

# All Clear!

The KESSEL *INNO-CLEAN*® Septic System

**KESSEL *INNO-CLEAN*®**  
septic system for waste-  
water treatment.

**Sequencing Batch Reactor  
(SBR) Technology**

KESSEL *INNO-CLEAN*®  
is certified by the  
German Institute for  
Building Technology (DIBt)



**Certification Number Z-55.3-85**



Septic Systems

 **KESSEL**



## Wastewater Regulations

The trend in the international community is that wastewater regulations are becoming stricter and stricter. Past practices of allowing untreated wastewater to flow directly into the ground, rivers or oceans is quickly becoming a thing of the past. Regulations now are requiring proper treatment of wastewater from homes and buildings before discharging into public watershed areas. Many existing and soon to be built structures are located in areas without connection access to public sewer lines meaning that the wastewater from the building will have to be treated on site by a decentralized system.

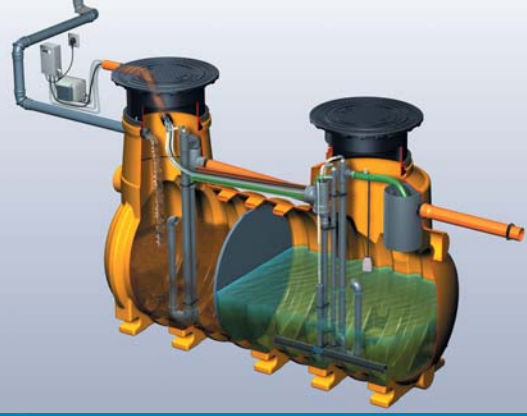
The **KESSEL INNO-CLEAN®** Septic System is designed exactly for this purpose – providing highly efficient decentralized treatment of domestic wastewater. The **INNO-CLEAN®** system operates with the reliable and highly effective SBR (Sequential Batch Reactor) system which is known in the industry as one of the best. The **KESSEL INNO-CLEAN®** system does not operate with mechanical low efficiency filtration but operates with a biological treatment procedure which guarantees high efficiency in the reduction of sludge and nitrates occurring in wastewater.



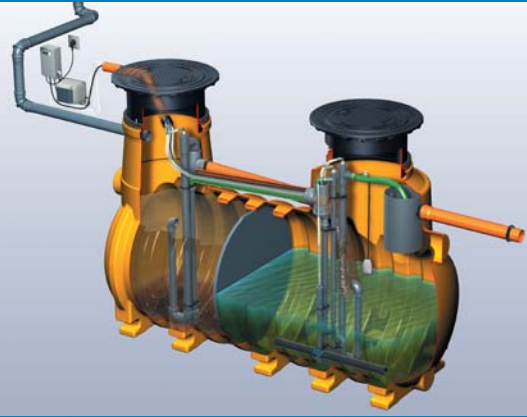
Here is what the **KESSEL INNO-CLEAN®** Septic System offers you:

- INNO-CLEAN®** provides the highest cleansing efficiency
- INNO-CLEAN®** has extremely low operational costs
- INNO-CLEAN®** is available in various chamber sizes
- INNO-CLEAN®** chambers are manufactured from virgin Polyethylene
- INNO-CLEAN®** minimizes inspection and maintenance intervals
- INNO-CLEAN®** is easy to clean and maintain
- INNO-CLEAN®** includes an automated control system which reduces annual maintenance and inspections

