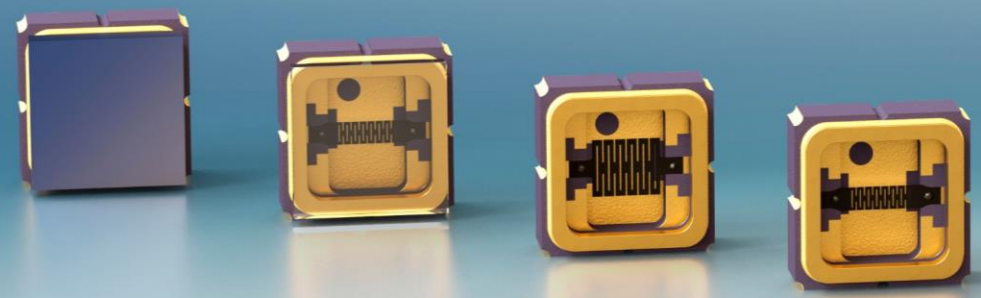
INFRASOLID®

Infrared emitter for next level material analysis

miniaturized · powerful · patented



INFRASOLID AT A GLANCE

- Manufacturer of innovative high-performance infrared light emitters, key components of spectroscopic measurement devices
- Founded in 2017 in Dresden, Germany as spin-off of the Technical University Dresden; currently 13 employees
- Revenue generating company currently counting 81 customers from 17 countries across the world
- Strong and growing projects pipeline with more than 20m € annual revenue potential in evaluation
- Proprietary technology with 14 granted patents in 10 countries
- Inhouse series production facility (> 100m^2) with proprietary equipment and sufficient capacity for scaling output to level required for achieving breakeven
- Positioned to disrupt the existing market due to its potential for new application possibilities and scalability

NEEDS IN EXISTING & NEW APPLICATIONS

INFRASOLID®

	Existing applications	New applications
USE CASE	**Measuring gases** (breathing air, pollutants and exhaust gases) in factories, traffic, cars and cities for **environmental and safety reasons** as well as for process control	**Measuring** liquids, gases and solid substances **with wearables or smartphones** in the full infrared spectrum
MARKET PULL	Stricter government regulations require the nationwide use of powerful, stable and high-quality measurement technology	Ongoing miniaturization and new applications require smaller, stable and foremost affordable device components
CUSTOMER PAIN	⊗ Quality issues ⊗ No adequate long term stability ⊗ Insufficient performance ⊗ Low robustness	⊗ No miniaturization so far ⊗ No economically viable purchase price (automatization in manufacturing needed) ⊗ No broadband emission spectrum with adequate performance ⊗ High energy consumption
CURRENT INFRASOLID CUSTOMERS	Need of high-performance IR emitters for water quality inspection and exhaust gas monitoring to measure lowest pollutants (TVOC analysis)	Needs infrared light emitters for its whole near infrared device roadmap to measure various materials
SOLUTION APPROACH	Improvement of infrared emitter performance in existing applications	Enable new applications and measurements that were not feasible so far

Our award-winning technology offers the most powerful and most efficient infrared emitters manufactured in a highly automated process

Existing applications

IR emitter for improvements of existing applications

- More precise measurements
- Long-term stability
- Power & efficiency

New applications

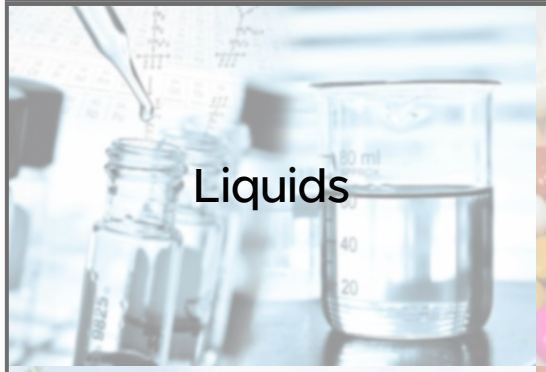
IR emitter for next level material analysis

