Smart heating, ventilation and air conditioning (HVAC) seeks to reduce air extraction and limit energy consumption. But good extraction is important to limit humidity and CO2 concentration and ensure well-being. With a CO2 gas, humidity and temperature sensor, the SCD30 module gives all the environmental data for HVAC, making it smarter.

Today only a few companies share this market. Sensirion, a leading manufacturer of digital microsensors and systems, recently released a CO2 gas sensor designed for HVAC applications, the SCD30, a Non-Diffractive Infra-Red (NDIR) sensor. With a small package volume under 5.6cm³, this CO2 gas sensor can be integrated into HVAC installations.

Sensirion has developed a thermopile die based on its air flow sensor technology called CMOSens. This technology allows integration of CMOS digital and analog functions with a very thin membrane manufactured in the metal layer. The technology of the CO2 gas sensor is not only in the silicon. The package and the IR filters are very important for the accuracy of the measurement.

The module embedded the SHT31 humidity sensor of Sensirion and an ultra-low power microcontroller from STMicroelectronics control the module and communications.

This report includes a technology and cost analysis of the SCD30 combo. All the main parts of the sensor are studied, including the humidity sensor, the other module parts and the assembly. Pictures and cross-sections for the electronic components and for the module are shown. These analyses provide the technical intelligence necessary to understand this technology.

COMPLETE TEARDOWN WITH

• Detailed photos
• Precise measurements
• Sensor cross-sections
• Materials analysis
• Manufacturing process flow
• Supply chain evaluation
• Manufacturing cost analysis
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AUTHORS

Sylvain Hallereau is in charge of costing analyses for IC, power and MEMS. He has more than 10 years of experience in power device manufacturing cost analysis and has studied a wide range of technologies.

Dr. Youssef El Gmili has joined System Plus Consulting’s team in 2019 after ten years passed on high level research and development on microelectronics. He has a deep knowledge in the study and analysis of semiconductors Materials. He holds a Master Degree in Microelectronics, and a PhD in Physics/Materials Science.

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Contact:

Headquarters
22, bd Benoni Goullin
Nantes Biotech
44200 Nantes
France
+33 2 40 18 09 16
sales@systemplus.fr

Europe Sales Office
Lizzie LEVENEZ
Frankfurt am Main
Germany
+49 151 23 54 41 82
llevenez@systemplus.fr

America Sales Office
Steven LAFERRIERE
Western USA & Canada
+1 310-600-8267
laferriere@yole.fr

Chris YOUMAN
Eastern USA & Canada
+1 919-607-9839
chris.youman@yole.fr

Asia Sales Office
Takashi ONOZAWA
Japan & Rest of Asia
+81 80 4371 4887
onozawa@yole.fr

Mavis WANG
Greater China
TW +886 979 336 809
CN +8613661566824
wang@yole.fr

Peter OK
Korea
+82 10 4089 0233
peter.ok@yole.fr

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