Kuepper Solutions

Product Information iRecu®

POWER.
INNOVATION.
RESPONSIBILITY.

Accelerating the energy transition with 3D printing and hydrogen:

Furnace refit with the iRecu® – saving money and CO_2!

IN 3 STEPS TO CO_2-NEUTRALITY

Video

iKU
Der Innovationspreis für Klima und Umwelt 2022
Preisträger

01 Increasing efficiency:
Saving more than 10 % fuel gas immediately - guaranteed

02 Hybrid operation:
Alternately with natural gas or H_2 - depending on availability

03 CO_2-neutral:
Switching to 100 % H_2

Kueppers Solutions

THE FUTURE IS NOW: HOW TO BE TRULY H_2-READY

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01 **Increase efficiency immediately:**

The iRecu® achieves up to 50 % fuel gas savings. It can only be manufactured using 3D printing. High complexity, unbeatable efficiency are given.

02 **Immediate investment security:**

Short payback period due to immediate savings in fuel gas. The savings assist in compensating for the future additional cost of hydrogen.

03 **Instant hybrid operation:**

Thanks to our patented Dual-Fuel mixing unit, our iRecu® is able to use both 100 % natural gas and 100 % hydrogen flexibly and efficiently.

04 **Immediately H_2 compatible:**

The iRecu® ensures consistent flame geometry, heat input and heat distribution when switching between natural gas and hydrogen for continuous furnace operation.

05 **Get started immediately:**

3D printing allows the burner to fit plug & play into the existing system. We build the iRecu® "Custom-Made" in series.

06 **Switch immediately:**

Maximum production flexibility - manufacture premium products with hydrogen, seamlessly switch to natural gas for conventional products - without furnace conversion

Invest into the future with the iRecu®: Economical efficiency meets performance.

CASE STUDY Dual-Fuel-iRecu®

3 furnaces converted

42 recuperative burners

Q4 2022 realization period

Mannesmann Precision Tubes installs the world's first Dual-Fuel iRecu® in real operation

—

13,6 % fuel gas savings

CASE STUDY Plug-In-iRecu®

1 furnace converted

42 recuperators

Q4 2022 realization period

thyssenkrupp Rasselstein installs the world's first additively manufactured plug-in iRecu® in real operation

—

12,9 % fuel gas savings

CASE STUDY Hydrogen Annealing

Bell-type annealing furnance

11 Dual-Fuel-Burner

Q2 2023 realization period

BILSTEIN realizes the world's first locally CO2-neutral heat treatment of around 100 t of cold-rolled strip in a batch annealing plant using 100% hydrogen (instead of natural gas).

World's first hydrogen annealing cycle in a batch annealing plant.

PRODUCT RANGE iRecu®

1

iRecu® BG2

nominal power
20 to 120 kW

2

iRecu® BG3

nominal power
60 to 180 kW

3

iRecu® BG4

nominal power
100 to 250 kW

Other capacities on request

iRecu® BG 2

	Dual-Fuel-iRecu®	Plug-In-iRecu®
nominal power	20 kW to 80 kW	40 kW to 120 kW
air pressure	min. 35 mbar	min. 20 mbar
gas pressure	> 35 mbar	-
gas pressure H_2	> 200 mbar	-
relative air preheating	70 – 85 %	65 – 80 %
typical fual gas savings	> 12 %	> 12 %
installation diameter	128 mm – 142 mm	128 mm – 142 mm
supply connections	customized	