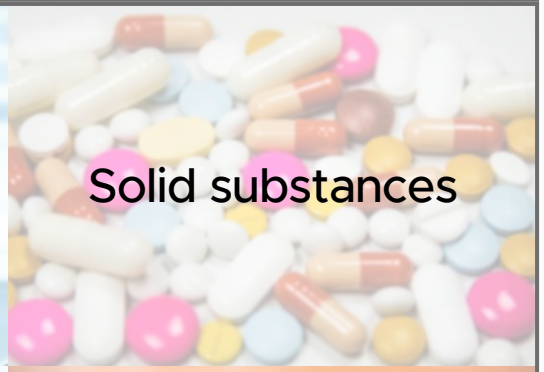
- Automation
- Price
- Miniaturization

APPLICATION POTENTIAL OF IR LIGHT

INFRASOLID®

Existing applications



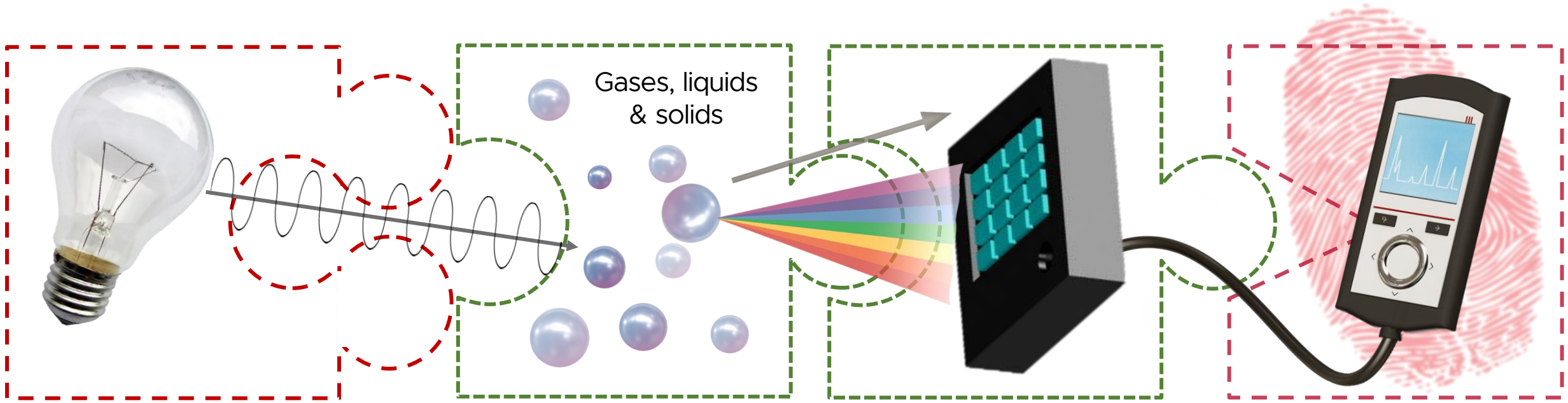


New applications

THE PROBLEM BEHIND

INFRASOLID®

Getting precise detection results mainly depends on the illumination power and quality. Existing illumination products are the limiting factor in all applications.



