![u-he logo]

Podolski
software synthesizer
User Guide

Version 1.2 (2013 Freeware)

WWW.U-HE.COM

Introduction

About Podolski

Podolski is a straightforward virtual analogue synthesizer featuring a flexible arpeggiator / step sequencer plus delay and chorus effects. Originally a FilterscapeVA spin-off made for a major German music-tech magazine and now freeware, Podolski can sound exceptionally smooth for a synthesizer of its vintage – or exceptionally gritty!

This is what Podolski used to look like (this *retro* skin is also included in the new version):

Main Features

- *Oscillator* – the Warp and Invert functions can be used to create many different waveforms, including (of course) the classic sawtooth, triangle and pulse / PWM

- *Envelope* – only one envelope here, but Gate can be used for the amplifier instead

- *two LFOs* – one global (i.e. for all voices) and one per voice

- *Filter* – classic Lowpass, Bandpass or Highpass with extra parameters Drive, Click (impulse at Note On) and AutoFM (bipolar frequency modulation from the oscillator)

- *Arpeggiator* – combined arpeggiator, step sequencer and modulator, like in Zebra2

- *two effects* – stereo delay and chorus / flanger with feedback

- *resizable GUI* – also three alternative skins

try using the ↓ **hyperlinks** ↓ to jump immediately to any section of this guide

Installation

Go to the Podolski page, grab the installation file (for Mac or PC), double-click on the downloaded file and follow further instructions. To update, install over the existing version.

File locations

The precise locations depend on your installation paths:

Win   Presets   *...\VstPlugins\u-he\Podolski.data\Presets*
             Preferences   *...\VstPlugins\u-he\Podolski.data\Support* (*.txt files)

Mac   Presets   *MacHD/Library/Audio/Presets/u-he/Podolski/*
             Presets (user) *[you]/Library/Audio/Presets/u-he/Podolski/*
             Preferences   *[you]/Library/Application Support/u-he/com.u-he.Podolski...*
             Resources   *MacHD/Library/Application Support/u-he/Podolski/*

To uninstall, delete the plugin(s) and the associated files / directories.

GUI Elements

Knobs

Podolski's knobs work like vertical faders – simply click and drag. You can also hover over any control and roll your mouse wheel (if available). Values appear in the status display, which reverts to showing the name of the current preset after a few seconds.

For fine control, hold down a SHIFT key on your computer keyboard before moving a knob (this doesn't work with the mouse wheel). Values can be reset to the default by double-clicking on any knob. Alternatively, try alt+click (Mac) or ctrl+click (Win).

Most parameters can be MIDI-learned (for e.g. control via hardware) via right-click or ctrl+click (Mac OSX) on any knob.

Switches

For the sake of simplicity, the pop-up menus dotted around Podolski's GUI are called "switches" in this manual. As well as opening the menu via mouse-click, the settings can also be selected directly using a scroll wheel. Switches can also be MIDI-learned via right-click (or ctrl+click in Mac OSX).

Alternative skins and sizes
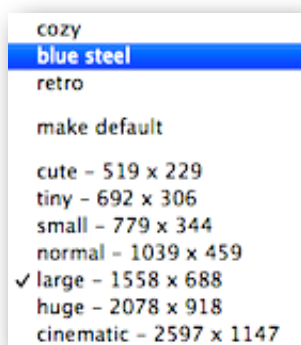
The skin and size can be changed by right-clicking anywhere in the background. The wide range of GUI sizes should cater for all monitors: the 7 options start at *cute* (laughably small) and stop at *cinematic* (ridiculously large).

Cozy and *Blue Steel* are new skins, *Retro* is the original.

The function *make default* saves the current appearance. Whether GUI settings are saved with each song depends on the host application – most do, but we have heard that some don't.