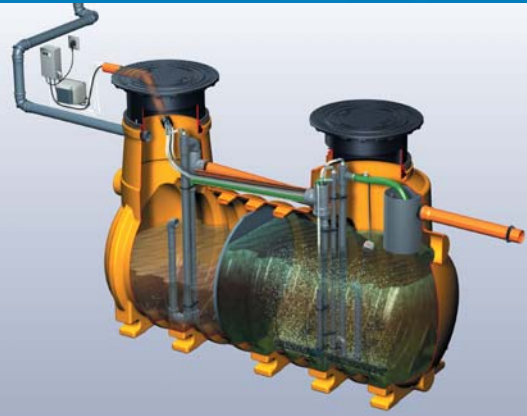
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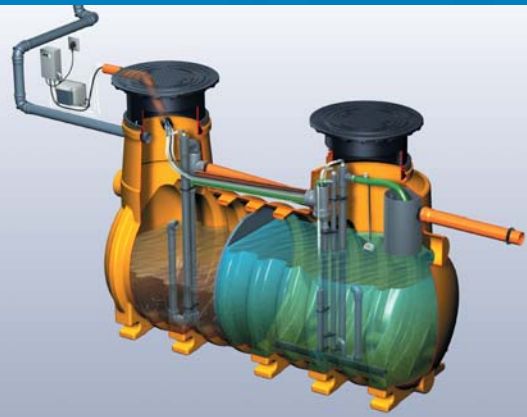
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## Clean water after 8 hours

Functions based on the Sequential Batch Reactor principal

### Solids and sludge settle to bottom of sludge storage area

1. The KESSEL *INNO-CLEAN*® is comprised of either 1 or 2 tanks based on the size of the unit. Single tank units have an interior separation wall which separates the sludge from the activation area. Sludge and solids settle to the bottom of the first tank.

### Wastewater is pumped from the first to the second tank

2. Wastewater (no longer containing solids and sludge which have settled to the bottom of the first tank) is automatically pumped from the first tank to the second tank (activation area).
3. The wastewater in the second tank then begins an 8 hour cleansing process. During the first 6 hours ambient air is occasionally pumped into the wastewater helping to mix the solution as well as providing the microorganisms with necessary oxygen so that the denitrification process begins. During this 6 hour period, microorganisms perform the cleaning process.
4. After the 6 hour cleansing period is over, a 2 hour sedimentation / rest period begins where any remaining sludge settles to the bottom and the cleansed wastewater remains on top.
5. At the end of the 8 hour cycle, the cleansed wastewater is pumped out of the *INNO-CLEAN*® and any sludge which has settled to the bottom of the second tank is pumped back into the main sludge collection area in the first tank. The cycle then repeats itself in that wastewater is again pumped from the first to the second tank where the 8 hour cycle begins again. In the case that no wastewater or only a minimal amount has collected in the first tank, the *INNO-CLEAN*® system automatically switches into an energy savings mode until a sufficient amount of wastewater is available and the system automatically re-starts operation.



## KESSEL *INNO-CLEAN*® Product Line

### KESSEL *INNO-CLEAN*®

Article Number  
97 600

3000 l



Article Number  
97 610

4500 l



Article Number  
97 620

6000 l



Article Number  
97 630

3000 l + 3000 l



Article Number  
97 640

3000 l + 4500 l



Article Number  
97 650

4500 l + 4500 l





Number of Building Inhabitants	KESSEL <i>INNO-CLEAN</i> ® BIG
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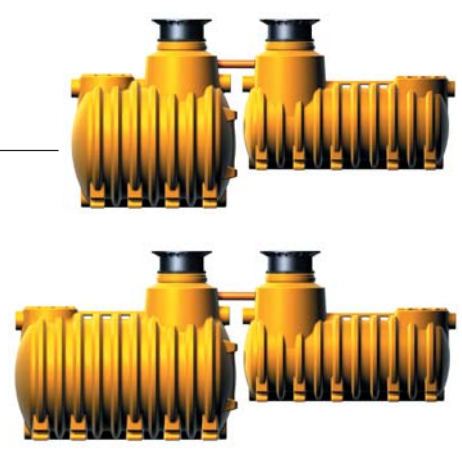
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6

KESSEL *INNO-CLEAN*® BIG Septic Systems provide larger sludge storage capacities in the first tank which reduces disposal frequencies.

