

## Heat pumps: Gearing up for the boom years

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# Heat pumps: Gearing up for the boom years

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The heat pump industry is entering a transformative decade, with major producers jostling for market share, consumers angling for state support, and EU governments aiming to nurture the bloc's nascent industry while meeting climate goals.

Read this EURACTIV special report to learn more about Europe's attempt to become a global heat pump manufacturing powerhouse.

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# Europe's 'heat pump valley' takes root in the East

By Nikolaus J. Kurmayer | EURACTIV.com

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With demand for heat pumps growing, Europe's future supply looks to be manufactured East of Berlin as investments head to Poland, Slovakia and

**A** global race has started to manufacture the millions of heat pumps needed to decarbonise heating, with Asian and East European countries taking a head start.

Nearly all heating in Europe must be climate-friendly by 2050 in order to reach the EU's net-zero objective – and heat pumps are increasingly viewed as the main way of achieving this.

“As far as I can see, heat pumps are seeing a major takeoff now,” said Fatih Birol, the executive director of the International Energy Agency (IEA), who presented a [special report on the future of heat pumps last year](#).

The EU wants an extra 10 million units installed by 2027 [in order to reduce its dependence on Russian](#)

[gas](#). The industry is booming, with world powers battling for a market share in one of the key future clean markets.

“It is a very important moment for the heat pump industry and for the governments in Europe, North America, Asia and beyond,” said Birol.

For the traditional European heating sector, which employs almost two million people across the value chain from production to installation, this decade marks a tectonic shift.

In 2021, the heat pump value chain employed 117,000 people, with around 37% (44,000) working in manufacturing, according to a [recent report by the European Commission](#). This value chain manufactures around 73% of the

EU's current heat pump needs.

European policymakers welcome this trend. After all, heat pumps are one of five future clean-tech markets – alongside solar, wind, batteries, and electrolysers – where Europe has a comparatively large market share.

For heat pumps, “about 35% of manufacturing capacity was located in China, 25% in the United States and a little under 20% in the European Union,” the IEA report found.

The IEA estimates that [heat pump manufacturing output capacity in the EU will exceed 55 Gigawatts by 2030](#), equivalent to the yearly production of 8 million heat pumps of 7-kilowatt capacity, which is the average size for a four-person household.

At this rate, manufacturing is set to exceed deployment targets.

The necessary investments – about €5 billion to boost manufacturing capacity according to industry estimates – have already been announced.

“You will not recognise the European heating industry by 2025,” said Thomas Nowak, the secretary-general of the European Heat Pump Association (EHPA).

## Europe’s heat pump valley

In Europe, Central and Eastern EU countries have taken a head start on manufacturing, thanks to cheap and skilled labour.

Already, observers point at a developing heat pump valley forming at the intersection of Poland, the Czech Republic and Slovakia.

Here, big manufacturers like Daikin in Brno and Łódź, Viessmann in Legnica, Bosch in Dobromierz, Panasonic in Pilsen, Vaillant in Senica and Stiebel in Poprad are currently stamping massive factories out of the ground.

The biggest winner so far is Poland. The country of 38 million people managed to attract the largest share of confirmed heat pump industry investments to date – exceeding the figure for Germany, a country twice as large.

“Poland is a country with a large number of skilled workers,” [said](#) Hiromitsu Iwasaki, vice-president for Europe at Daikin, when the Japanese manufacturer announced a €300 million investment funding a new factory in Łódź last year.

“All heating products sold in Europe are also manufactured in Europe,” he added, citing Daikin’s

“proximity strategy” as another reason for locating its factories there.

Poland’s attractiveness as a location for heat pump manufacturing is also fuelled by growing domestic demand.

The heat pump market in Poland grew 102% last year. The almost 200,000 heat pumps sold in Poland put the country head-to-head with Europe’s richest countries, just behind the Nordics which had a head start in adopting the technology.

## Asia looms

With much of the world’s solar and battery industry already located in China, heat pumps are one of the few markets where Europe is able to compete.

The European Commission sees a “strong technological lead” for EU companies, especially for geothermal and large-scale heat pumps, which have the capacity of heating entire cities when connected to district heat networks.

“The demand for district heating is exploding,” explains Raymond Devorvet, a business developer at MAN Energy Solutions, a German company. Already, cities from Vienna to Stockholm are introducing heat pumps as their primary source of heat, he told the BBC.

