

## ***naturemade***

A quality label for energy sets new standards

# Association for Environmentally Sound Energy (VUE)

- VUE is the creator and owner of the quality label *naturemade basic / star*
- Legal entities, corporate bodies of public law and natural persons may become members of VUE
- Board:
  - Environmental and consumer organizations,
  - Renewable energy associations,
  - Major energy consumers and
  - Large, medium and small energy producers and suppliers

# VUE Goals

- Promotion of **new renewable energies** and **ecological energy products**
- Development and application of **certification procedures** and **quality labels** for ecological and renewable energy products
- Development of **scientific criteria** to evaluate energy products
- **Collaboration** with other organizations in Switzerland and abroad which aim for similar goals
- Also: PR to influence **Swiss energy policy**

# One Label – Two Qualities

naturemade

*basic*



*naturemade basic*

=

protecting the climate

naturemade

*star*



*naturemade star*

=

protecting the climate  
+  
sustainable on  
global / regional / local levels

# What the Consumer Wants

- A standard product
- A simple product
- A trustworthy product
- Transparency
- Reliability in terms of ecological quality



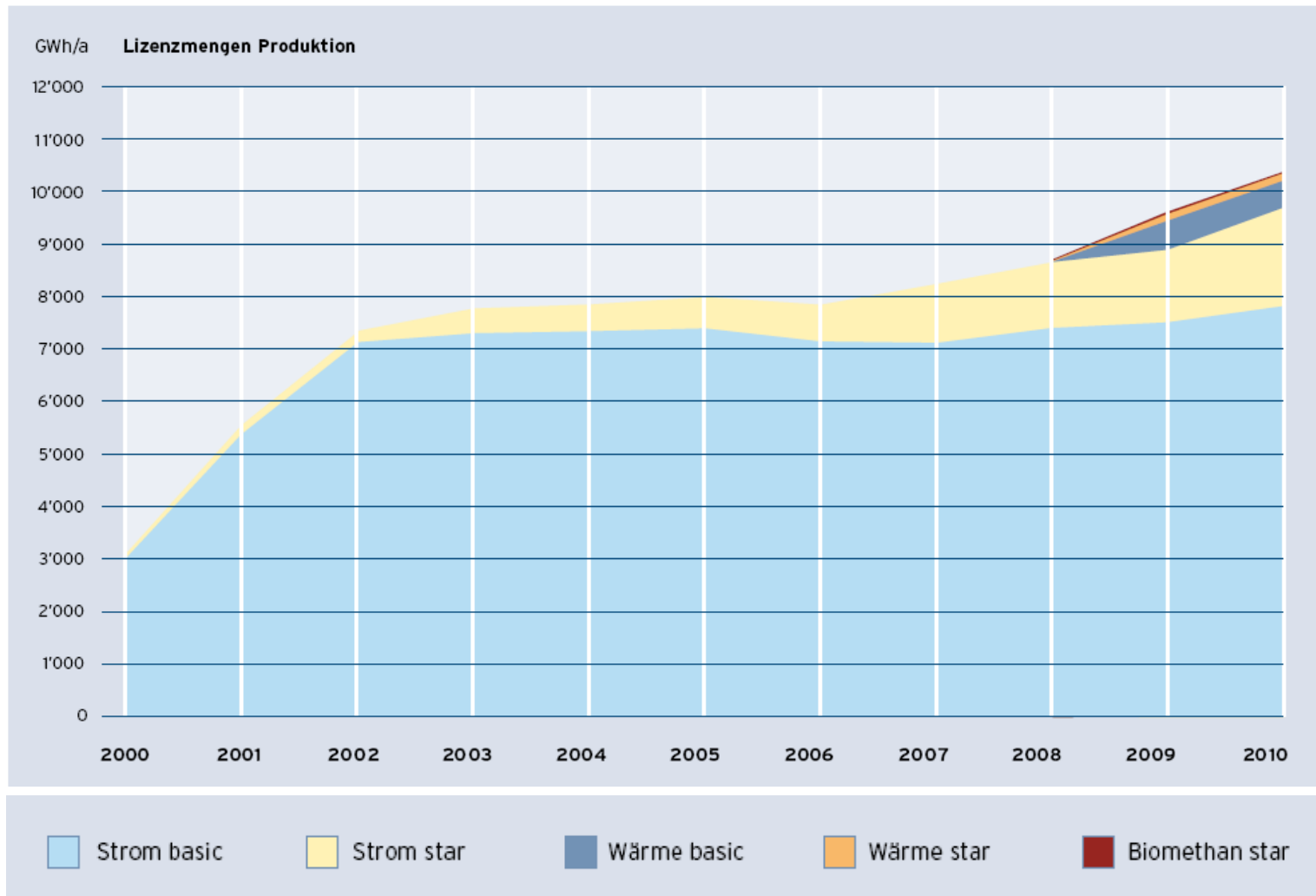
A strong and credible quality label is necessary to ensure a high ecological quality for energy