Insufficient illumination

Transmission, reflection & absorption

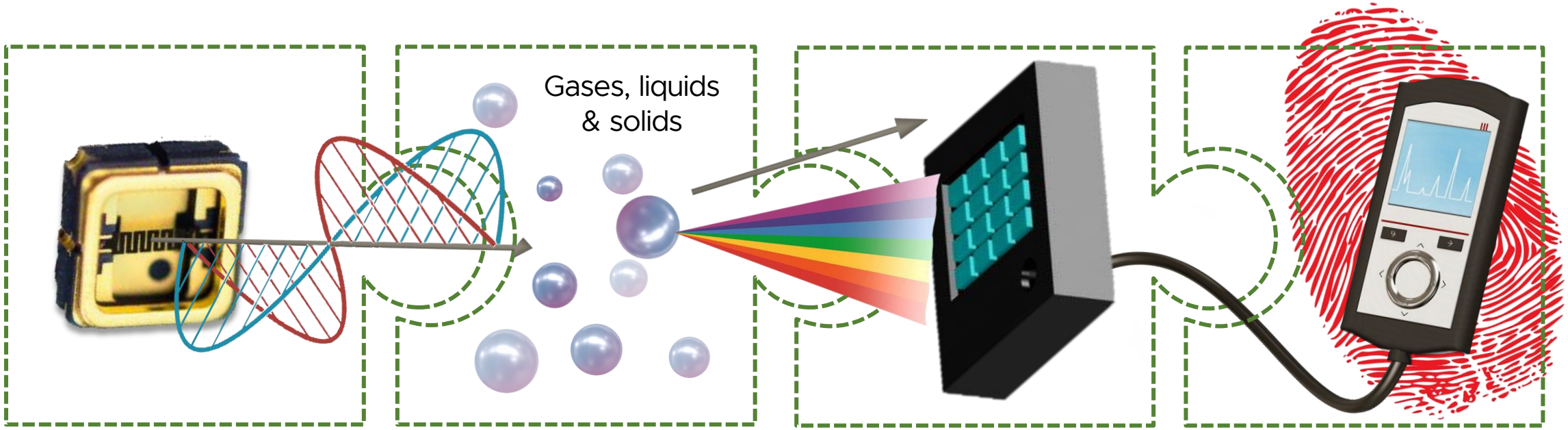
Detection

Limited identification & quantification

CLOSING THE GAP

INFRASOLID®

Infrasolid provides the missing part with its high performance and extremely miniaturizable infrared emitters, enabling faster and more precise measurements.



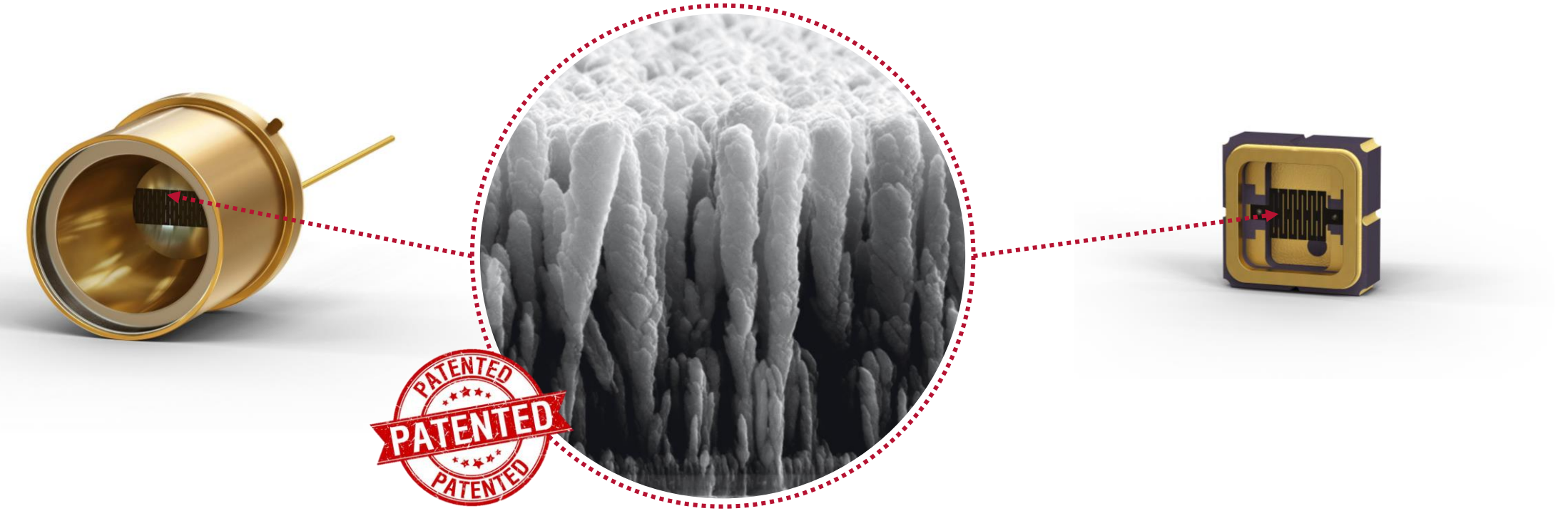
INFRASOLID®
illumination

Transmission,
reflection &
absorption

Detection

Precise
identification &
quantification

TECH & PROCESS



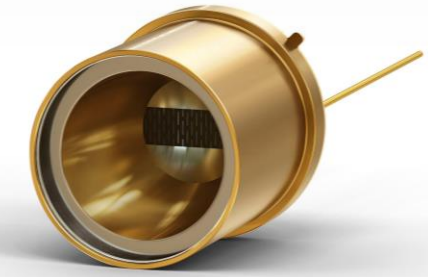
- New and unique infrared emitter technology
- High-melting metal with nanostructured surface
- Free-standing & monolithic emitter structure

