



طاقة الشمال

North Lebanon Alternative Power
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AECENAR

Association for Economical and Technological Cooperation
in the Euro-Asian and North-African Region

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The Fuel Burner:

I. Introduction:

A burner is the mechanical element that ensures the production of heat by mixing a fuel (gaseous, liquid or solid) with an oxidant (usually air, naturally containing oxygen), thus producing a combustion. The mixture requires the best adjustment so that the combustion efficiency is maximum and the combustion is the best possible, that is to say, generating the least possible unburnts and pollutants.

The fuel supplying a burner may be gaseous, liquid or solid, alone or as a mixture, for example:
hydrogen
methane (natural gas);
butane;
propane ;
oil;
oil (fossil, plant, animal);
pulverized coal;
wood pellets and crushed biomass waste;
waste (in cement burners for example).



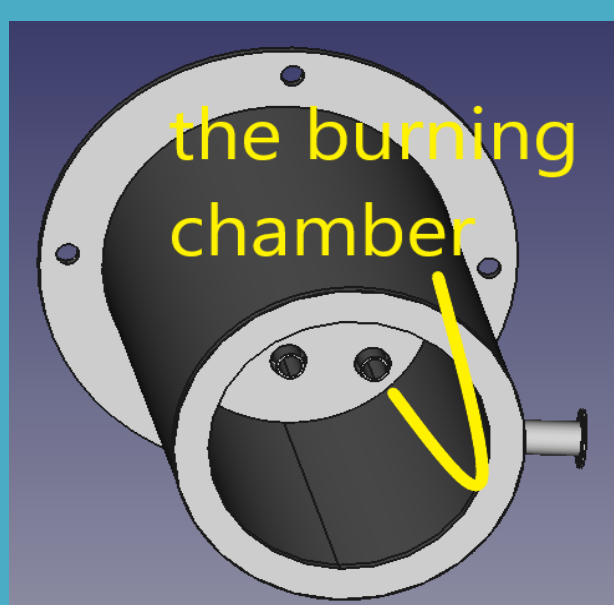
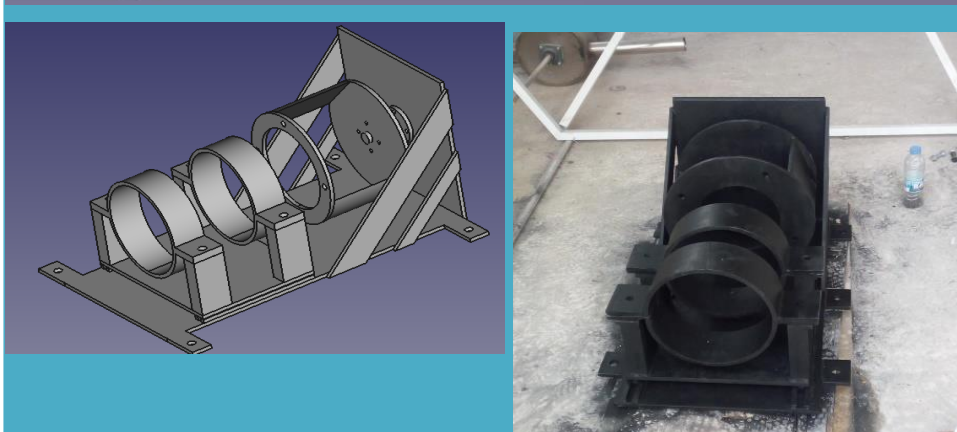
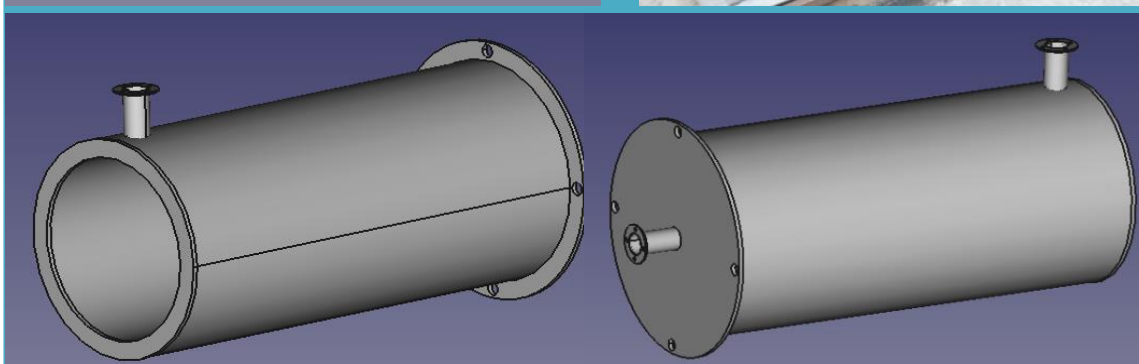
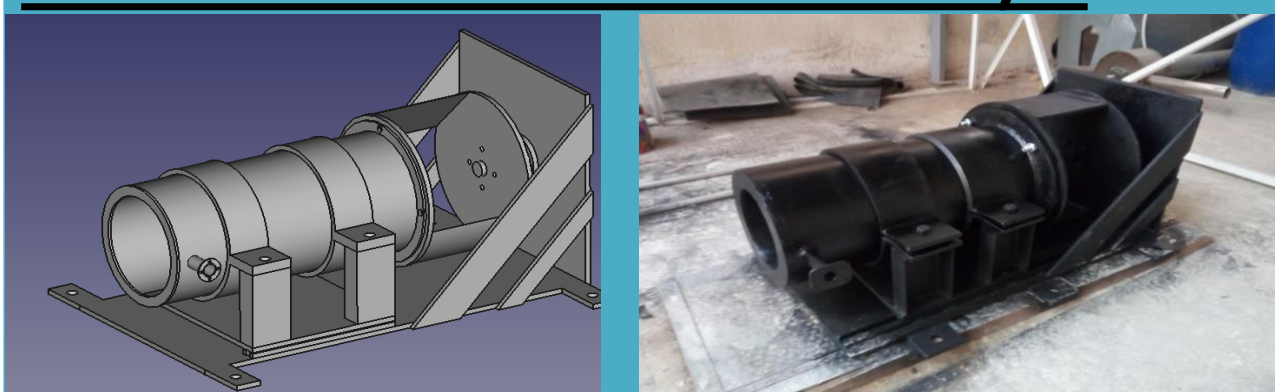
Natural gas burner equipping an industrial cooking oven