# naturemade star certifiable systems

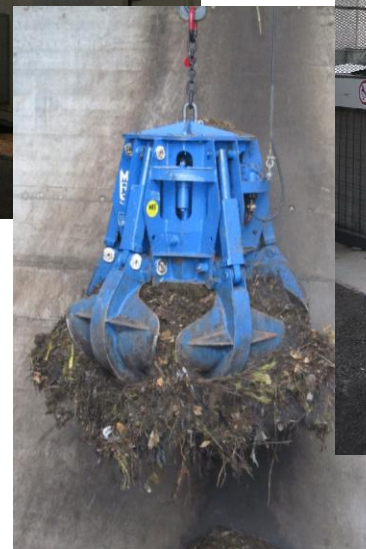
- **Electricity**  
(hydropower, wind, solar, digester gas, green waste composting, agricultural biogas plants, wood and old wood)
- **Thermal energy**  
(wood and old wood)
- **Biomethane**  
(digester gas, green waste composting, agricultural biogas plants)

→ one label for all systems!

# naturemade production



# Example: biomethane power plant near Zurich





# product marketing

## Was spricht für Biogas?

- Erneuerbare Energie
- CO<sub>2</sub>-neutral
- Ausschliesslich aus natürlichen Abfallstoffen
- Keine zusätzliche Investition in die Heizungsanlage

Für Fragen kontaktieren Sie einfach unseren Kundenservice unter 043 317 23 00.  
Weitere Infos: [www.erdgaszuerich.ch](http://www.erdgaszuerich.ch)

Wählen Sie Ihre gewünschte Variante!  
Dann erhalten Sie ab sofort Ihr Biogas mit einem Aufpreis auf Ihren Erdgas-Preis.

<input type="checkbox"/>	<b>erdgas</b> mit 5% Biogas	Aufpreis 0,5 Rp./kWh*
<input type="checkbox"/>	<b>erdgas</b> mit 20% Biogas	Aufpreis 1,8 Rp./kWh*
<input type="checkbox"/>	<b>naturemade star</b> 100% Biogas	Aufpreis 8,1 Rp./kWh*

\* Exklusive MwSt., Preisstand Oktober 2011

Ort, Datum

Unterschrift

## Biogas

Die erneuerbare Energie mit der grossen Zukunft



Energie, die nicht ausgeht

**naturemade**  
**star**

**erdgaszürich**  
erneuerbare Energien und Erdgas

## general criteria

- Auditing conditions  
(certification valid 5 years, annual control, independent auditing organisations)
- Basic criteria  
(net energy, allowed sources, declaration of origin, environmental management system, energy management, legal compliance etc.)

# general criteria

## Conditions of biomethane generation from biomass

Energy sources for a biogas plant	<p>Plants which generate biomethane from biogas, using both biogenic waste and other energy sources are, in principle, eligible for <i>naturemade star</i> certification if:</p> <ul style="list-style-type: none"><li>– the plant is demonstrably designed with a view to generating power from renewable energy sources; and</li><li>– biogenic waste accounts for at least 66 percent of the plant's total energy consumption, as an annual average. The individual proportions of the plant's total energy consumption must be constantly recorded by appropriate measurement procedures.</li></ul> <p>For the improvement of the fuel value it is permitted to add propane gas limited to 10%. Only the quantity of biomethane which derives from the biogenic waste portion of the plant's total energy consumption is eligible for certification respectively only the part of biomethane without propane gas.</p> <p>This rule is applicable especially to plants where deficient biogas quality necessitates admixture of natural gas for the BTTP.</p>
Use of genetically modified organisms	In principle VUE does not allow the use of genetically modified plant matter in energy generation.
Safeguarding soil fertility and productivity	The long-term fertility and productivity of the soil used to grow fuels must be ensured.