Preset Browser

Podolski's status display lets you select presets from the current directory and even step across folder boundaries while the Synthesis view is open, but no software synthesizer is complete without a large preset browser...
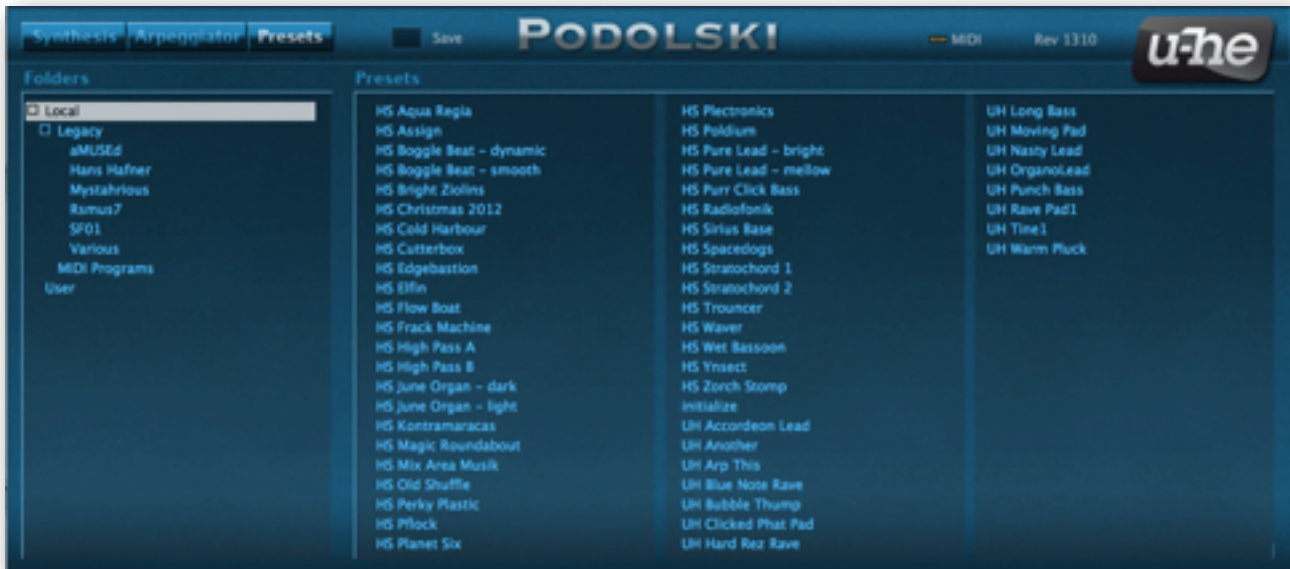
Click on the button labelled **Presets** at the top left of Podolski's window. The preset folder structure appears in the *Folders* panel on the left, and a list of presets contained in the currently selected folder appear in the *Presets* panels. Closed folders have a solid square next to the name (like 'Local' here) – click on the square to open it.

The factory presets are now in u-he's **.h2p** format so they can be easily exchanged between computer types (Mac, PC) and plugin types (AUi, VSTi).

Loading presets

The *Presets* panel displays all presets in the folder you selected in the *Folders* panel. The root directory ('Local') contains several category folders, a selection of usable presets from those folders plus a preset called **initialize**. which you can use to make your own presets 'from scratch'.

To load a preset, simply click on the name. After loading a preset in the browser you should be able to use the up/down cursor keys on your computer to step through the others – even across folder boundaries.
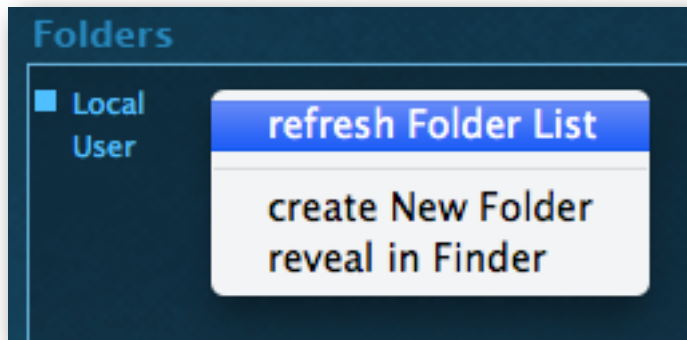
Saving presets

The upper bar has a small button labelled **Save**. Clicking on the rectangle will store the current preset *in the currently selected folder* (so always remember to select a suitable folder before saving your edited sounds).

Context menu functions

Right-clicking in the *Folders* panel opens a menu containing 3 useful functions:

Refresh folder list is probably the most important one here! It updates the contents of the browser after you have made any changes.

