

SENIS

# Customer Success Story

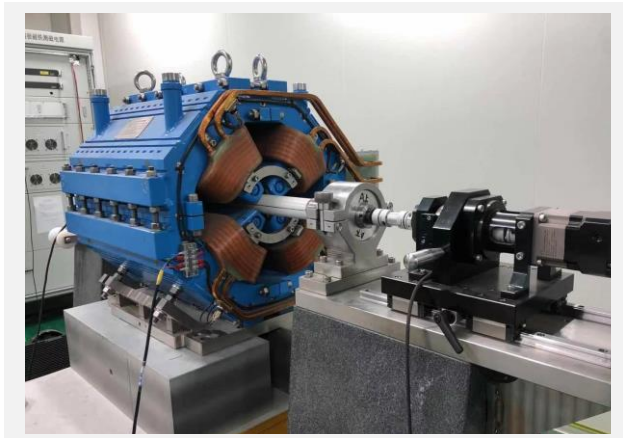
## “Supporting technology and industrial breakthrough in China” with SENIS magnetometer

SENIS® Magnetometer 3MH6 is applied at Beijing High Energy Photon Source HEPS in China to precisely measure magnetic fields of undulators and beamlines of light sources.

### Objective:

### To be the first high-energy synchrotron radiation light source in China!

HEPS is the 4th generation synchrotron radiation light source facility, as a national strategic project in fundamental physics research area. It's the most advantage facility in the world, providing high energy X-ray for material research. According to the design, the X-ray generated in HEPS will be 70 times “brighter” than for instance, the existing NSLS-II in the US. Project was kicked off in 2019, and it is currently being built in Huairou-Beijing. The scheduled completion is in 2025, while the total planned budget is ~\$700Milion. SENIS shall support this objective with the world's most precise 3-axis magnetic field teslameter 3MH6.



“I have used Hall probes of SENIS' worldwide competitors and compared them to the SENIS probe. I sincerely think that SENIS 3MH6 is a very good product!”  
- HEPS' lead engineer Mr. Zhou, Institute of High Energy Physics, China

### Challenge:

### Controlling the electron movement with high precision

To control the electron movement in horizontal (X) and vertical (Y) directions, two types of magnets need to be measured very precisely. The X-direction magnet measurement needs the high accuracy field strength at low frequency – for this application HEPS needs to precisely measure magnetic fields with very high repeatability and stability. The Y-direction of the N-S magnetic field measurement focuses on the integral along the X-direction of the magnetic field By and requires high-resolution magnetic field measurement.



Institute of High Energy Physics  
Chinese Academy of Sciences



HEPS | HIGH ENERGY  
PHOTON SOURCE

### ABOUT THE CUSTOMER

**Institute of High Energy Physics (IHEP)**, a Chinese Academy of Sciences research institute, is China's biggest laboratory for the study of particle physics. They are in charge of the internationally advanced project **High Energy Photon Source (HEPS)**, a high-energy synchrotron radiation light source mainly composed of accelerator, beamlines and end-stations. HEPS is one of the key projects listed in the “13th Five-year Plan for national major scientific and technological infrastructure” and thus it is an important platform for supporting the original and innovative research in the fields of basic science and engineering science. **HEPS' mission is to be the first high-energy synchrotron radiation light source in China.** It will make many contributions to the development of science and technology in China. This light source can provide essential support for the breakthroughs in technological and industrial innovation.

More information  
about HEPS  
can be found on:

<http://english.ihep.cas.cn/heps/index.html>

## Solution:

### SENIS® 3MH6 high-precision, low-noise Teslameter

Low-noise Teslameter with an integrated 3-axis Hall probe incorporates a high accuracy magnetic field-to-analog-voltage transducer with a high-level, temperature compensated output signal for each of the three components of the measured magnetic flux density, Bx, By and Bz. A digital module is additionally applied to the analog transducer to form the digital Teslameter. The Hall probe of type Chas the dimensions of 8.0x4.0x0.9mm<sup>3</sup> and a 3D field sensitive volume (Bx, By, Bz) of 0.10x0.01x0.10mm<sup>3</sup>. The sensor integrates both horizontal and vertical Hall sensors as well as an temperature sensor.

<https://www.senis.swiss/magnetometer/digital-teslameters-gaussmeters>



UNIQUE VALUES

- High accuracy: better than 100ppm
- 3-Axis Hall probes: 8.0x4.0x0.9mm
- Field sensitive spot: 100x100x10µm
- Highest magnetic resolution: 1µT
- High measurement range: 100mT - 20T

## Result:

### Precise measurements boost confidence

HEPS measures precisely magnetic fields with SENIS magnetometers in order to control the electron movement in both horizontal and vertical directions. HEPS, associated to the Institute of High Energy Physics, China, will continue applying SENS magnetometers in their future projects with the objective of being the first high-energy synchrotron radiation light source in China.



“We believe that in our future projects we will apply the SENIS magnetometers as the first choice.”

- HEPS' lead engineer Mr. Zhou,  
Institute of High Energy Physics, China



## About SENIS

SENIS AG, Switzerland, develops, manufactures and supplies advanced sensors and instruments for magnetic field and electric current measurements.

We provide innovative but simple solutions to satisfy customer needs for precision, reliability and safety in robotics, consumer electronics, automotive and T&M industries.



ACCURATE



INVENTIVE



CUSTOMIZED