Abbau Glucose

Prof. Dr. Werner Bidlingmaier & Dr.-Ing. Christian Springer

Projekt Orbit | Dr. W. Bidlingmaier | Bauhaus Universität Weimar | www.orbit-online.net

Microbiological Degradation; example: Glucose $C_6 H_{12} O_6$ (180 g/mol)

	aerobic	**anaerobic**
Reaction	$C_6 H_{12} O_6 + 6 O_2 \rightarrow 6 CO_2 + H_2O + 2700$ kJ	$C_6 H_{12} O_6 \rightarrow 3 CO_2 + 3 CH_4 + 140$ kJ
Spez. energy	2700 kJ * mol * 180 g / mol = 15 kJ/g	140 kJ * mol * 180 g / mol = 0,8 kJ/g
Biomass production acceptance upon: 50 % energy are used for the build up of biomass; this are 20 kJ/g Biomass	0,5 * 15 kJ/g Glucose / 20 kJ/g Biomass = 0,38 g Biomass / g Glucose	0,5 * 0,8 kJ/g Glukose / 20 kJ/g Biomass = 0,02 g Biomass / g Glucose

The aerobic degradation produces ca. 20 times more biomass as the anaerobic degradation.