# Biomethane generation from green waste composting plants and agricultural biogas plants

## *naturemade star certification criteria*

The first requirement for award of the naturemade star quality seal is that all basic certification criteria must be met.

### **Global criteria:**

**GK-G1:** Environmental impact caused by biogas plants for auditing (generation of gas and injection of biomethane into a supply network or directly to a filling station) must not exceed half that of natural gas (fuel for transport, fuel for heating), incl. extraction, transport and injection into a supply network. This is checked with a standardised parameter model for fermentation plants.

LCA threshold value

### **Local and regional criteria:**

**LK-GG1:** VUE assumes that a valid building permit for the construction of plants for the generation of heat from biogenic fuels in Switzerland includes the obligation to avoid any negative impact on the landscape.

No impairment of landscape

**LK-GG2:** Compliance with the Integrated Plant Production (IP) Guidelines is a minimum requirement for targeted cultivation of biogenic fuels.

Safeguarding biodiversity and compliance with IP Guidelines

**LK-GG3:** The emission of odour which may occur on intake, preparation and composting of biogenic materials should be avoided as far as possible. All possible measures to reduce odour emission must be state of the art.

Odour

**LK-GG4:** For agricultural biogas plants, ammonia emissions are controlled and minimised via a farm fertilizer management system (by covering the liquid manure pit and conveying emissions through a drag hose or other prevention measures e.g. a biofilter). This includes measures recommended by the Swiss Federal Institute for Agricultural Economics and Engineering (FAT) to reduce ammonia losses.<sup>4</sup>

Avoidance of ammonia emissions

**LK-GG5:** During rated operation, the emission of defined offgas at the treatment facilities may not contain more than 1% of the methane contained in the raw gas. Proof of compliance with the limit value is governed by the requirements of SVGW Guideline G209.

Methane emissions

**LK-GG6:** An operation log has to be kept to document all operational interruptions. To avoid gas emissions, escaped gas during operational interruptions must be burned off (e.g. by flame or gas burner).

Avoidance of gas emissions during operation interruptions

# Certification of biomethane generation from sewage gas

## ***naturemade star certification criteria***

The first requirement for award of the *naturemade star* quality seal is that all basic certification criteria must be met.

### **Global criteria:**

**GK-G1:** LCA threshold value The environmental impact caused by plants applying for certification (generation, treatment and injection into a supply network or direct to a filling station) must not exceed half that of natural gas (fuel for transport, fuel for heating), incl. extraction, transport and injection into a supply network.

This is checked with a standardised parameter model for sewage gas.

### **Local and regional criteria:**

**LK-GK1:** Gas emissions In the co-fermentation of organic waste, the related exhaust gas emissions from lorry traffic must be taken into account.

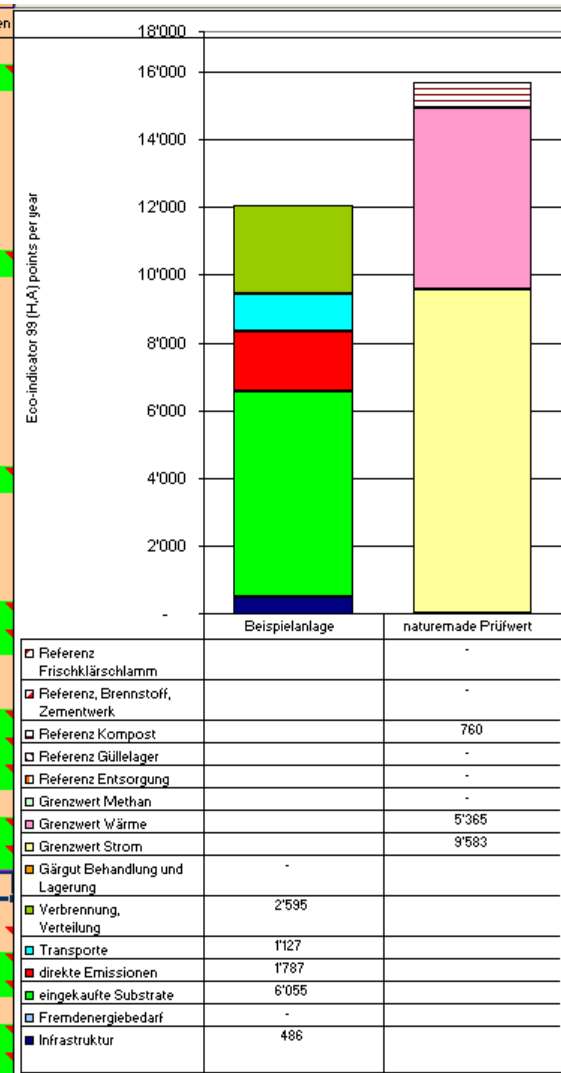
**LK-GK2:** Odour The emissions of odour which may occur on intake and preparation of co-substrates should be avoided as far as possible. All possible measures to reduce odour must be state of the art.