Create new folder does exactly what it says – a new folder is created.

*Reveal in...* opens Finder / Explorer and highlights the current folder.

Right-clicking in the *Presets* panel opens another context menu:

Make Favourite puts a yellow star next to the preset so you can find it more easily.

Mark as Junk hides the selected preset(s). Junked presets become visible again by selecting *Show Junk*, marked with a brown 'no entry' symbol.

Select All marks all presets within the current folder, and *Deselect* cancels the selection. Use cmd+click (Mac) or ctrl+click (Win) to select / deselect individual presets.

To move presets between folders you can drag & drop them from the presets panel into a folder in the other panel.
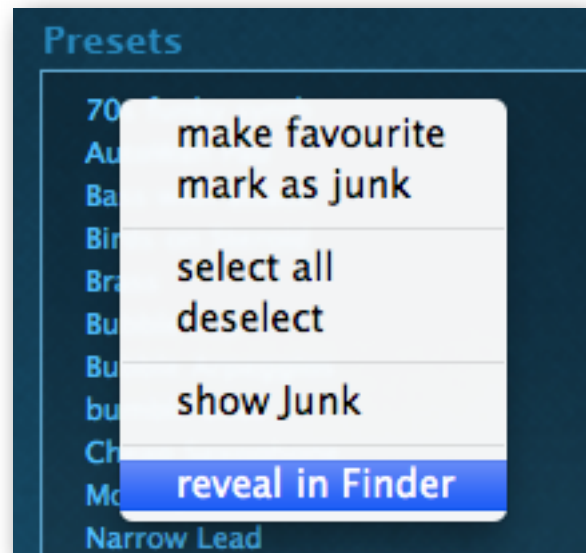
Tip: If you need to manipulate a lot of files you should consider using the functions of your OS instead. After editing in Finder / Explorer, remember to refresh Podolski's browser, otherwise it won't reflect the changes you made.

The 'MIDI Programs' folder

Local also contains a special folder called *MIDI Programs*, which is initially empty. If you put a bunch of presets (up to 128) in there, they are **all** loaded (into a cache, for performance reasons) when the first instance of Podolski starts. Important: changes only take affect after restarting the host software: *MIDI Program* presets cannot be added, removed or renamed on the fly.

As presets are accessed in alphabetical order, it's a good idea to use numbers as the head of each name: '001 rest-of-name' to '128 rest-of-name' or similar.

The *MIDI Programs* folder can contain up to 127 sub-folders (of 128 presets each), and these are switchable via MIDI Bank Select messages (1-127). The MIDI bank select message is CC#0 (Podolski only interprets the MSB) – send the Bank value, then a Program Change message to load the preset.

Synthesis

Global Settings

The main views, **Synthesis**, **Arpeggiator** and **Presets** are selected using the row of buttons at the top left of Podolski's window. The Synthesis and Arpeggiator views both have a few panels in common, including the global settings:

Status display

This is the bar in the middle of the global panel. Most of the time it will show the name of the currently selected preset. While editing, however, it shows the exact value of the parameter. After a few seconds of inactivity it reverts to displaying the preset name.

Clicking on the status display lets you select a preset from the current folder. You can use the arrows to the left and right of the display to step through presets – even stepping "across the boundary" into a neighbouring folder.

Voice settings

There are five voice-related controls immediately above the status display...

Glide
Controls portamento / glide rate. Turn this up to slew between consecutive notes.

Mode
Selects one of 4 basic voice modes:

|	
poly	polyphonic i.e. you can play chords and overlapping notes
mono	monophonic: each new note triggers the envelope
legato	monophonic: the envelope is not retriggered until after a space has been left between consecutive notes – great for expressive solos
arpeggiator	polyphonic: arpeggios are defined in the Arpeggiator panel.

Voices
Specifies the maximum number of notes available at the same time, usually to save CPU but also quite useful for characterful "voice-stealing" effects:

few	4 voice polyphony (arpeggiator: 6)
medium	8 voice polyphony (arpeggiator: 12)
many	16 voice polyphony

PitchBend
These two small switches define the pitch bend ranges (down and up), from 0 to 24 semitones. Set *down* and *up* to different values (e.g. 12 and 3), then try the pitch bender on your MIDI keyboard.