8



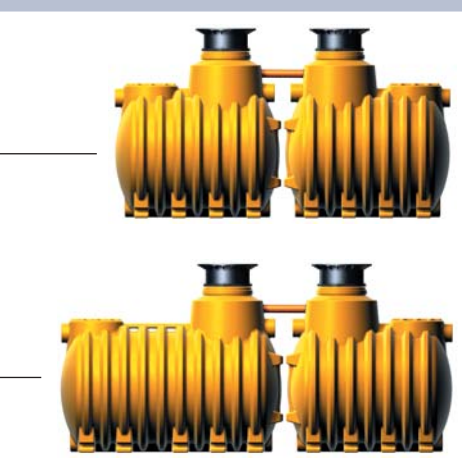
Article Number  
97 631

4500 l + 3000 l

Article Number  
97 632

6000 l + 3000 l

10



Article Number  
97 641

4500 l + 4500 l

Article Number  
97 642

6000 l + 4500 l

12



Article Number  
97 651

6000 l + 4500 l



## Installation Example



Illustration shows an KESSEL INNO-CLEAN® 4

**KESSEL-INNO-CLEAN®-Kit**

**Certification Number  
Z-55.3-85**



**with DIBt Certification**

- ① Control unit and air compressor
- ② Inlet
- ③ KESSEL INNO-CLEAN® Chamber
- ④ Load Class B (12.5 ton)  
cast iron covers (Child-Proof)
- ⑤ KESSEL INNO-CLEAN®-Kit  
aeration system
- ⑥ Sludge storage
- ⑦ Separating wall
- ⑧ Cleansing chamber
- ⑨ Sampling chamber
- ⑩ Dry well

## Take advantage of what KESSEL INNO-CLEAN® has to offer:

- Water tight chamber**
  - prevents root penetration
  - no inflow of groundwater through cracks
- Extended life-span**
  - chamber resistant to aggressive wastewater
- Shatter-proof**
  - reduced risk of transport and installation damage
- Easy care**
  - design provides for low maintenance and operating costs
- Light weight**
  - no large construction equipment needed for installation
- Access covers**
  - vertically adjustable for easy installation
  - cast iron covers available in load class B (12.5) and D (40.0) ton
- cast iron covers prevent child access (child proof)**



## KESSEL *INNO-CLEAN*® delivery contents

- 1 or 2 chambers (based on size)
- KESSEL *INNO-CLEAN*®-Kit completely assembled with air compressor hoses
- Control unit and air compressor
- User's Manual
- 2 upper sections for manhole covers (vertically adjustable, sealing gaskets included)
- 2 cast iron manhole covers (load class B – 12.5 ton) according to EN 124
- 2 Lip Seals ND 600

## Available accessories

### Dry well



**KESSEL-Dry Well LW = 1000 mm for connection to outlet of KESSEL *INNO-CLEAN*® Septic System manufactured from Polyethylene - for underground installation**

Monolith (one piece) construction, resistant against aggressive wastewaters  
Includes upper section with cast iron manhole cover (load class B - 12.5 ton).

**Delivery:**  
Dry well completely assembled.

#### Article Number

Chamber height 1500 mm  
**Article 97 660**

Chamber height 2000 mm  
**Article 97 670**

Additional information available at [www.kessel.de](http://www.kessel.de)

### KESSEL *INNO-CLEAN*®

#### Article Number

#### Number of Building Inhabitants 4

Single tank system **97 600**

#### Number of Building Inhabitants 6

Single tank system **97 610**

#### Number of Building Inhabitants 8

Single tank system **97 620**

Double tank system **97 630**

#### Number of Building Inhabitants 10

Double tank system **97 640**

#### Number of Building Inhabitants 12

Double tank system **97 650**

### KESSEL *INNO-CLEAN*® BIG

#### Article Number

#### Number of Building Inhabitants 8

Double tank system **97 631**

Double tank system **97 632**

#### Number of Building Inhabitants 10

Double tank system **97 641**

Double tank system **97 642**

#### Number of Building Inhabitants 12

Double tank system **97 651**



[www.kessel.de](http://www.kessel.de)