F.A.Q. about the program

What is the Circuit Navigation System?

The Circuit Navigation System („CirNavSys")
is a computer programm, which supports the user in
the analysis of electric circuits.

It is different from the previous programs for circuit
analysis by the fact that previous programs return
line graphs of currents and voltages to the user, but
the CirNavSys automatically creates an animation in
which the currents and voltages are presented as
scaled graphical elements. This difference is shown
in example 1 below.

The Advantage of that animation is that the user can analyze and understand
circuits faster, easier and with a lower risk of making an error in the analysis.

Who shall use the Circuit Navigation System?

It is directed primarily to education, see at cirnavsys.com/cns-for-education (in
german language).
Also developers of electric circuits may profit from this program, see at:
cirnavsys.com/cns-for-companies (in german language).

What is the actual status of the program?

The state at program version 0.3.45 (date: 02.Nov.2020) is, that the program
does what it is supposed to, which is to analyse circuits and output them as an
Animation. It even is the circuit simulator which is the easiest to handle of all
the ones I have ever seen, and I have seen several of them when studying
electric and information engineering and when working at several companies.

Nevertheless the program can ans should be further improved: for that purpose
I have a ToDo list which is actualized after every updated. That list contains
several items on further simplification of the program or more functionalities.

In the current version a marketing of the program can start, that however
should be done by persons whith business knowledge, while I will further
optimize the program.

Where can we get further information?

You can find further information at https://www.cirnavsys.com/about or https://
www.cirnavsys.com/company or on our youtube-channel.

How can we get in contact?

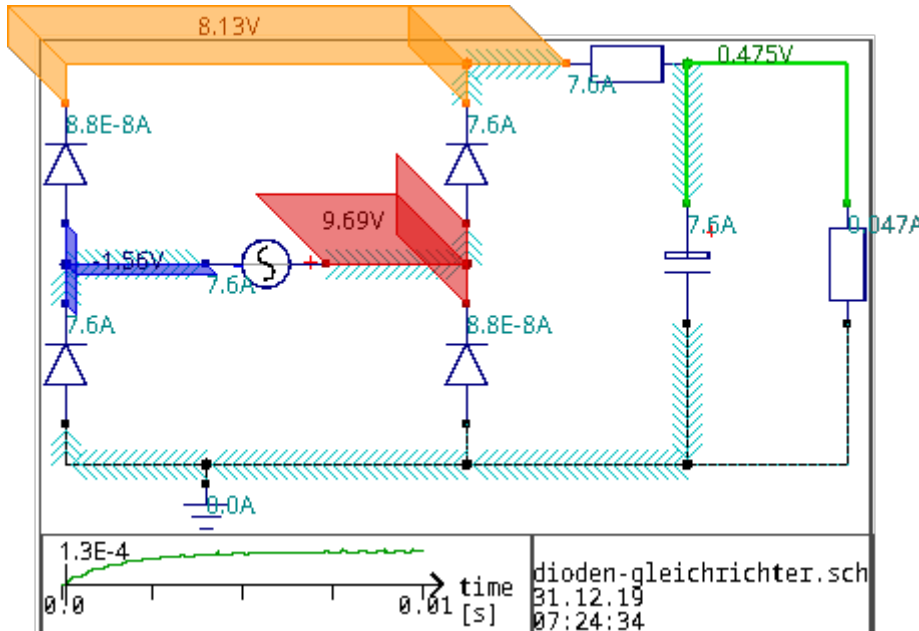You may find me unter the following contact details:

- per email at b.sessler@gmx.de
- per telephone at 07735 2392
- per mobile telephone at 0151 25118245
- per letter to:

    Benedikt Sessler
   In der Grub 7
    D -78343 Gaienhofen

Example 1: diode rectifier

This example shall show how much easier it is for a user of the CirNavSys to understand the interdependencies between circuit parts and the operating principle of an electric circuit.

A diode rectifier creates a DC voltage out of an AC voltage. It does this by the four diodes which guide the current in a way so that if flows into the capacitor independently of the voltage.

Point of time 1: When there is a positive input voltage, the current flows into the capacitor, so that the output voltage increases.

Point of time 2: When there is a negative input voltage, the current also flows into the capacitor, so that the output voltage increases even more.
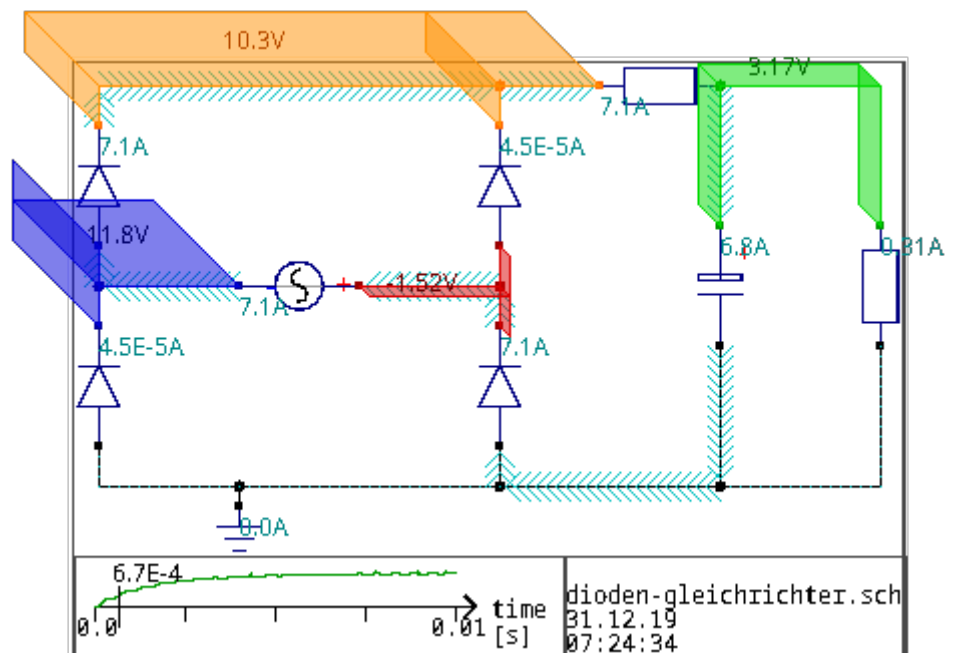

Conclusion: The output voltage over the capacitor increases until the output voltage reaches an equilibrium value, which is circa the peak of the ac input voltage.