However, some industry insiders are more sceptical about the “experience of EU manufacturers with refrigerants alternative to F-gases,” which the Commission cites as another European strength.

The EU is in the midst of banning a wide range of F-gases, which are central to the functioning of many common heat pump models – particularly Asian models.

Switching to propane, which serves the same function without the climate-warming F-gases, is expected to favour European companies, many of whom have begun producing propane-based models already.

“Why wouldn’t Chinese companies be able to make the switch to natural refrigerants in a few years,” one industry insider asked. Companies like Dongyue Group and Sinochem are major Chinese players in the production of refrigerants.

Already, Chinese companies are making forays into the European market. “Imports from China have been rising for the past two years,” said the Commission, which noted that development started from a low base to explain the jump.

This assessment may underestimate the longer-running trend before the 2020 pandemic restricted imports from China. In 2011, heat pump imports from China were valued at €48 million, growing to €243 million in 2020, a 17% annual increase.

This figure subsequently more than doubled in 2021. Estimates for 2022 suggest that this figure doubled once more, with imports including components exceeding €1 billion.

Brussels hopes that the clamp down on F-gases in favour of natural refrigerants like propane can give European companies the necessary leg-up on their Asian competitors.

“The German heating manufacturers are already supplying the alternatives. The only disadvantage, if any, could be for Japanese and American manufacturers, who are not so far advanced in this area,” said Peter Liese, a centre-right EU lawmaker from Germany





# 500,000 missing workers: Heat pump industry looks to attract more women



By Nikolaus J. Kurmayer | EURACTIV.com



The heat pump industry is facing a gap of 500,000 skilled workers. Could boosting women’s participation in the workforce help address it? [Shutterstock/Dziurek]

**H**eat pumps are slated to transform Europe’s heating sector, a process that has laid bare a skilled workers gap that industry and governments want to fill by boosting female participation in the workforce.

Decarbonising the heating sector, and reducing the bloc’s reliance on imported fossil fuels, will require replacing millions of fossil heating systems by heat pumps, but a worker shortage threatens to scupper the process.

“Finding enough people to install

and also obviously manufacture and sell heat pumps is an increasing challenge,” [says Julie Beaufils](#), the secretary-general of EuropeOn, a trade association representing electrical system operators in buildings.

The European Heat Pump Association, a lobbying body, [estimates](#) that by 2030 some 500,000 skilled workers will be needed to match the heat pump roll-out targeted by EU governments.

“It’s all about intertwining skills policies and climate policies. You

can’t reach climate ambition without having the right people to do the work to deliver,” says Beaufils, who stresses the need for “doers” to implement the green transition.

Regardless of heat pump production capacity, skilled installers are crucial to ensuring a smooth transition from fossil fuels to clean heating.

Beaufils herself estimates that around 70% of jobs in the heat pump industry will go to installers “because at the end of the day, each of the heat pumps that you produce, and that you

sell, must be carefully installed by skilled technicians.”

In the UK, where the government began doling out generous subsidies to increase heat pump uptake, installation capacity – and misinformed installers – [have been identified as a major roadblock](#).

In Germany, the lack of skilled technicians is a [key argument against government plans](#) to ban fossil fuel boilers. According to estimates, around 60,000 technicians would be needed for the sector alone.

The industry contends that the missing installers in Germany is a gap that can be easily filled. Installing a heat pump “is not rocket science” and the existing knowledge in companies, “the need for retraining professionals is not as dramatic as one might think,” says Helmut Bramann, CEO of the central installers’ association SHK.

## Industry challenge

Perhaps the industry’s wider challenge is how male-dominated it is. Among clean tech industries, heat pumps come last with a 16% share of women in the workforce, while other sectors like batteries and hydrogen boast a female rate of at least 30%.

There are some industry initiatives in place to help tackle this: On 8 June, the industry gives a cash award as part of the “Women in Cooling” competition, where contenders were asked to submit best practices – with finalists ranging from Spain to Turkey.

The EU-funded coalition HP4ALL similarly seeks to boost female participation in apprenticeships.

Most large heat pump

manufacturers have also implemented initiatives to boost installer numbers. The German company Viessmann trains 90,000 a year for all heating systems, and the share of heat pump trainings is expected to increase in the coming years.