**LK-GK3:** Energy plan An energy plan must provide specific proof of energy. The planning of measures should show which activities are to be planned and implemented, and when (cf. also special requirements S-K4).

**LK-GK4:** Methane emissions In rated operation, the emission of defined offgas at the treatment facilities may not contain more than 1% of the methane contained in the raw gas. Proof of compliance with the limit value is governed by the requirements of SVGW Guideline G209

# parameter model (LCA)

naturemade Star Prüfung: Energieprodukte aus Biogasanlagen				Prüfungen
<b>Anlagenname und Referenzzeitraum</b>		<b>Beispielanlage</b>		
<b>Anlagentyp und Fermentergröße</b>	Landwirtschaft	500 m3		WAHR
<b>Inputs für die Anlage</b>				Finanzieller Ertrag (plus) bzw. Aufwand (minus), ohne Transportkosten, für die
Landwirtschaft Umrechnung aus Tierbestand auf Extrakt	1516 t FM			
Substrate (Eingabe auf Extra Blatt)	2'859 t FM	0 CHF	#####	
Müschlamm und ähnliche Substrate	0 t FM	0 CHF	0 CHF	
Wasserverbrauch	0 m3			
Gesamtinputmenge für Anlage	4'375 t FM	-189'060 CHF	44'505 tkm	WAHR
<b>Energieeigenverbrauch der Anlage (Systemgrenzen beachte)</b>				0 kWh
Strombezug aus Netz	0 kWh			
Heizölverbrauch	0 kWh			
Zündölverbrauch (10 kWh/kg)	0 kWh			
Dieserverbrauch (10 kWh/Liter)	0 kWh			
Erdgasverbrauch	0 kWh			
<b>Outputs der Anlage</b>				
Gesamtproduktion Biogas, Brutto (8 kWh/m3)	1'800'000 kWh	300'000 m3		WAHR
ungewollte Biogas Verluste (Methanschlupf und Unterbrüche)	0 kWh			
Biomethan: Verkauf und Verbrauch ausserhalb der Anlage (12.7 kWh/t)	0 kWh			
Biogas verbrannt in Fackel, Heizung, BHKW	1'800'000 kWh			
Art der Verbrennung	Gasmotor (Korzenzündung)			
Stickoxide NOx als NO2 aus BHKW	300 mg/Nm3			WAHR
Total Biogasnutzung, Brutto	1'800'000 kWh			WAHR
Gesamtproduktion Strom, Brutto	723'916 kWh			
Eigenverbrauch der Anlage aus Bruttostromproduktion	23'916 kWh			
Strom: Verkauf und Verbrauch ausserhalb der Anlage	700'000 kWh			WAHR
Einspeisung in einen Wärmeverbund / Verteilverluste Fernwärmenetz	0 kWh	10%		WAHR
Nahwärmenutzung: Verkauf, Verbrauch i.d. Nähe der Anlage	700'000 kWh			WAHR
Total Wärmeverkauf (nach Abzug Verteilverluste)	700'000 kWh			
Gesamtmenge Energieprodukte	1'400'000 kWh	78%		WAHR
Behandlung, Gärgut, fest	geschluzzene Kompartimentierung/Lagerung mit Biofilter	0 t FM	Trotzdem Lagerart wählen!	WAHR
Behandlung, Gärgut, flüssig	Geschluzzener Gärgutlager/Nochgärung	4'000 t FM		
Einfache Distanz Anlage - Ausbringung/Entsorgung			7'200 tkm	
Verwendung feste Gärrückstände	Verbrennung, Zementwerk, 92xTS	0 t FM	0 CHF	2 km
Verwendung flüssige Gärrückstände	Landwirtschaft, Schleppertrach	4'000 t FM	0 CHF	2 km
		4'000 t FM	0 CHF	WAHR
<b>Resultate:</b>	Beispielanlage naturemade Prüfwert			
EI'99-aggregated, Hierarchist	120E+04	158E+04	76%	WAHR
<b>Globales naturemade Star Kriterium erfüllt</b>				WAHR