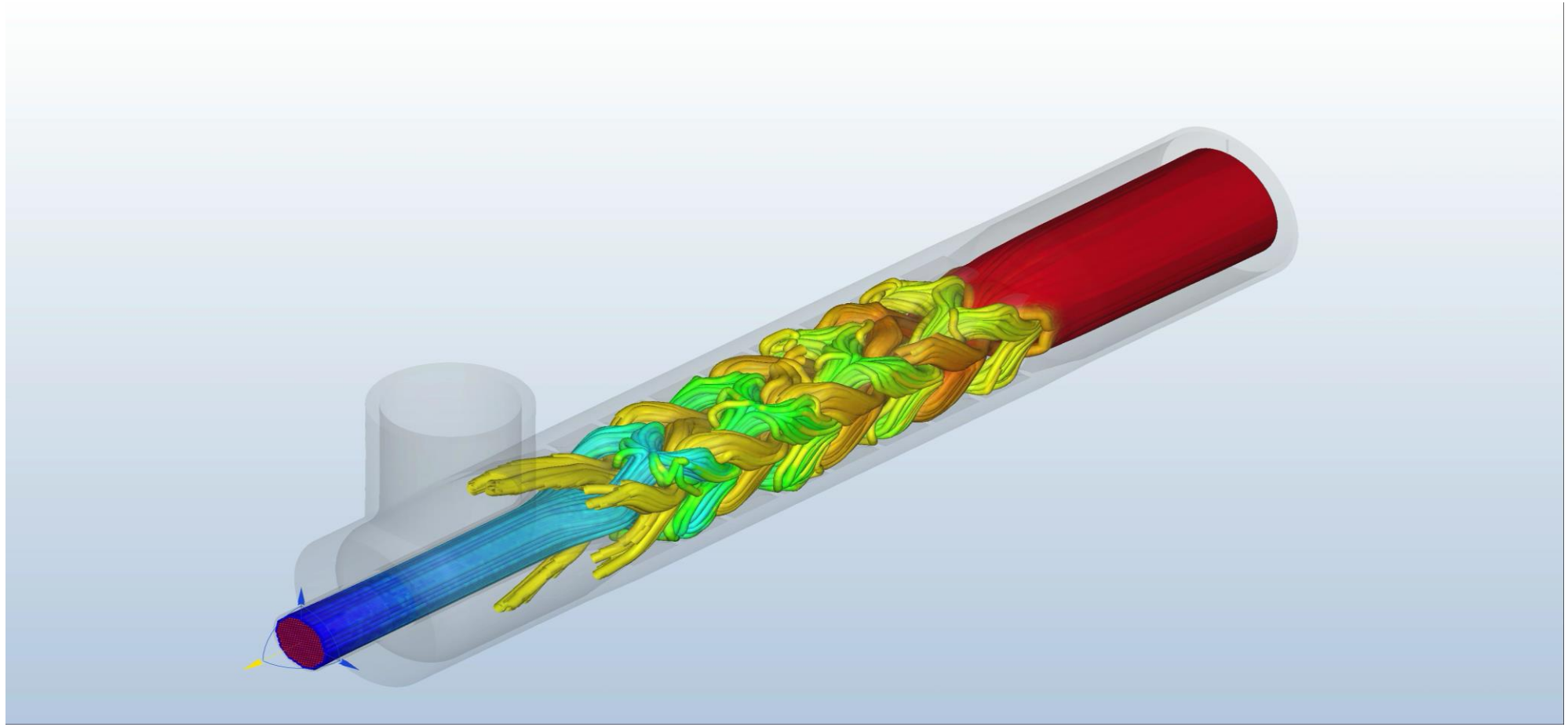
iRecu® BG 3

	Dual-Fuel-iRecu®	Plug-In-iRecu®
nominal power	60 kW to 150 kW	80 kW to 180 kW
air pressure	min. 35 mbar	min. 20 mbar
gas pressure	> 35 mbar	-
gas pressure H_2	> 200 mbar	-
relative air preheating	70 – 85 %	65 – 80 %
typical fual gas savings	> 12 %	> 12 %
installation diameter	172 mm – 185 mm	172 mm – 185 mm
supply connections	customized	

iRecu® BG 4

	Dual-Fuel-iRecu®	Plug-In-iRecu®
nominal power	100 kW to 200 kW	120 kW to 250 kW
air pressure	min. 35 mbar	min. 20 mbar
gas pressure	> 35 mbar	-
gas pressure H_2	> 200 mbar	-
relative air preheating	70 – 85 %	65 – 80 %
typical fual gas savings	> 12 %	> 12 %
installation diameter	240 mm	240 mm
supply connections	customized	

WE DETERMINE YOUR GUARANTEED SAVINGS



WE DETERMINE YOUR GUARANTEED SAVINGS

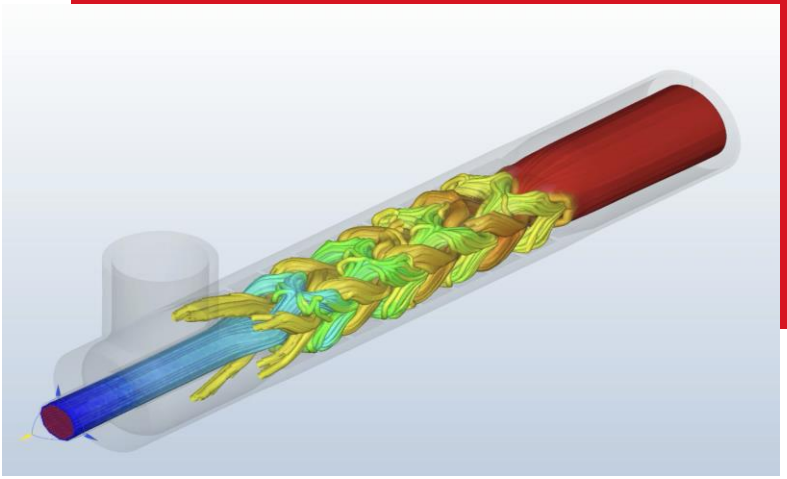
01 Collect the information below

02 Send them to us at **info@kueppers-solutions.de** - with NDA if desired

03 We calculate your savings potential with conversion to the iRecu®

Information about the plant

1	**max. air pressure**	_____mbar
2	**installed burner capacity**	_____kW
3.1	**process temperature**	_____°C
3.2	**exhaust gas outlet temperature**	_____°C
4	**type of process heating**	☐ DIRECT ☐ INDIRECT
5	**contact**	_____
6	**E-Mail**	_____



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Kuepper Solutions

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