Another German producer, Vaillant, offers one-day trainings in heat pumps.

Yet, given the systematic prevalence of men in the industry – few have encountered anything but a male heating professional – can the industry successfully induce more women to participate? Could cleaner heaters with less grime prove more popular?

## Waiting for Brussels

The growing demand for skilled workers in the heat pump sector and other green tech industries has been noticed at the highest echelons of the European Commission in Brussels.

“I am proposing to make 2023 the European Year of Skills,” said Commission President Ursula von der Leyen [during her annual address](#) in September last year.

Almost halfway into 2023, the European Year of Skills has yet to truly manifest for the heat pump industry. While the industry has expressed big hopes, insiders say the project is still “work in progress”.

“What we are really looking forward to is a new initiative from the European Commission – the partnership on skills for heat pumps,” says Claire Grossmann, secretary-general of AREA, the European association of refrigeration, air conditioning and heat pump contractors. “We really hope that this will help.”

However, the industry itself appears sceptical. “We expect mostly events and celebrations here and there across Europe, which is good because we need to raise awareness,” said Beaufile from EuropeOn.

“But of course, we are calling for more profound change,” she added, saying the proof will be in the skills pact that the European Commission is expected to present for the sector.

In early September, Gdańsk will host the annual EuroSkills summit. Holding it in Poland, a hot spot for the budding heat pump industry, may be an apt location. By then, the industry hopes for a changed environment as it seeks to woo additional (female) workers and apprentices.

# Four key hurdles for would-be owners of heat pumps in Europe

By Nikolaus J. Kurmayer | EURACTIV.com



Would-be owners of heat pumps face various hurdles, from permitting to sky-high costs due to electricity being overtaxed. [Shutterstock/ShapikMedia]

Consumers looking to switch to heat pumps today face challenges like complicated permits, dubious installers and a tax system that favours gas over electricity.

Europe has big heat pump ambitions. Germany eyes six million installations in the coming years and the EU is betting on tens of millions of them to reduce its dependence on Russian gas.

All of the devices will need to be installed in the homes of consumers, who often miss qualified advice from trained professionals or even risk being faced with dubious installers.

On 31 May, the UK's Customs and Markets Authority rang the alarm. The British watchdog said it "will be carrying out further work looking into potential misleading practices in the green

heating and insulation sector."

Malignant practices by some vendors and lack of information appeared to be impacting consumers looking to switch to clean heating, the authority said. The UK introduced a generous subsidy scheme to boost the lagging uptake of heat pumps in 2022.

Consumer advocates on the continent sound the alarm, too.

"Consumers are still not being given enough clarity about the heating and cooling systems that they should choose and are not sufficiently supported in this transition," says BEUC, the European consumer organisation.

## Four key challenges

The consumer group identified four key hurdles for would-be owners of a heat pump: obtaining a permit from the

municipality for installing the device, getting a permit to connect it to the grid, the quality of installers, and the fact that electricity remains an unduly taxed form of energy.

To evaluate the shopping experience in Europe, BEUC sent 40 secret would-be buyers of a heat pump into the market in four different EU countries, equipped with a questionnaire to relay their experience at every step of the process.

The shoppers' experiences in the Czech Republic, Slovenia, Slovakia and Spain varied from "wondrous" to shocking, suggests the report, seen by EURACTIV.

Spain stood out as the worst location, as all undercover shoppers reported an unpleasant experience with their installers, leaving them unsatisfied.



On financing, all but one installer failed to mention that would-be heat pump buyers could apply for state support to help finance the often costly acquisition.

BEUC argues that improved certification schemes for installers – and consumer awareness initiatives may be needed.

Another hurdle facing consumers are municipal governments.

“In some countries, you need a permit for installing the external unit of the heat pump,” says Jaime Loffredo, BEUC team leader on energy policy. “That is problematic.”

When your heater breaks down in winter, and you want to replace it with a heat pump, “one can’t wait for the municipality to give the heads-up.”

## Permitting issues

Similar permitting issues extend to grid connections. Theoretically, devices that consume a lot of energy need to be notified to the grid operators, so they can accommodate for the increased power demand in a given region or neighbourhood.

In late 2022, EU countries passed an emergency law to bypass this requirement for 18 months, but by mid 2024, the exemption will expire.