- Core know-how: Vacuum deposition process for metals
- Exclusive know how in pre- and post processing of core component
- Customized unique production plant with 12 years of technology experience

UNIQUE SELLING PROPOSITION

INFRASOLID®

Existing Applications

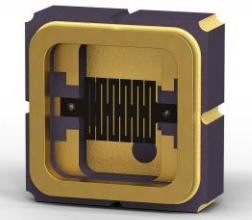


Hermetic housing for harsh environments

Up to 5 x higher radiant power[1]

Up to 10 years lifetime[2]

New Applications



Extreme miniaturization by (3 x 3) mm^2

Low energy consumption < 100 mW[3]

Best price-performance ratio

Scalable automatization

Up to 10 x higher efficiency[4]

Broad band light emitting from 0,8µm to 20µm

Mechanical stability

[1] Compared to state of the art TO8-emitter [2] Market standard are 5 to 10 years [3] Typically > 200 mW for other SMD-emitter [4] Compared to standard Micro-Bulb and MEMS

Infrasolid is able to sell to many niche markets to avoid dependencies of single verticals & industries

	Existing applications[1]	New applications[2]
TOTAL AVAILABLE MARKET IR Spectroscopy	212m EUR, CAGR 5.3%	6.3bn EUR, CAGR 7,5%
SERVICABLE AVAILABLE MARKET (EU, North America, East Asia)	Exisiting applications 70m EUR, CAGR 6%	New applications 750m EUR, CAGR 8%
SERVICABLE OBTAINABLE MARKET	Improvements of existing applications in IR gas analysis = 40m EUR p.a.	New devices to solve future challenges e.g. food scarcity, clean environment, healthier life = 166m EUR p.a.

[1] https://www.mordorintelligence.com/industry-reports/global-gas-analyzer-sensor-and-detector-market
[2] https://www.marketsandmarkets.com/Market-Reports/ir-spectroscopy-market-42486905.html
https://www.persistencemarketresearch.com/market-research/alcohol-breathalyzer-drug-testing-equipment-market.asp

Infrasolid is ready to tackle the scalable mass market with its combination of unique characteristics and the ability for an automated production

✓ Fulfilled
● Sufficient
✗ Not fulfilled

(Emitter-) Technology	Nanostructured metal foil	Laser	LED	Micro-Bulb	MEMS
Company	INFRASOLID®	EDINBURGH INSTRUMENTS	HAMAMATSU	OSHINO	axetris
Energy consumption	✓	✓	●	✗	●
Price	✓	●	✗	✓	●
Small size	✓	✓	●	●	✓
Performance	✓	✗	✗	●	✓
Mechanical stability	✓	✓	✓	✗	●
Automatization capability	✓	✓	●	✓	●
Cross sensitivity (e.g. temperature)	✓	✗	✗	✓	●

BUSINESS MODEL

INFRASOLID®

INFRASOLID® acts as component supplier and sells IR emitters in different packages to

- Direct sales
- Sales partner for USA & Asia

Device manufacturer sells detection devices to their end customers in the following verticals

Existing Applications

Since 2018:
Medicine, ventilation, environmental, oil & gas, groceries, safety

New applications

Start in 2020:
Smart Home, automotive, healthcare, Smartphone, IoT

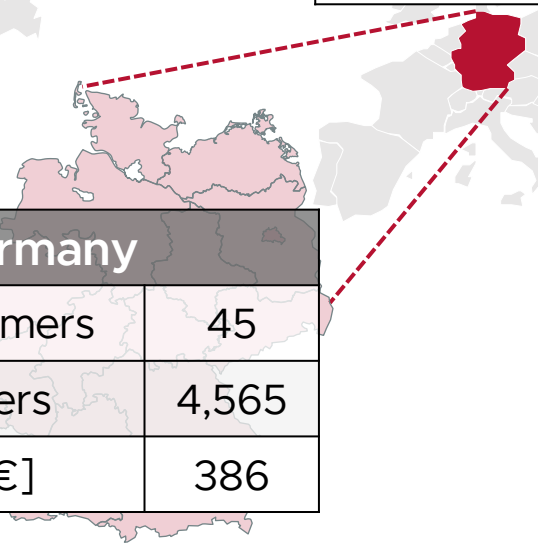
55 **Number of customers** **26**

GLOBAL TRACTION

All emitters sold since foundation are still running and all customers continue to work with us