Arp settings
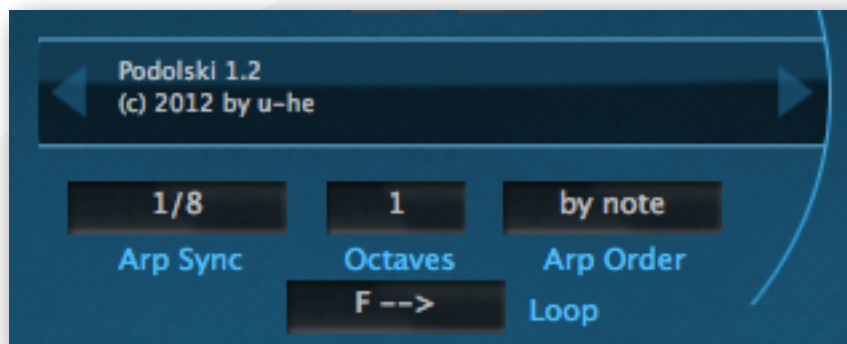
For details of the arpeggiator controls in the global panel as well as a full description of all the other arpeggiator parameters, go [here](#).

Oscillator

Podolski's oscillator is basically a **sawtooth** wave with adjustable symmetry (via *Warp*).

Podolski's oscillator also includes an inverted wave that can be mixed in via the *Inv/PWM* knob. As these signals can be phase-shifted apart, variable *pulse* and other waveforms are available (see the image and accompanying explanation on the next page).

Tune / TuneMod / Vibrato

Tune
The *Tune* knob adjusts the oscillators basic pitch by +/- 24 semitones.

TuneMod
The *TuneMod* knob sets the amount of *Tune* modulation from a source selected in the neighbouring switch. Experiment with different modulation sources and amounts.
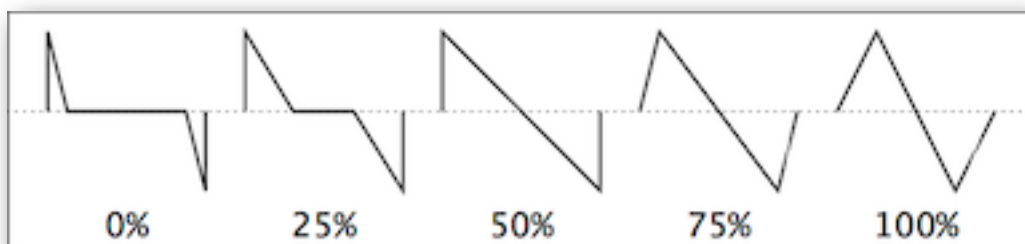
Vibrato
Sets the amount of Tune modulation from a fixed source, namely LFO voice (LFO1).

WaveWarp / WarpMod

WaveWarp
Controls the basic oscillator shape.

The minimum setting gives you a bright spike, the centre position (50%) is a classic sawtooth which morphs into a triangle as you turn *WaveWarp* up to maximum.

WarpMod

The knob sets the amount of *WaveWarp* modulation from a source selected in the associated switch. Experiment with different modulation sources and amounts.

Phase / PhaseMod / Inv-PWM

Phase

The Phase knob shifts (in opposite directions) the phases of the two oscillator signals.
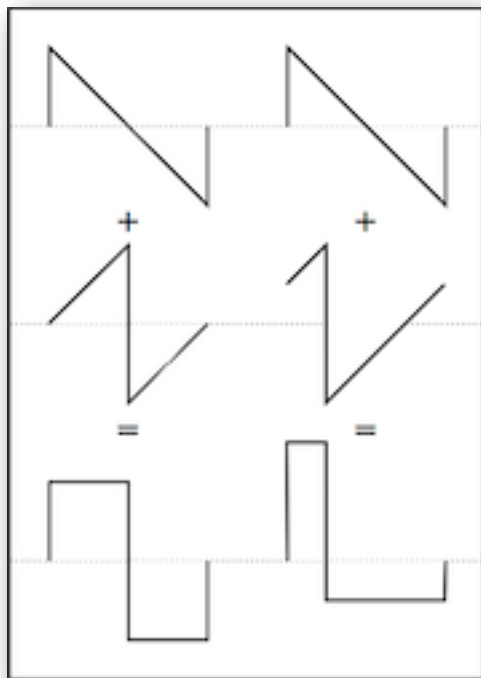
PhaseMod

The *PhaseMod* knob sets the amount of *Phase* modulation from a source selected in the neighbouring switch. Experiment with different modulation sources and amounts!