# list for inputs

2	C	D	E	F	G	H	I
2	<b>naturemade Star Prüfung: Energieprodukte aus Biogasanlagen</b>					<b>Anlagenname</b>	
	<b>Ausgangsmaterialien</b>	Eingabe:	Finanzieller Ertrag (plus) bzw. Aufwand (minus), ohne Transportkosten, für die Anlage	Distanz, Anlieferung mit Traktor	Distanz, Anlieferung mit Lkw	Anzahl Tiere	Anteil Stallhaltung
3							
4	<b>Landwirtschaft</b>	t/a	CHF/a	km	km	-	%
5	Milchkuh	0.0 t	0 CHF	0 km	0 km	0	100%
6	Mutterkuh (schwer)	0.0 t	0 CHF	0 km	0 km	0	80%
7	Jungvieh < 1-jährig	0.0 t	0 CHF	0 km	0 km	0	90%
8	Jungvieh 1- 2 jährig	0.0 t	0 CHF	0 km	0 km	0	100%
9	Stiere und Rinder > 2 jährig	0.0 t	0 CHF	0 km	0 km	0	100%
10	Mastkalb	0.0 t	0 CHF	0 km	0 km	0	100%
11	Rindviehmast intensiv 65-520 kg	0.0 t	0 CHF	0 km	0 km	0	100%
12	Pferde über 3-jährig	0.0 t	0 CHF	0 km	0 km	0	100%
13	Mutterschafe oder Ziegen	0.0 t	0 CHF	0 km	0 km	0	100%
14	Zuchtschweine	0.0 t	0 CHF	0 km	0 km	0	100%
15	Mastschweine / Remonten 25-100 kg	0.0 t	0 CHF	0 km	0 km	0	100%
16	Zuchteber	0.0 t	0 CHF	0 km	0 km	0	100%
17	Legehennen	0.0 t	0 CHF	0 km	0 km	0	100%
18	Mastpoulet	0.0 t	0 CHF	0 km	0 km	0	100%
19	<b>Substrate</b>						
20	Apfeltrester	0 t FM	0 CHF	0 km	0 km		
21	Backabfälle, Süßwarenabfälle, Teig- und Mehreste	0 t FM	0 CHF	0 km	0 km		
22	Baum-, Reben-, Strauchschnitt	0 t FM	0 CHF	0 km	0 km		
23	Biertreber siliert	0 t FM	0 CHF	0 km	0 km		
24	Biertreber, Malztreber, Hopfentreber (sowie deren -Keime, -Staub, -Trub und	0 t FM	0 CHF	0 km	0 km		
25	Blut, Fettabscheiderrückstände, Fischrückstände, Fleischabfälle	0 t FM	0 CHF	0 km	0 km		
26	Blutmehl, Tiermehl	0 t FM	0 CHF	0 km	0 km		
27	Champignonsubstrat, Speisepilzsubstrat	0 t FM	0 CHF	0 km	0 km		
28	Enteisungswasser	0 t FM	0 CHF	0 km	0 km		
29	Fehl- und Testchargen aus Lebensmittelindustrie (pflanzlich)	0 t FM	0 CHF	0 km	0 km		
30	Fett aus Fettabscheider	0 t FM	0 CHF	0 km	0 km		
31	Filterrückstände aus Lebens- und Genussmittelherstellung	0 t FM	0 CHF	0 km	0 km		
32	Flotatschlämme (Schlachthof)	0 t FM	0 CHF	0 km	0 km		
33	Früchteabfälle (Orangen, Zitronen, Bananen, Ananas, etc.)	0 t FM	0 CHF	0 km	0 km		
34	Fruchtwasser, Zuckerwasser	0 t FM	0 CHF	0 km	0 km		
35	Gärgut aus Nahrungsmittelindustrie	0 t FM	0 CHF	0 km	0 km		
36	Gartenabraum, Laubgemisch	0 t FM	0 CHF	0 km	0 km		
37	Gemüse, Rüstabfälle	0 t FM	0 CHF	0 km	0 km		

Info / Prüfung / Substrate / Umweltdeklaration /

**Thank you for your attention!**

***Questions?***



## *naturemade* – Costs

- *naturemade* license fees
- External auditor's fee
- Internal costs for the preparation of the audits
- Sometimes costs for optimizing a power plant in order to achieve *naturemade star* quality
- Costs for the support model