In Germany, “there are some problems already on connecting heat pumps to the electricity grid because the grid is overloaded,” says Loffredo. The [German housing company Vonovia explained in May](#) that it was not able to install 70 heat pumps due to a lack of grid capacity.

## Electricity taxation

Perhaps most egregious, though,

is the fact that electricity is significantly overtaxed compared to its fossil fuel counterparts.

Italy, Spain, the United Kingdom, Belgium and Germany “overtax electricity – in three cases by more than 200% – and undertax oil and fossil gas while not taxing wood use at all,” [according to the Regulatory Assistance Project](#), a green policy think-tank.

“In some countries, if you buy a heat pump, you end up spending more than what you were spending with a gas boiler because electricity tariffs are very high,” confirms BEUC’s Loffredo.

Given the fact that heat pumps turn 1 kilowatt-hour (kWh) of electricity into up to 4 kWh of heat – compared to regular heaters average of 0.8 kWh per unit of energy – the tax burden difference that results is significant.

One country that has a policy in place to tackle this is Denmark, which banned new fossil heating systems from 2013 and offers a special tax rate for any electricity consumption beyond 4,000 kWh per year – reducing the tax burden of powering a heat pump by about two thirds.

An ongoing reform of the EU’s energy taxation directive is currently stuck in gridlock.

## Heat pumps want smart grids to prosper

As Europe’s share of renewable energy increases, sunny and windy periods increasingly result in extremely low electricity prices at times.

Heat pumps can make targeted use of those periods of low prices to heat homes even more cheaply than

previously possible, making them a better deal for consumers.

Doing so requires both digital smart meters – that can accurately measure electricity consumption at all times – and a contract that makes such a thing possible.

Much of Europe has already got started on this. In Denmark and Sweden, 100% of households have a smart meter installed. Spain, Italy, France and the Netherlands have a rate above 80%.

In Belgium, Germany, Bulgaria and Slovakia, the share of smart meters is zero.

NIBE, the Swedish heat pump manufacturer, has devised a plan to circumvent this issue. “Heat pumps offer more than traditional heating,” its director, Klaus Ackermann, told PV Magazine.

The Swedish company recently partnered with Sonnen, a German company that manages electricity demand as a service provider to ensure grid stability. By aggregating heat pumps, Sonnen can reduce their use in times of peak demand – and turn them on when demand is low.

Some NIBE models are expected to come with this functionality installed already.

“Intelligently integrating power generation and consumption allows customers to enjoy maximum comfort at low costs and with minimal environmental impact”, notes Ackermann.



# Key EU lawmaker: Europe ‘needs to stay ahead of the game’ on heat pump manufacturing

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By Nikolaus J. Kurmayer | EURACTIV.com



“One of the most promising replacement of any heating system in our house is via heat pump. This is putting the heat pumps centre stage as the most effective way of changing our fossil dependency in the housing sector,” says Bas Eickhout. [EU/Eric VIDAL]

**N**atural refrigerants like propane are the way forward to replace climate-warming fluorinated gases in heat pumps, Green EU lawmaker Bas Eickhout argues in an interview with EURACTIV.

*Bas Eickhout is a Dutch lawmaker who coordinates the Greens/EFA group in the European Parliament's environment committee and leads the negotiations on the reform of the F-gas regulation.*

### Interview highlights:

- Heat pumps are Europe’s best bet for reducing dependence on fossil fuel heating.
- Gas industry lobbied against an earlier adoption of heat pumps.
- The green transition will mean less jobs in some industries, like the heating sector, while others will create jobs.

- German Finance Minister Christian Lindner is holding up public investments needed to accelerate the green transition.
- Switching to natural refrigerants is the only chance that European manufacturers have to compete against foreign rivals.

**Mr Eickhout, why do you think there is such a focus on heat pumps**

**today?**

I think the most logical reason is, of course, that where we are having high energy use and with that CO2 emissions, we are looking at alternatives to lower our fossil dependency.

This debate has accelerated because of the war on Ukraine, where our dependence on Russian fossil gas has come home to haunt us.

But we also want to get rid of that fossil dependency in its entirety. So that's why we're looking to electric cars, and industry is working towards electrifying their fleet.

When it comes to household heating, we're undergoing the same process. Amazingly, one of the most promising replacement of any heating system in our house is via heat pump. This is putting heat pumps centre stage as the most effective way of changing our fossil dependency in the housing sector, which is a big source of energy use and CO2 emissions.