North America	
No. of customers	12
No. of emitters	107
Revenue [k€]	6

Europe (excl. Germany)	
No. of customers	16
No. of emitters	1,242
Revenue [k€]	50

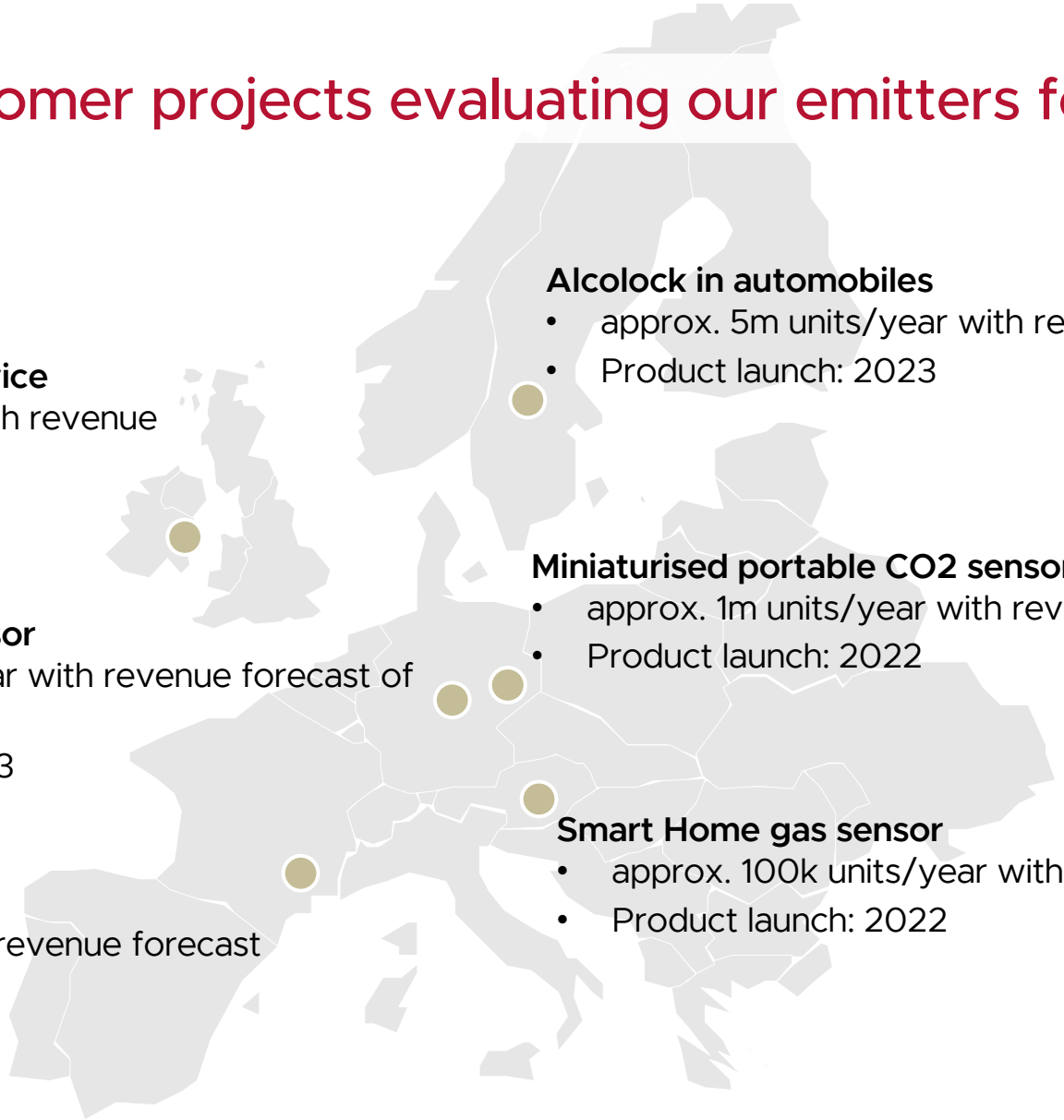


Germany	
No. of customers	45
No. of emitters	4,565
Revenue [k€]	386

Asia	
No. of customers	8
No. of emitters	14,687
Revenue [k€]	249

Cumulated revenue and committed orders from 2017 to 2021

Ongoing large customer projects evaluating our emitters for new applications



Capnography in wearable device
- approx. 100k units/year with revenue forecast of 1m €/year
- Product launch: 2022