Inv/PWM

Controls the relative mix between the 'normal' and 'inverted' waves. Facilitates PWM...

How to do PWM

First, a short explanation:

Although the oscillator is sawtooth-based, it is also capable of generating variable-width pulse waves. To achieve this, Podolski's oscillator includes an inverted version of the waveform, and lets you shift the phases apart.

The centre-left waveform in this image is the same as the one above it, but inverted vertically and precisely 180° (i.e. half the total wavelength) out of phase. Adding these two results in a square wave.

The phase of the centre-right waveform is much closer to the top wave, it is shifted by about 90°, resulting in a much narrower pulse.

This means that classic cyclic PWM (pulse width modulation) is easy to achieve by modulating the phase difference with an LFO. Try the following:

1) Load the *initialize* preset
2) Set *WaveWarp*, *Phase* and *Inv/PWM* to exactly 50%
3) Select LFO1 as *PhaseMod* source and turn up the amount

Of course you should also try using other modulators e.g. ArpModulator or envelope...

Envelope

Synthesizer envelopes are used to shape the volume and/or tone of each note...
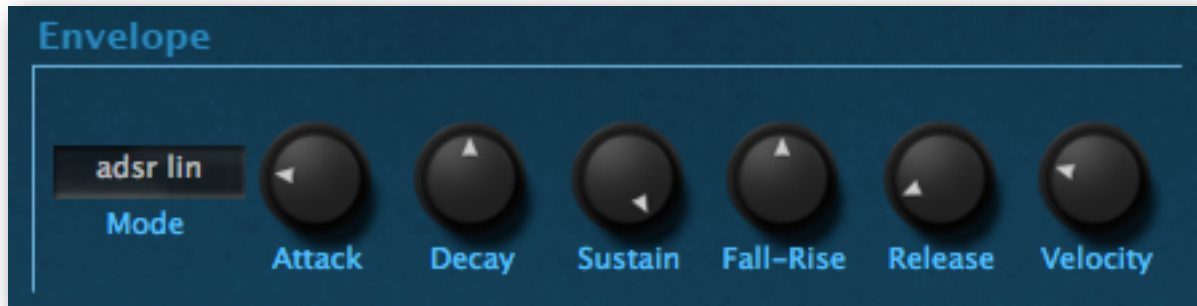
Mode

Podolski lets you select one of four envelope modes – *adsr exp*, *adsr ln*, *hdsr exp* and *hdsr ln*. Those abbreviations have the following meanings:

adsr   classic envelope type with Attack, Decay, Sustain and Release stages, plus an extra Fall-Rise stage that modifies the sustain (see below)

hdsr   similar to *adsr*, but the *Attack* stage is replaced by a *Hold* stage: The level starts at maximum and remains there for the time set by the Attack knob

exp   short for 'exponential': the attack, decay and release stages are all curves like in the image below

ln   short for 'linear': the attack, decay and release are all straight lines

Stages (Attack, Decay...)
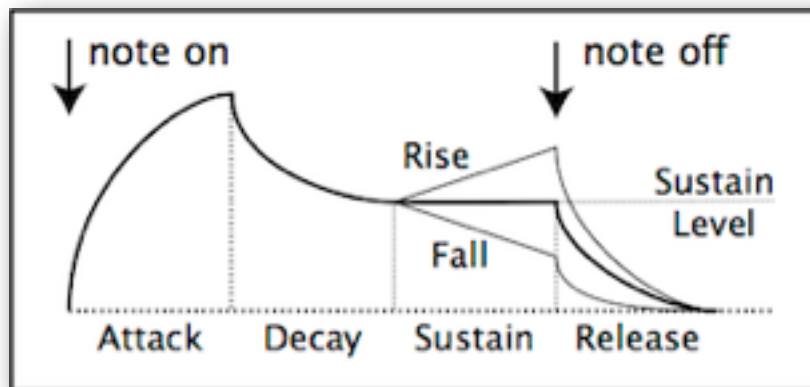
Attack
This knob controls either the time it takes for the envelope to rise from zero to maximum level (in *adsr* mode) or the length of the Hold stage at maximum level (in *hdsr* mode)

Decay
The time it takes to fall from maximum down to the sustain level

Sustain
The level after Decay. Normally remains at this position until the note is released...