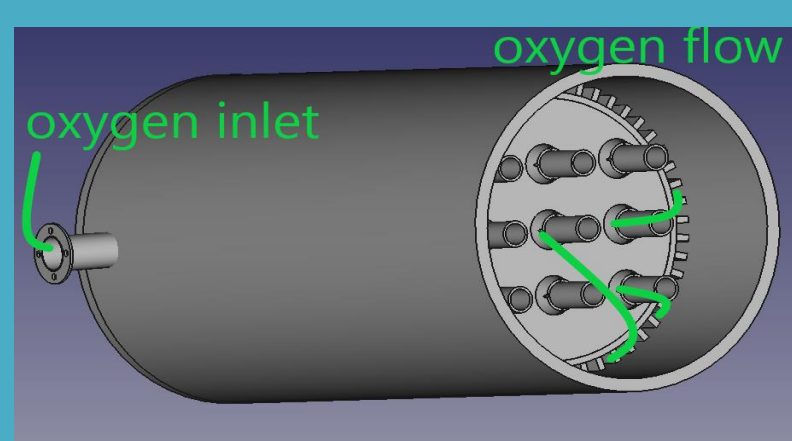
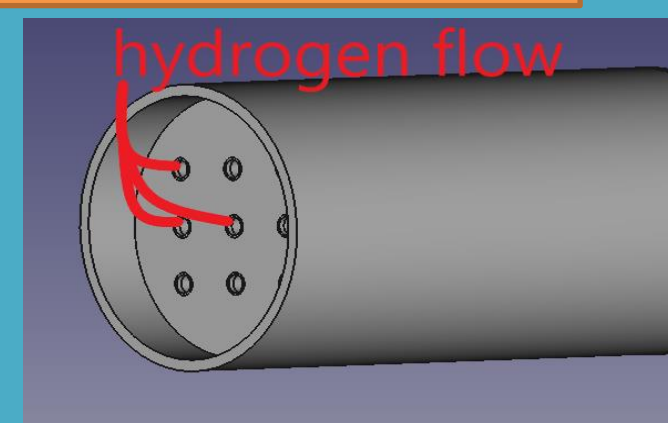
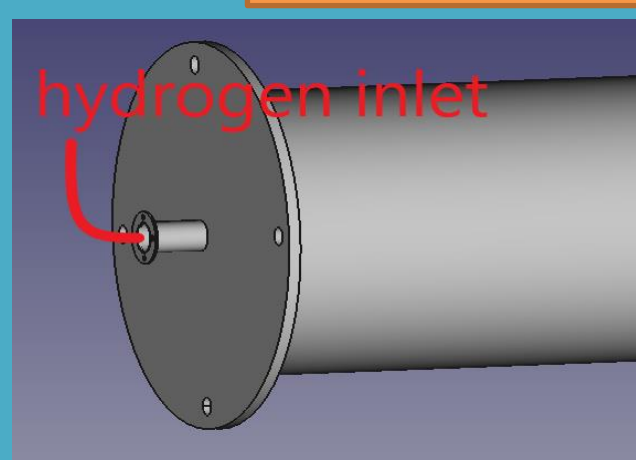
Combustion fan with frequency variator for gas / oil burners

Properties of the inlet of fuel	
number	9
diameter(cm)	1
length (cm)	7
volume of 1 tube (cm ²)	5.495
volume of 9 tubes	49.455
Properties of the inlet of air	
diameter of pores(cm)	0.2
number of pores around each tube	6
total number	54
surface of pore	0.0314
total volume	1.6956
chamber of air	
length (cm)	5
diameter (cm)	23
volume (cm ²)	2076.325
chamber of fuel	
length (cm)	5
diameter	23
volume	2076.325
dimension of the tube related flask to burner	
diameter(cm)	1
surface of section	0.785
length (cm)	400
combustion value of butane (MJ/m ³)	120
flow rate of fuel (g/s)	556
flow rate of oxygen (g/s)	30442
velocity of fuel (m/s)	0.948
velocity of oxygen(m/s)	17.12

II. burner functionality :



This burner is powered by oxygen and hydrogen



the flow of oxygen on the wall leads to its cooling