**Heat pumps are not a new technology even though their efficiency is widely lauded.**

**Why didn't heat pumps make a breakthrough before? The technology behind it hasn't changed much, after all.**

That's a good question! I think it has to do with our fossil fuel dependency, which has been an addiction of sorts.

In the energy sector, we always had this mantra: cheap, reliable and clean. Let's be honest, we focused our entire economic and energy system on cheap and reliable.

And even that turned out to be a lie. We Greens were criticising Nord Stream 2, whereas many were saying the pipeline would be a reliable source

of energy. How did that turn out?

On top of this, there was the huge gas lobby that was really pushing for gas as a clean replacement to coal.

I think it's really been a lack of imagination. Established sectors like housing, who went from burning biomass [wood] to coal and oil and then to gas, were used to slight improvements – while still burning things for heat. Changing to a heat pump is doing an entirely different way of heating. It requires an adjustment rather than replacing or switching your fossil energy source.

So, I think the fossil lobby and our very short-sighted focus created and maintained this dependency. That was difficult to compete with for heat pumps back in the day, kind of like the situation we see with electric vehicles today.

That's what we're going to see: the next clean revolution will be in housing, although that of course requires more expenditure.

**And we're right in the middle of this revolution, a rapid transformation of the heating sector. Is the European industry equipped to handle this rapid pace of change?**

Well, that's the big challenge for now. They seem to be capable of handling it.

Of course, there's a lot going on also in the markets. Just think of the Viessmann takeover [by the US-based HVAC giant Carrier] which has shown the interest of the capital markets.

I think for now, you see an acceleration of the deployment of heat pumps. And let's see how fast that acceleration can go. I'm not saying that there are no challenges, but you do see an acceleration.

**Those are the manufacturers,**

**which are just one part of the value chain. Will there be enough skilled workers to fill the jobs that are being created?**

In a way, we have skills issues all over the place. And that has been aggravated because of growth in the clean heating sector, but it is a problem we see in many sectors.

I think there is a positive part of it even though it is of course your task as a journalist to point out the problems. But let's be honest, we [Greens] have always said that the green economy also delivers a lot of employment.

And that's exactly what you see now! So you could say that there is a problem, with workers needing to be retrained and upskilled to handle heat pumps, or you could argue that we're experiencing a green jobs boom.

During such a transition there are always challenges to make sure everything runs smoothly, that's unavoidable.

But I think the more positive message that I really think should be communicated too is that this is another indication of investments creating green jobs in Europe.

The transition is not always 100% smooth, there will be bumps down the road. But that is what it means to transform an economy.

**The legacy heating value chain in Europe employs almost 2 million people. Do you think that the switch to clean heating is capable of matching this amount of jobs?**

Again, this is a transition that will mean an increase in employment, massively. That's what's going to happen.

You could also do nothing, but is that an alternative?

Climate protection is not negotiable, and security policy has just provided another boost to our climate agenda. We're already pretty late with this transition, therefore I can understand that people feel like there is a lot happening in a very short time

So it is important that we politicians are honest to avoid government rows like the ongoing controversy in Germany: change is happening.

That will mean an increase in jobs in some sectors, and a decrease in others. But there will be jobs.

**You mentioned Germany, where a policy to boost uptake of heat pumps has caused a drawn-out government fight. What other tools are available to governments to increase the acceptance of this “new” clean heating technology?**

The German government is now working on a compromise on this, but generally speaking, heat pumps are considered big investments that pay off over time.

Depending on the house and other circumstances, the rate of payback is going to be different. Is it an independently standing house, are the walls flat, how well isolated is it?

All this comes back to one term: investment is needed to achieve this transformation. That is something I find lacking in the German plan [termed a boiler ban], where the fiscal headroom is limited due to the German Finance Minister Christian Lindner holding onto the purse strings tightly.

He is stopping any kind of investment discussion, even though we need a push for more European funds and to give EU countries extra fiscal leeway when it comes to supporting green investments by reforming the

stability and growth pact [the EU's fiscal framework].

All these questions are on the table. And we have a German Minister of Finance who doesn't want to talk about them. But we need these investments. And that's where I think the problems lie.

For Europe, we're looking at investment needs of about €500 billion per year. That's a lot of money. Not all of it will be public, much of it is going to be coming from private investors. But we will need public money to lead the way.