Fall-Rise

...but what happens during the sustain stage can be modified by using *Fall-Rise*:

Negative values: time to 'fall' from the current sustain level down to zero
Positive values: time to 'rise' up from the current sustain level to maximum

Note: Fall-Rise settings close to the centre (0.00) are slow, larger values are faster

Release

After a note is released, the time it takes to fall from the current sustain level to zero.

Velocity

How much *MIDI velocity* (how 'hard' a note is played) affects the level of the envelope.

Note: Remember that Podolski's envelope can modulate various parameters, not just the amplifier. For instance, if you want the envelope to control e.g. filter frequency without affecting the volume in any way, you could try switching the VCA switch in the amplifier section to *Gate* instead of *Envelope1*...

Amplifier

This panel contains the main volume control plus a few extras...

Pan

The stereo position. Can also be useful for balancing the stereo image of presets that have a lop-sided delay effect.

VCA

Envelope1   uses the envelope to control volume
Gate   notes start immediately, are held and have just enough release time to avoid clicks. Using *Gate* here frees up the envelope for other tasks.

Output

The main volume control. Note that some presets – those with very high filter resonance – have relatively low *Output* values to prevent unwanted distortion.

Modulation

Output level modulation e.g. for tremolo effects (LFO), or to balance levels across the keyboard (KeyFollow). The neighbouring knob controls the amount.

LFO global / LFO voice

Podolski has two LFOs (low frequency oscillators) which can be either synchronized to the host tempo (from 1/64 to 8 bars) or set to absolute times (0.1s, 1s or 10s).
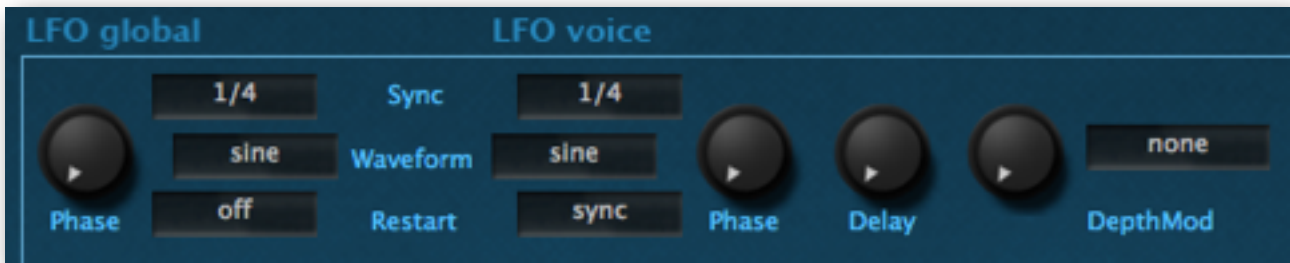
The main difference between the LFOs is that there is only one **global LFO**, while each note gets its own **voice LFO**. The parameters on this page are common to both LFOs:

Sync

Sets the LFO speed. Except for three absolute times (see the note below), LFO rates in Podolski are synchronized to the song tempo. The range is from a 64th to 8 bars, including several triplet ("3 in the space of 2") and dotted ("half as much again") values.

Note: At the top of the list are three *absolute times* measured in seconds (0.1s, 1s, 10s). LFO speeds in Podolski can't be modulated, however – consider them a bonus!

Waveform

sine	pure sine wave
triangle	pure triangle wave
saw up	rising saw ('ramp')
saw down	falling saw
sqr hi-lo	square wave, restarted at the higher level
sqr lo-hi	square wave, restarted at the lower level
rand hold	random steps
rand glide	random curves

Restart

Determines when and how the LFOs are retriggered. The options differ:

Global LFO

The global LFO can be restarted after a specific number of bars (in the song) have elapsed. The values are *off, each bar, 2 bars ... 32 bars*.