Handheld material sensor
- approx. 1m units/year with revenue forecast of 5m €/year
- Product launch: 2023

Handheld alcohol sensor
- approx. 100k units/year with revenue forecast of 1m €/year
- Product launch: 2022

Alcolock in automobiles
- approx. 5m units/year with revenue forecast of 15m €/year
- Product launch: 2023

Miniaturised portable CO2 sensor
- approx. 1m units/year with revenue forecast of 1m €/year
- Product launch: 2022

Smart Home gas sensor
- approx. 100k units/year with revenue forecast of 500k €/year
- Product launch: 2022

TEAM

INFRASOLID®

Dr. Marco Schossig
15 years of research
Worldwide known expert

Dr. Tobias Ott
8 years of research
Expert for nanostructures

Benjamin Buchbach
8 years start-up experience
Former high-tech start-up consultant

Seasoned team with international track record

60+ years international sales experience
Deep knowledge in production setup & company building

Metrics & Targets	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E
Revenue [k€]	48	131	517*	2,008	6,301	11,799	20,708	28,226
Gross profit [k€]	22	83	265	1,541	5,015	10,200	18,135	24,582
Gross margin	45%	64%	51%	77%	80%	86%	88%	87%
EBITDA [k€]	- 588	- 821	- 1,483	- 893	1,452	5,081	10,776	14,969
EBITDA margin	- 1,209%	- 628%	- 287%	- 45%	23%	43%	52%	53%
Profit after tax [k€]	- 456	- 654	- 1,411	- 1,130	1,167	4,053	7,025	9,829
Sold pieces [k]	**0.4**	**1.8**	**21**	**205**	**1,155**	**3,835**	**8,555**	**17,340**
Team growth	8	10	20	22	27	28	39	50
No. of product series	2	4	6	7	7	7	7	7
Yield of production	60%	75%	85%	95%	96%	97%	98%	99%
No. of patent families	5	6	7	8	9	10	11	12

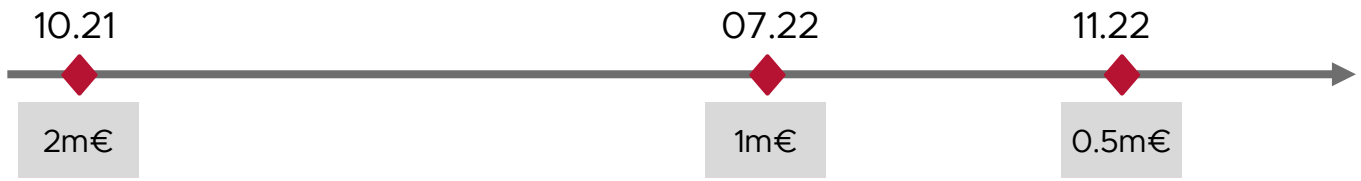
* 80 % revenues + committed orders

INVESTMENT OPPORTUNITY

INFRASOLID®

3.5m € for the next 24 months to scale

2m € have been committed by existing investors and other sources



Use of funds

- **0.75m €** for team scaleup in Sales, BIZ DEV & for marketing
- **0.5m €** for team scaleup in R&D, production and Quality
- **0.75m €** CAPEX for finalizing internal production
- **0.5m€** for scaling production capacity through automatization
- **0.25m €** for development of next product generation for NIR-measurement
- **0.25m €** for Quality & metrology
- **0.5m €** working capital