So it could be time to empower the European Investment Bank further, but again, the German Finance Minister is opposed.

During this transition, we'd need consistent policies in order to help people who live in houses that need extra assistance – making the climate agenda more social. And that makes it so complicated, when different government parties have different agendas.

**On another topic, you're very busy with negotiations on the revised F-gas regulation. It is already your second time taking charge on a reform, the last being ten years ago. It appears the law is much more controversial this time around, what changed?**

F-gases are siblings to the infamous CFCs that once threatened the ozone layer – they were phased out via the Montreal agreement. They possess a high climate impact, much higher than CO<sub>2</sub> per molecule.

Today, the hole in the ozone layer is shrinking. But we have created additional emissions from greenhouse gases with fluorinated gases. The F-gas regulation aims to decrease those

emissions from European appliances.

Heat pumps, as well as air conditioners, rely heavily on F-gases for their functioning. In their role as refrigerants, they concentrate and transport energy. Everything that needs a kind of heating element uses F-gases.

Thus, we want to reduce their use and shift towards climate-friendly natural alternatives where possible instead. Because F-gases aren't necessarily needed for the functioning of heat pumps, natural alternatives like propane are possible.

We started this process ten years ago, with the last F-gas regulation. But back then, ambition in the EU was rather low to get this done. So we're in a hurry now, but the clampdown on F-gases are also a chance for the European heat pump industry.

Companies like the German heat pump maker Viessmann are already producing models that run on natural refrigerants.

That, and the limitless innovation capacity of the chemical industry, is the reason why we need to ensure that we transition from F-gases to natural alternatives. Because otherwise, the chemical industry may come up with gases that work, but instead of damaging the climate they are carcinogenic.

Let's not make the mistake we did when banning CFCs and replaced them with climate-damaging F-gases, but rather get it right this time by moving to natural alternatives.

So what we're looking for now in the legislation is to stimulate and accelerate that transition to natural cooling elements, while not hindering the acceleration of the rollout. And to avoid this, we are pushing for an emergency brake on the clampdown that the European Commission can pull if the heat pump

rollout is endangered.

**Would you say the European industry is best placed to handle natural refrigerants, giving them a leg up on their foreign competitors?**

That's the funny thing. Most of the competitors are Japanese and American, who get their refrigerants from the respective chemical giants and pay a patent fee for them.

But for Europe, I think this law is going to boost innovation and lower our impact on the environment. So yes, we are ahead of the game.

But we need to stay ahead of the game. So we can't sit still, that's what we did with electric cars. And now the biggest car exporter in the world is China, with a vibrant EV industry.

The chances that we win on the natural alternatives are much higher than with F-gases, because we've already lost that battle.





**PROMOTED CONTENT**

*DISCLAIMER: All opinions in this column reflect the views of the author(s), not of EURACTIV Media network.*

# Heat pump ramp-up: tackling the installers gap

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By Cezara Missing and Kai Roger Lobo | Viessmann



[Viessmann]

**R**EPowerEU sets out targets for a steep ramp of heat pumps: We want to install at least 10 million / 30 million new heat pumps by 2027 and 2030, respectively. With these targets in mind, the European Commission is currently drafting an Action Plan to accelerate the roll-out of heat pumps. A series of stakeholder meetings will discuss

key policy areas to address – with the first meeting scheduled for this Thursday focusing on the areas of skills and communication.

*Cezara Missing and Kai Roger Lobo are, respectively, Deputy Director and Director Public Affairs Germany at Viessmann*

Many elements play a role to meet REPowerEU goals: New hydronic heat pumps can now work with radiators in existing buildings, thereby replacing oil and gas boilers. The heating industry is investing billions in new models and production capacities and we can expect the current shortages of heat pump supply will be overcome. But

what needs to be done to ensure the availability of installers?

### **Snapshot Germany: Developments in the heat pump market**

Let us have a look at Germany: In Germany – one of the countries most affected by the changing landscape of energy supplies in the wake of the Ukraine war – the heat pump ramp-up rate is particularly fast. In March 2022, the government decided that from January 2024 every newly installed heating system in existing buildings, or in new builds has to run on at least 65% renewable energy – one main compliance option being heat pumps. How has Germany done so far in speeding up heat pump installation, and what lessons can be learnt regarding a potential installers gap?