Voice LFO

sync	never restarts – LFOs for all notes are always in phase
gate	restarts per note at the specified *Phase* (see below)
single	similar to sync, but restarts at the next note after all notes are released
random	restarts at a random phase per note (the value of *Phase* is ignored)

Phase

Sets the phase (i.e. the position within its cycle) at which the LFO will be restarted according to the *Restart* setting. Ignored by the voice LFO if *Restart* is set to *random*.

Delay

Voice LFO only. The level of the LFO is faded in whenever a note is played – this knob controls how slowly this happens.

Tip: you can use the Delay feature to turn the voice LFO into a simple ramp envelope by setting it to a slow square wave in *Gate* mode – see the preset *HS Mix Area Musik*.

DepthMod

Unlike the global LFO, the level of the voice LFO can be modulated. A typical use of this feature is to control vibrato amount from a modulation wheel.

Filter

Podolski's filter offers you the classic choice of Lowpass, Bandpass or Highpass...

Cutoff

The edge-frequency. In Podolski, integer steps are precise semitones apart.

Modulation 1 / Modulation 2

The filter has a pair of cutoff modulation switches / knobs. In the above image, cutoff is modulated by a random amount as well as the voice LFO. The most commonly used modulation source here is probably *Envelope1*.

Rez

Resonance amount. Resonance is an internal feedback loop that emphasizes the cutoff frequency. Tip: High resonance can lead to a very hot output signal, so you might need to turn that a long way down to compensate. Even as little as 5.00.

Type

The basic filter mode: *Lowpass*, *Bandpass* or *Highpass*.

Key

The key-follow parameter controls the amount of cutoff modulation from the played MIDI note – the higher the note, the higher the cutoff. At 100%, it follows semitones exactly. Note that the 'pivot note' (where key-follow always outputs zero) in Podolski is E3.

Drive

The filter has its own *Drive* parameter which can be used to distort the filtered signal. Tip: the effect is particularly strong when *Rez* is turned up!

Click

Click feeds a short impulse into the filter, which can be used to e.g. add punch or cause immediate resonance, whatever the signal from the oscillator.

AutoFM

Podolski's filter can be frequency-modulated from it own input signal i.e. the oscillator, either negatively or positively. This feature is rare in digital synthesizers, although it can deliver very lively timbres which, depending on the polarity and amount of FM, range from silky-smooth to dirty-grungy. Especially effective with very low notes and/or PWM!
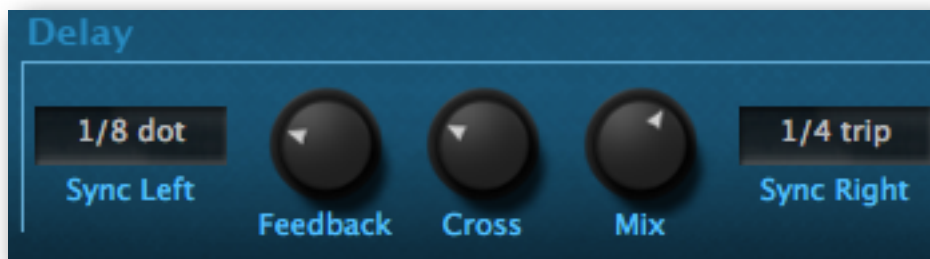
Effects

These days, no synthesizers comes without at least a few 'post synthesis' effects, and the most common of these are delay and chorus...

Delay

Podolski has a simple stereo delay unit featuring two host-synchronized delay times and two types of feedback:

Sync Left / Right

The two Sync switches specify the repeat rate of each delay channel, measured in musical note lengths. The range is from one 64th to whole-bar triplets. Tip: You will usually find that the non-triplet times are more suitable for rhythmic effects, and a mixture of triplet and dotted times are often best for washy effects.

Feedback

Controls how much of the signal is fed back into the same delay channel.

Cross

Similar to *Feedback*, but this one controls how much of the signal from the right channel is fed into the left and vice versa. Experiment with *Feedback* and *Cross* together.

Mix

Balance control between 100% dry and 100% wet (delay only).