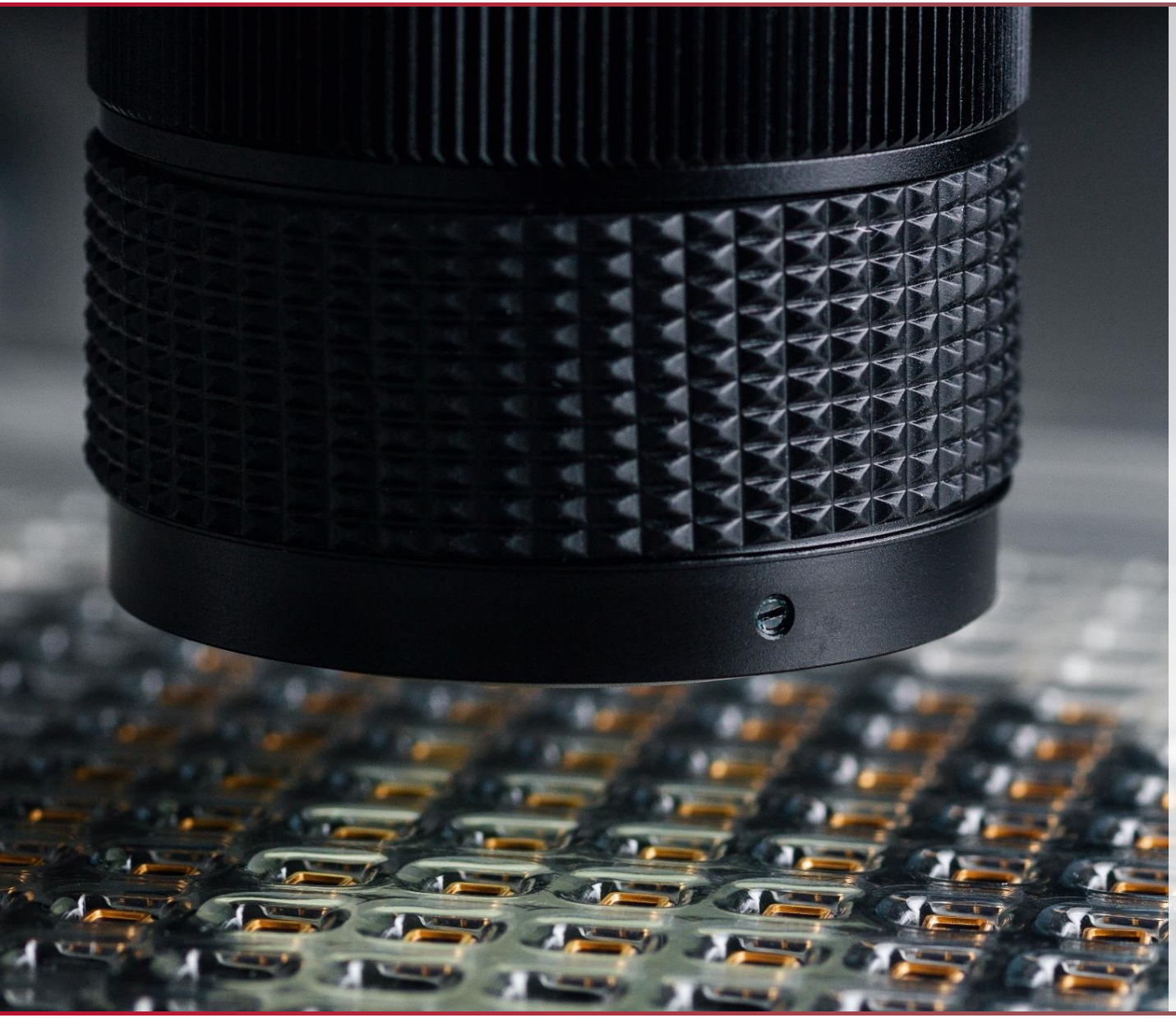
Investment for acquiring and supporting more pipeline projects

Product market fit shown in existing industry markets

Spin-off of the Technical University Dresden, all patents incorporated in Infrasolid

Mature tech (TRL9) ready to be rolled out internationally

WHY NOW?



- 80% of the planned revenue for 2021 already secured
- First scalable emitter technology (TRL 9) ready for automatization
- First provider of illumination component for next level mobile material analysis
- Federal regulations will push new industry standards in environmental and safety measurements
- Broad application fields in automotive, healthcare, smart home and consumer electronics
- Worldwide IP protection

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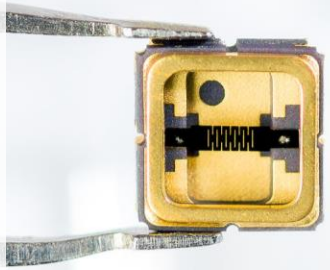

Europäische Union
Europa fördert Sachsen.
EFRE
Europäischer Fonds für regionale Entwicklung

Europäische Union
Europa fördert Sachsen.
ESF
Europäischer Sozialfonds

Freistaat Sachsen
Diese Maßnahme wird mitfinanziert durch Steuermittel auf der Grundlage des vom Sächsischen Landtag beschlossenen Haushaltes.

gefördert durch das Amt für Wirtschaftsförderung
Dresden.