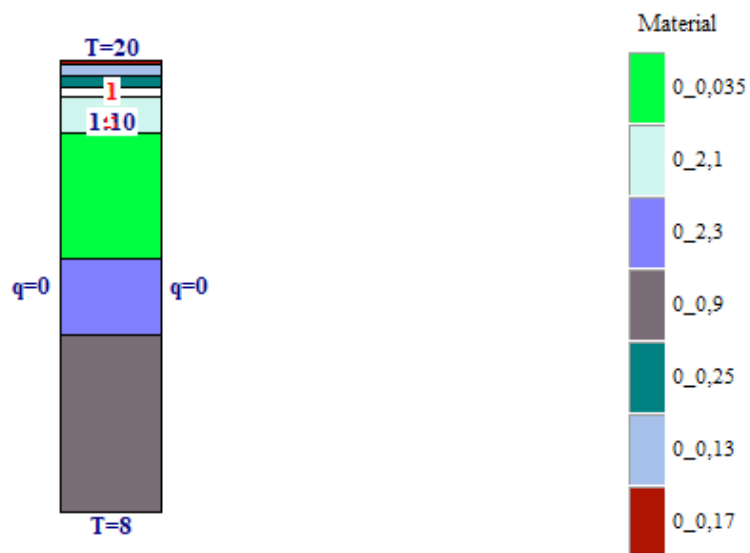


## Steady-state capacity simulation

Project	Łapanów_HALA_WIATA	Pipe	PEX-a
Date	21.08.2023	d [mm]	20
System	UPONOR Sport hall	s [mm]	2,0

**Figure 1** cross section floor pex-a 20x2,0

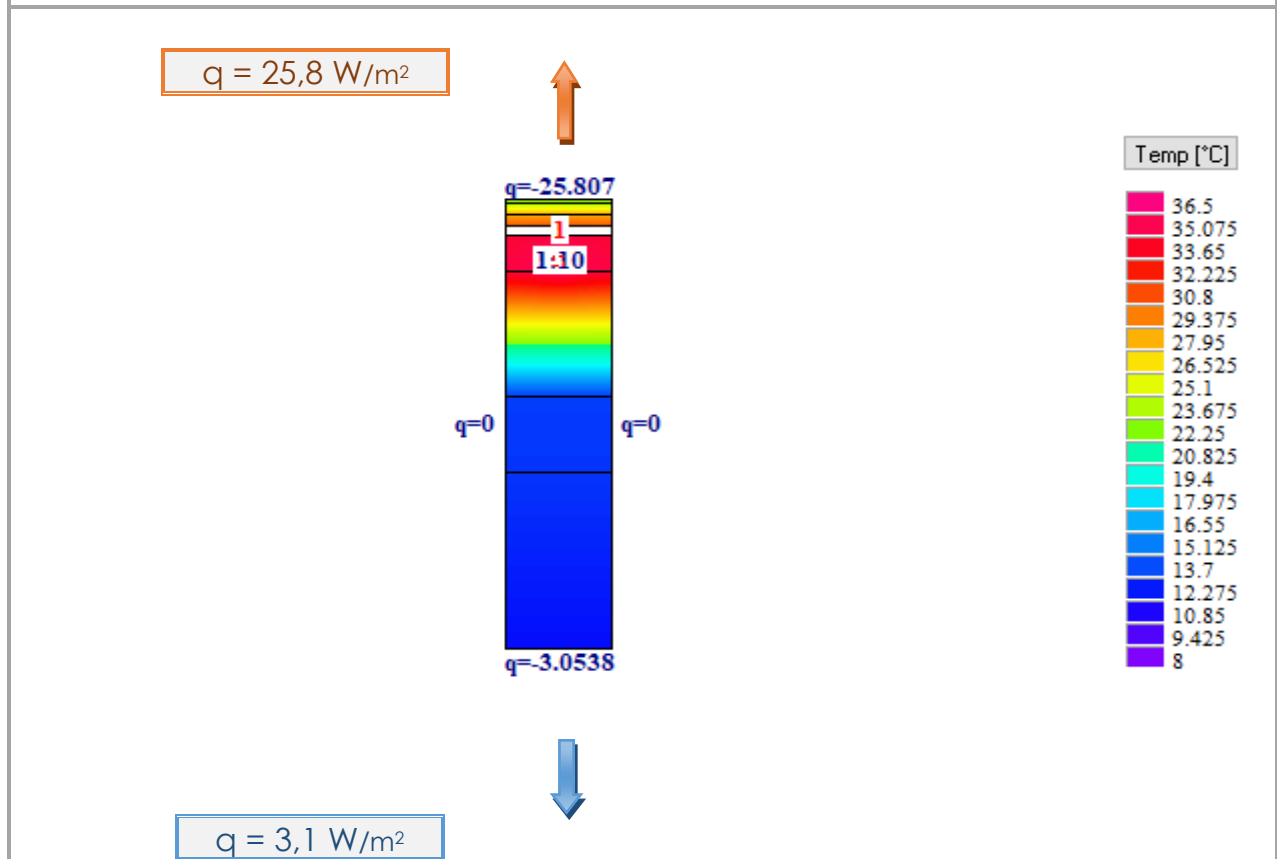


Nr.	Layer	Thickness [mm]	Thermal conductivity [W/mK]
1.	Wykładzina sportowa PVC	7,5	0,17
2.	Płyta wilgocioodporna typu P5	24	0,13
3.	Legar górny 20x90mm	20	0,25
4.	Legar dolny 20x90mm	20	0,25
5.	Wylewka cementowa zbrojona	70	2,1
6.	Styropian	250	0,035
7.	Płyta żelbetowa B-15	150	2,3
8.	Żwir zagęszczony	350	0,9

## Steady-state capacity simulation

**Figure 2** Heating efficiency

pipe spacing 200 mm



	heating
temperature above	20 °C
temperature below	8°C
supply / return temperature $\theta_V / \theta_R$	40°C / 33 °C
temperature difference $\sigma (\theta_V - \theta_R)$	7 K

### RESULTS

Capacity above	25,8 W/m <sup>2</sup>
Capacity below	3,1 W/m <sup>2</sup>
SUM	28,9 W/m <sup>2</sup>

## Steady-state capacity simulation

