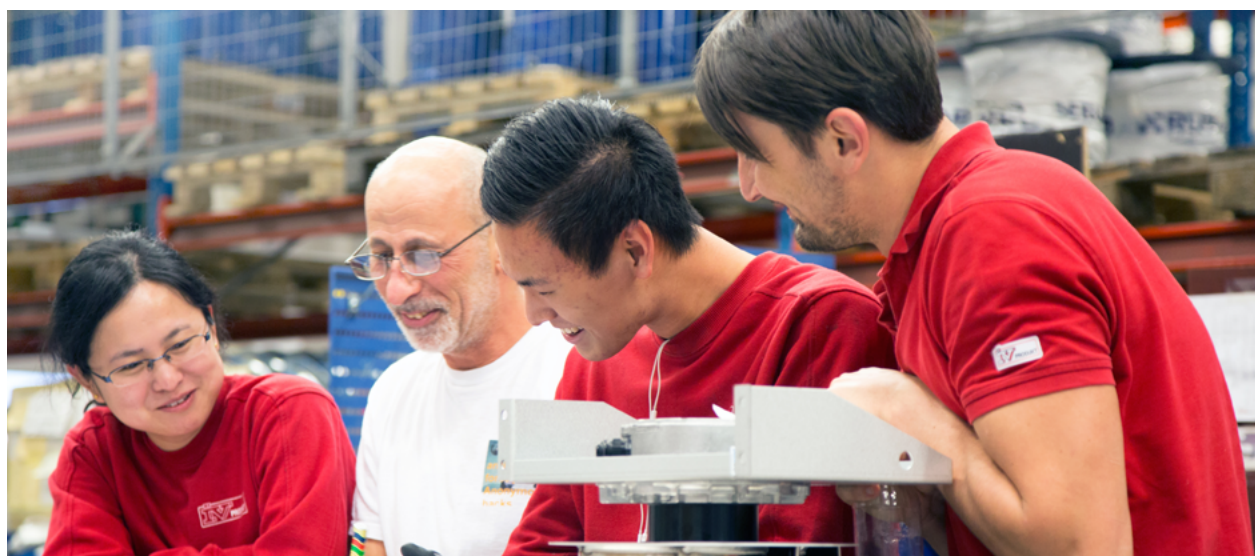
Make LCC calculations and choose the right unit for your needs with our product selection program [ivprodukt.com/iv-produkt-designer](http://ivprodukt.com/iv-produkt-designer)



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## Would you like to join us?

Are you ambitious and do you love to develop, challenge and be challenged? Do you want to come to work every day in the company of forward-thinking, positive people who genuinely care about one another?

Regardless of whether you are an engineer, electrician, consultant, sales person, installer, service technician, or simply interested in indoor climate – send us a spontaneous application today!

[www.ivprodukt.com/vacancies](http://www.ivprodukt.com/vacancies)

# We look forward to seeing you!

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