One can see this in these two images or even better in an animation video. It only takes a few minutes to create such a video with the CirNavSys.

With these automatically created images from the CirNavSys, the operating principle of the circuit is relatively easy to understand if you know what diodes, capacitors and resistors are.

But still electic engineering is still being taught with curve diagrams, and in also in companies the employees manly are using line graphs. This is inefficient:
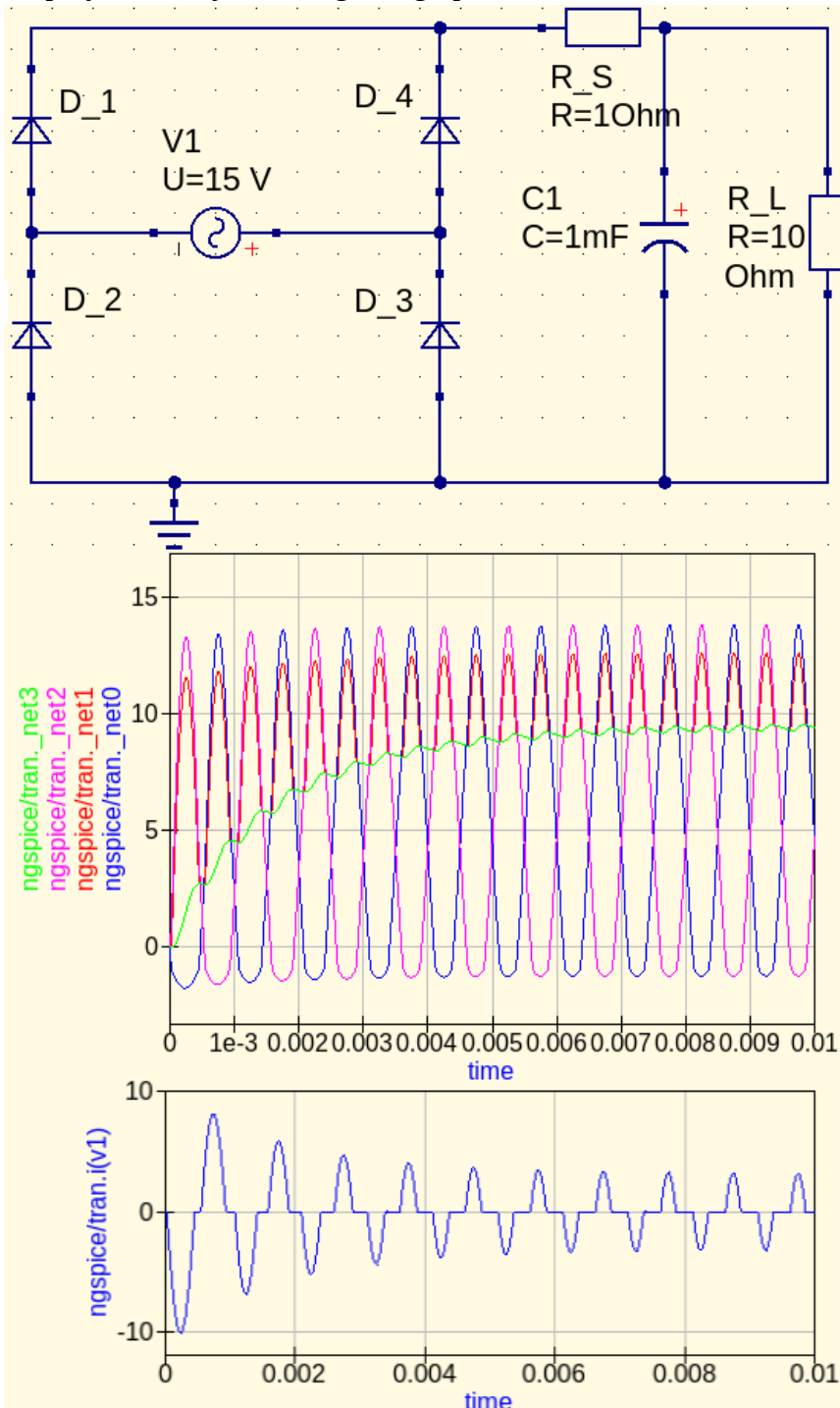
At first the user has to coordinate which curve is for which component.

In the CirNavSys this coordination was done by the computer, and displayed in a way that the user directly sees which current/voltage is where in the circuit.

After the user has coordinated the curves and components, he has to search for interdependencies.
In this example, one interdependency is that the green curve rises exactly when the current curve has a large absolute value.

After all relevant inter-dependencies are found, the operating principle of the circuit needs to be concluded.
Here it is that the current is directed by the diodes into the capacitor, which generates a dc voltage over the capacitor.

Conclusion from this example:

1. By using the CirNavSys, the user does no longer need to coordinate currents and voltages to the components of the circuit, that is now done by the computer.
2. By using the CirNavSys interdependencies are easier to find, because they are displayed in one image, and do no longer need to be searched by comparing curves.
3. By using the CirNavsys the operating priciple is easier to find, because the currents and voltages are directly shown in the circuit diagram.