Estimation ot the size of the 20 kW HEG tube (HEG = Hydraulic Energy Generator)

General considerations

The dimensions of a HEG tube with an output of 20 kW are sometimes compared to a Coca-Cola can. But such cans have a size of 58 mm *146 mm and a volume of 0.33 litres. They are less high than the HEG tube and have a larger diameter, see:
https://de.wikipedia.org/wiki/Getr%C3%A4nkedose

Estimates of the HEG dimensions based on the slides in Adolf Schneider's lecture
www.borderlands.de/Links/Cola-Device.pdf

Determination of the diameter of the tube

Slide 5

On the left you can see the measuring instrument UNIT-T M830 B. The dimension are according to the produce webpage https://cxem.net/izmer/izmer66.php

Length 125 mm, Width 65 mm, Depth 28 mm

If you compare the diameter of the tube with the the width of the instrument on the photo you get a ration of 23/46 = 0.50. That means that the diameter of the tube is 0.5 * 65 mm = 3.25 mm

This is not correct because the tube is a little further back and therefore appears narrower in perspective on the photo.

Slide 8

Here you can see a normal Schuko plug, whose diameter is known to be 36 mm. In comparison, the diameter of the tube is 36 mm*20/21 = 38 mm. However, the tube is a little further back, perhaps by 5%. Thus, the **true diameter** of the tube is 1.05*38 mm = **40 mm**. This is consistent with the information on slide 3 which is a video clip taken from video: https://disk.yandex.ru/d/9CN509gHhoWgq section 52:50 ff.

Determination of the heigth of the tube

Slide 3

According to the text you can read a height of 200 mm. But this is the total height including the small top. The tube alone has a height of 200 mm * 111/120 = 185 mm. This would imply that the height is 4.63 times the diameter.

From the photo on the left with the tube in the hand, one can take a ratio of 127/29= 4.4 or a height, relative to 40 mm diameter, of 176 mm.

If we choose **a nominal heigt of 180 mm** we can calculate an outer volume of 0.18*0.02*0.02*3.14 m^3 = 0.22 liter. This is 0.7 times the volume of a coca cola can.

But to determine the inner volume, we assume a wall thickness of 5 mm. Then the **inner volume** is calculated as 0.18*0.015*0.015*3.14 = **0.127 liter.**