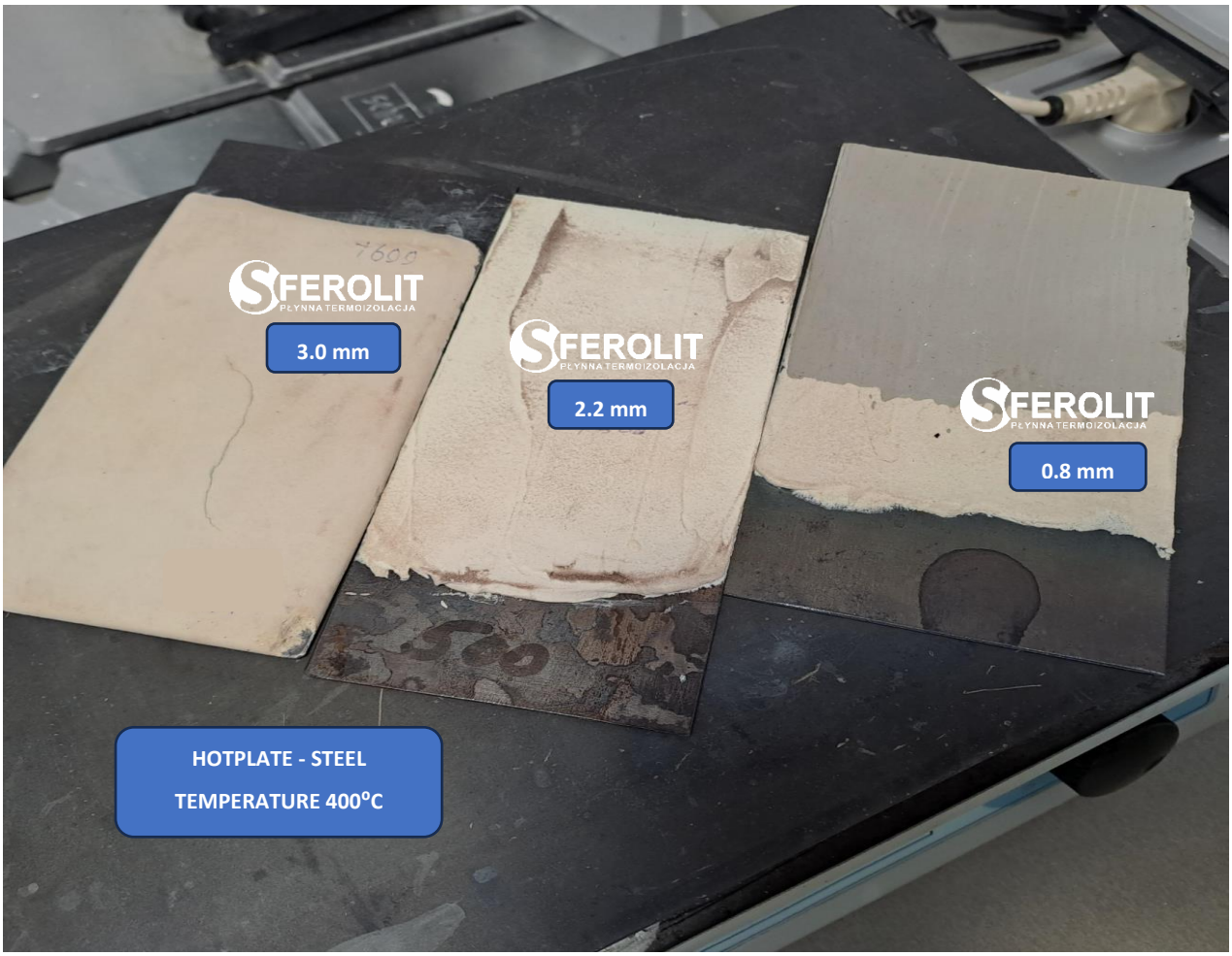
TEMPERATURE MEASUREMENTS OF THE THERMAL INSULATION COATING

SFEROLIT® APM600

Laboratory tests were carried out by taking temperature measurements at different SFEROLIT® coating thicknesses. A constant surface temperature of 400°C was set on a steel hotplate. Three steel plates with different SFEROLIT® coating thicknesses were placed on the plate. The test was carried out using an Elcometer 319 certified climatic conditions meter. SFEROLIT® APM600 insulates at operating temperatures of -40°C to +600°C. Results below.

The survey was conducted in Łódź, Poland on 10 January 2024.

Figure 1



First measurement:

hotplate: 400°C

ambient temperature: 20°C

Coating thickness: 0.8 mm

Surface temperature on SFEROLIT® coating: 86,50°C

Temperature reduction of 78.38%

Figure 2

Second measurement:

hotplate: 400°C

ambient temperature: 20°C

Coating thickness: 2.2 mm

Surface temperature on SFEROLIT® coating: 72,90°C

Temperature reduction of 81.78%

Figure 3

Third measurement:

hotplate: 400°C

ambient temperature: 20,10°C

Coating thickness: 3.0 mm

Surface temperature on SFEROLIT® coating: 67,30°C

Temperature reduction of 83.18%

Figure 4

SUMMARY

After testing in the laboratory, a maximum temperature reduction of 83.18% was achieved with a 3 mm thick thermal insulation coating. The test was carried out several times at different intervals. The results are tabulated below.

Coating thickness	**0.8 mm**	**2.2 mm**	**3.0 mm**
Coating surface temperature	86,50°C	72,90°C	67,30°C
Temperature reduction	**78,38%**	**81,78%**	**83,18%**
Steel temperature	400°C	400°C	400°C
Ambient temperature	20,00°C	20,00°C	20,10°C

HOW NOT TO TAKE MEASUREMENTS !!!

SFEROLIT® thermoisoal coating is a different technology from traditional thermosilting such as foam, mineral wool or polystyrene. SFEROLIT® coating should only be measured with tactile thermocouple sensors because SFEROLIT® coating has a high reflectivity of up to 100% and curves the infrared image, making it impossible to measure correctly and reliably with laser pyrometers or infrared cameras. An unsuitable measuring device can show errors of 50-70% or even more, so it is important to select a measuring device that is compatible with SFEROLIT® technology. Here are the differences in measurements between the Elcometer 319 touch thermometer and the laser pyrometer.

Coating thickness	**0.8 mm**	**2.2 mm**	**3.0 mm**
Steel temperature	400°C	400°C	400°C
Ambient temperature	20,00°C	20,00°C	20,10°C
Elcometer 319 - correct measurement	86,50°C	72,90°C	67,30°C
Temperature reduction - correct measurement	78,38%	81,78%	83,18%
Laser pyrometer - measurement error !!!	293,80°C	265,70°C	235,50°C
Temperature reduction - measurement error !!!	26,56%	33,58%	41,13%

Figure 5

Figure 6

Figure 7