Chorus / Flanger

Although often frowned upon by analogue synth purists, chorus is a popular effect in polyphonic synthesizers. Podolski's chorus is a fairly basic delay-based unit, but includes resonant feedback in two flavours (negative and positive)...

Center

The Center knob controls the nominal delay times (from about 2 to 10 milliseconds). Tip: Use lower values for typical chorus/ensemble effects, and higher values for more complex flanging effects.

Speed

The chorus effect requires an internal LFO to modulate the delay times. The *Speed* knob regulates its rate. Note that lower values are faster than high values i.e. the knob works in the opposite direction from what you might expect!

Depth

Modulation intensity. Set fairly high values for deep effects, or turn all the way down for static colouration effects.

Feedback

*S*ends some of the output signal back into the input. When fed back, the short delays create resonant frequencies that can sound very dramatic. Set to the centre for regular chorus, or set negative / positive values for different-sounding resonance.

Mix

Balance control between 100% dry and 100% wet (delays only). Values above the centre (50%) increase the stereo width, but may reduce the tonal colouration.

Arpeggiator

Clicking on the *Arpeggiator* button in the upper bar gives us the following view:

The right half of the window is now filled with arpeggiator parameters. The envelope panel stays where it was while the global section and part of the filter are shifted to the left. Note: the remaining filter parameters and the oscillator panel are only visible in *Synthesis* view.

Arp parameters: global panel

First of all, you will need to select *arpeggiator* Mode. The parameters *Arp Sync*, *Octaves, Arp Order* and *Loop* are also here in the global panel:

Mode

This is where you switch the arpeggiator on!

Arp Sync

Sets the arpeggio rate relative to the song tempo received from your host program.

Octaves

0, 1 or 2 times: How often the octave is shifted up after all notes in the buffer have been played back.

Arp Order

Incoming notes are ordered within a note buffer in one of two ways. Note: The buffer is then played back in the direction set by the *Loop* parameter.

by note   notes are reordered according to MIDI note number
as played   retains the original order in which notes were played is retained

Loop

Determines the direction in which the note buffer is played back. See *Arp Order*.

f ==>   forwards
b <==   backwards
fb <=>   forwards / backwards
bf >=<   backwards / forwards

Note: The *Loop* setting does not affect the direction in which the sequence runs.

Arp parameters: main panel

Half of the Arpeggiator view is taken up by 16 columns of note parameters:

It might look daunting at first, but like e.g. an audio mixer, once you have understood a single channel strip you are most of the way towards understanding the "whole shebang".

First, the two switches at the top, then the 16 rows of note parameters...

Control Steps

The number of steps used for the arpeggio. Tip: You don't always need to use a lot of steps. For instance, 3 steps are enough to create a 15-note sequence (or 24 in *fb* or *bf Loop* mode) if you set *Octaves* to 2 and play a 5-note chord.

Glide on Legato

When the Slide switch is on, any Glide set in the global panel will only be applied to connected notes (see Gate below).

Step

Sets which note in the buffer is played at this step.

▶	*next:*	play the next note
❚❚	*same:*	repeat the same note
◀❙	*first:*	play the first note (see Arp Order on the previous page)
❙▶	*last:*	play the most recent note (see Arp Order on the previous page)

Tip: for typical monophonic arpeggios, set all steps to *last*!

Length

Step lengths are defined as multiples of the *Arp Sync* value:

♪	1 x
♪	2 x
♪	3 x
♩	4 x

Gate

As arpeggiators automatically play / release notes, the gate times need to be defined:

0, 1 ,2, 3, 4   from very short to almost the length of *ArpSync*
5 (legato)   connected to the next step – see also *Glide on Legato* above

The step following a 5 (legato) will not be triggered unless it uses more than one Voice.

Voices

Sets the maximum number of notes that can be played simultaneously, from 0 (mute the step) to a 6 note chord.

Transp.

Pitches may already be jumping around, but in addition to this movement the individual steps can be transposed +/- 12 semitones. Unpredictability is therefore to be expected!

ArpMod

At the bottom of the Arpeggiator panel is a row of bipolar sliders which can be used to modulate anything in step with the arpeggiator. For instance, try setting up an arpeggio and controlling cutoff from the modulation source *ArpModulator*.

The End