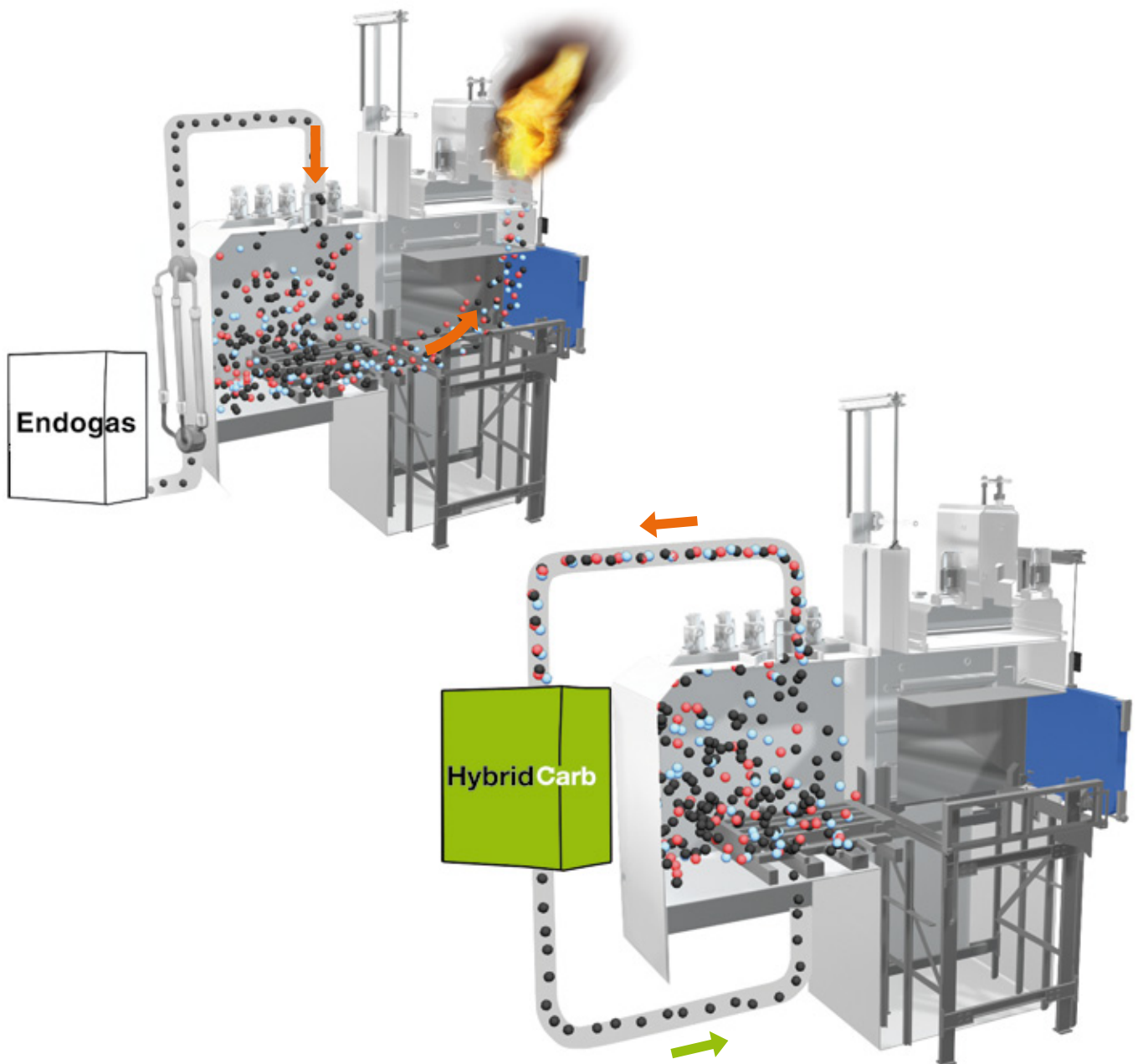


# HybridCarb

Smart Sustainability –  
Be in the **green** with heat treatment.



Hard work wins



# Save money with less CO<sub>2</sub>: Ipsen's revolutionary HybridCarb process.

HybridCarb is an innovative gassing technique for gas carburization developed from scratch: process gas is no longer burned off, but rather is returned to the heating chamber via a recycling process. This not only reduces CO<sub>2</sub> emissions, but at the same time cuts process gas costs by up to 90 %.

In conventional gassing processes using endogas or nitrogen/methanol, only 2 % of the process gas is used for carburization. The rest is burned off and released into the atmosphere. This is not only questionable from an environmental point of view, but is also a waste of resources, giving rise to unnecessary expenses. With HybridCarb, process gas is recovered and used for further heat treatment.