As of mid-May, the framework conditions for 2024 are not yet fixed: compliance options with the 65% rule, especially related to hydrogen readiness, timing and exemptions for elderly people are controversial. Notwithstanding, the heating industry is optimistic that they can meet the annual target of at least 500,000 new heat pumps as of 2024. The sales numbers have increased from 154,000 (2021) to 236,000 (2022), roughly one-fourth of the German heating market. In the first quarter of 2023 alone, 96,500 heating pumps were sold, a plus of 111 per cent compared to the previous year. However, there are discrepancies between production, delivery and installation capacities. Not only disruptions in supply chains interfere with reaching the targets. There are also some concerns regarding the lack of heat pump installers.

### **Installers gap vs. ambitious targets: A limiting factor?**

ZVSHK (German Central Association Plumbing, Heating, Air Conditioning) reports at least 40,000 vacancies at the moment. In order to reach 6 million heat pumps by 2030, ZVSHK estimates a need of about additional 60,000 installers on top of the workforce needed in plumbing (for reference: 929,000 heating systems were installed while 1.22 million bathrooms were built/renovated in 2021). For 2023, the Federation of the German Heating Industry (BDH) and the Federal Association of Heat Pumps (BWP) expect about 350,000 installed new heat pumps, more than one-third of the total German market. This proves on one hand the big market elasticity on the installers' side, ramping up heat pumps which are still more time intensive to install than gas boilers: Up until now, the installer workforce has not been a limiting factor to meeting explosive market growth.

On the other hand, 'only' 500,000 heat pumps by 2024 would mean a market crash (from almost 1 million heating systems sold in 2022) in the post Building Energy Act (GEG) world, if new installation of stand-alone oil and gas-based heating systems is to be more or less banned. This can also manifest itself through anticipatory effects like installing boilers instead of renewable alternatives as long as it is still allowed, which may lead to a different installation focus this year.

The new concept of financial support may include some implicit indicators for future market development. Most of the compliance options for the

65%-rule are planned to be financially supported by at least 30 to 50 per cent. While income-related financial support is still under discussion, changes to the current support scheme may impact installer availability in one way or the other.

### **Mitigating the installers gap: Heat pump design and digitalization**

Most heat pump makers are innovating to facilitate the installation, with new heat pump design and digitally supported performance optimization throughout the lifetime. From these, we expect that we can cut installation time in half, and reduce maintenance time significantly.

The new generation of heat pumps for the building stock are increasingly designed in "monoblock" layout, with environmentally friendly natural refrigerants. For this setup, installers do not require "F-gas certification" – this is a crucial factor for simplifying and speeding up the shift from combustion to heat pump installation.

Digitalization and connectivity will reduce workload too, facilitating system set-up optimization, efficiency monitoring and preventive maintenance for minimized electricity consumption in individual "real use" operating conditions. Digital functions can cover regulatory requirements for heating system efficiency optimization, and monitor performance for system maintenance, saving precious time for heat pump installations and reducing total costs. Therefore, digital checks should be introduced at scale for routine tasks.

## Mitigating the installers gap: Re- and upskilling

While there might be divergent evaluations of the installers' gap, one thing is certain: The massive heat pump ramp-up requires upskilling and investments in further training and development of the workforce. The association of the European heating industry (ehi) estimates that 50% of the EU's 1.5 million installers require additional training for heat pump installations.

To that end, heating manufacturers have heavily reinforced their skilling activities. At Viessmann, we have increased our training activities by 75% compared to pre-pandemic times: In 2022, we've trained more than 88,000 installers across European markets with plans to further increase this number in the coming years. And the trend towards non-fossil solutions is clear: the seminars on heat pumps and digital tools were the most sought-after by far. Next to manufacturers' own activities, instruments such as the Pact for Skills at European Level or national support programmes are necessary to meet the increased training needs in the labour market.

## Conclusion: Concerted action across installers and manufacturers can do the trick

We are positive that an EU Heat Pump Action Plan will help to better align the efforts between installers, heat pump manufacturers and policymakers across markets. From our experience in Germany, aiming

at a particularly steep rate, we believe that the combined effects of i) market transformation of digitally enabled monobloc heat pumps, ii) a joint effort on re- and upskilling in installation and production, and iii) continued support from authorities can mitigate an installers gap.



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