This recycling of process gas greatly increases the efficiency of the carburization process. That's not just beneficial for the global climate. It also means your operating efficiency will be improved. And here's some really good news: almost all atmospheric furnaces can be retrofitted with the HybridCarb recycling kit.

**Make savings more quickly: with Plug & Play.**  
HybridCarb can be installed extremely quickly since the connections have been radically simplified – there is just one inlet point and one outlet point. In general, the installation work in itself does not take more than four to six hours.

**No maintenance, no interruptions.**  
HybridCarb is extremely reliable and does not require you to service it. However, should repairs happen to be necessary, you can simply switch back to the conventional gassing type between two charge treatments in a matter of seconds and at the touch of a button.



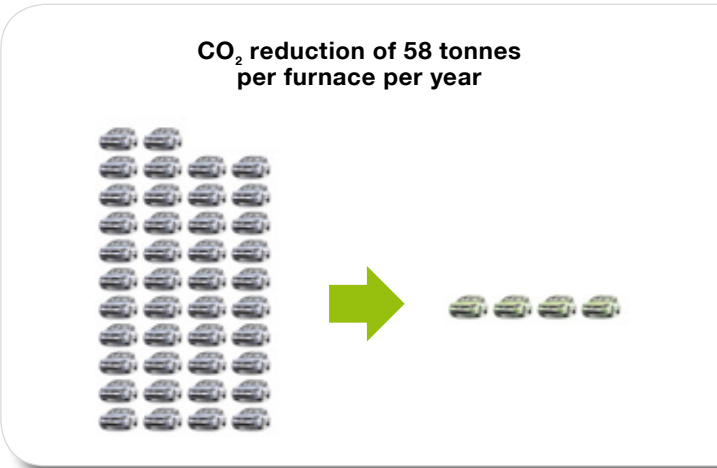
Ipsen's  
revolutionary  
HybridCarb



## Prozessgasverbrauch HybridCarb vs. Endothermic gas TQ-17 furnace

process	CD / CHD	load weight	time	Endothermic gas			natural gas per hour	natural gas per hour	Savings
				carrier gas	natural gas equivalent	enrichment gas Ø			
	[ mm ]	[ kg ]	[ h ]	[ m³/h ]	[ m³/h ]				percental savings
Carburizing	0,7	1800	9,25	18	4,0	0,75	0,90	3,85	81,1
	1,7	2000	18,75	18	4,0	0,75	0,59	4,16	87,6
Hardening		1000	3,25	18	4,0	0,5	1,076	3,42	76,1
		600	4,75	18	4,0	0,5	1,034	3,47	77,0

**It all balances out: 90 % less CO<sub>2</sub> emissions.**  
In a size 17 chamber furnace, CO<sub>2</sub> emissions can be reduced by 58 tonnes by using HybridCarb. This is the equivalent of the emissions produced by 42 Volkswagen Golfs each travelling a total of 15,000 km a year.



**HybridCarb vs endogas or nitrogen/methanol.**  
In a direct comparison, there are many reasons for adopting the new technology:

	HybridCarb	Endogas	Nitrogen/ methanol
Process gas savings	+	-	-
Low operating costs	+	-	-
Lower carbon footprint	+	-	-
Space requirement	+	+	-



**HybridCarb – the Recycling Kit.**  
Almost all atmospheric furnaces can be retrofitted with the HybridCarb recycling kit quickly and easily. This is carried out by our service technicians.



**Better safe than sorry.**  
Another advantage of HybridCarb is its high level of safety. This is achieved by eliminating the need to store toxic, highly flammable methanol which is subject to a permit under national legislation. And don't forget that heat treatment using nitrogen/methanol carries the risk of being affected by fluctuating methanol prices. Furthermore, using an endogas generator is no longer required.

# About the company.

**Ipsen – we deliver performance.**

**Ipsen stands for cutting edge heat treatment technology and systems. Few companies in the world have had such a decisive impact on the development of heat treatment.**

For over 60 years Ipsen has been finding new ways of producing steel of ever improving quality using the company's innovative, proprietary technologies, such as the AvaC® process (low-pressure carburising), the SolNit® process (solution nitriding) and the recently developed HybridCarb® process (gas carburising with recycling). Ipsen's offerings combine the highest performance with outstanding reliability, which perhaps explains why our furnaces and heat treatment equipment enjoy an excellent

reputation all over the world. Our customers work in automotive, aviation and aerospace as well as tooling, machining, medical and commercial heat treating.

Despite Ipsen's many important innovations, our focus is not solely on technology: in all we do, we aim to surpass our customers' expectations. We are not only committed to developing great technology, we are also passionate about providing quick, seamless and attentive service.



If you require further information or would like to know more about our company and the products we make, please contact us. We look forward to hearing from you!

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