Klop Organ
## Maranatha Kerk, Ridderkerk, The Netherlands

The start.
At the end of February 2012, I had the idea to build a virtual Organ for jOrgan from scratch. This means recording, cleaning, removing noise, re-tuning, looping and balancing, putting in a sound font and building the disposition.

Because of my lack of knowledge around sampling ins and outs, I first spent a lot of time on the jOrgan forum as well as other sound related forums. During these investigations I made contact with John Reimer who had already a lot of experience in sampling treatment over many years.

After more than a year, spending a lot of evenings or even days behind our computers, and after numerous emails with interesting discussions, I am very proud to launch a new jOrgan disposition of the Klop organ, Maranatha Church, Ridderkerk, The Netherlands.

Location
Ridderkerk is a relative small and old city (dating from about 1250) in the western Netherlands, in the province of South Holland. The municipality has a population of 45,000 and covers an area of 25.10 km^2 of which 1.35 km^2 is covered by water. The city of Ridderkerk is at an average level of 1.2 metres below sea level. The Maranatha kerk is one of the 15 churches in Ridderkerk, owned and in regular use by the Free Reformed Church.
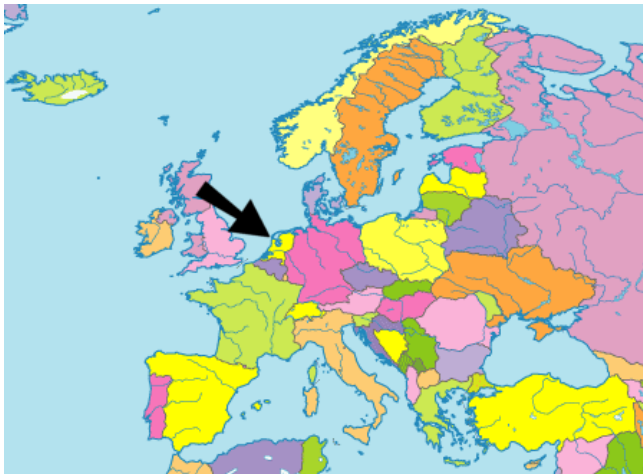
Description of the organ.
The organ in the Maranatha kerk was built in 1996 by Fa. G.C. en H. Klop from Garderen. The organ has only wooden pipes. In total 13 different kinds of wood are used. The organ case is made from oak wood. The pipes in the front are made from cedar. For the reeds three different types of wood are used. Not everything is made from wood. Reeds have also brass parts, and the tuning springs are made from silver.

Specifications

Wind pressure Pedal:	72 mmWk	Organ mass total:	Around 1,350 kg
Wind pressure HW & BW:	65 mmWk	Keyboard range:	C - f''' (36-89)
Pipes total amount:	1428	Pedal range:	C - f' (36-65)
Longest pipe:	2.40 meter	Tuning:	Kirnberger III, A4=440 Hz
Shortest pipe:	11 millimeter		

Disposition

Hoofdwerk (HW)			Pedaal (PD)			Borstwerk (BW)			Speelhulpen
1	Prestant 1)	8'	11	Subbas	16'	17	Holtpijp	8'	Koppel HW-BW
2	Bourdon 2)	16'	12	Bourdon 5)	8'	18	Gamba	8'	Koppel PD-HW
3	Octaaf	4'	13	Prestant	8'	19	Roerfluit	4'	Koppel PD-BW
4	Roerfluit	8'	14	Octaaf 6)	4'	20	Prestant	4'	
5	Quint	3'	15	Fagot	16'	21	Nasard	2 2/3'	
6	Spitsfluit	4'	16	Trompet 7)	8'	22	Terts	1 3/5'	
7	Octaaf 3)	2'				23	Gemshoorn	2'	
8	Cornet	V				24	Sifflet	1'	
9	Mixtuur	III-IV				25	Dulciaan	8'	
10	Trompet	8'				26	Tremulant		

1) Doubled pipes from f

2) From G

3) From c1

4) From c; from C-B transmission holpijp

5) Continuation of 11 through double slider

6) Continuation of 13 through double slider

7) Continuation of 15 through double slider

Stichting Oud Ridderkerk   2920.019.007
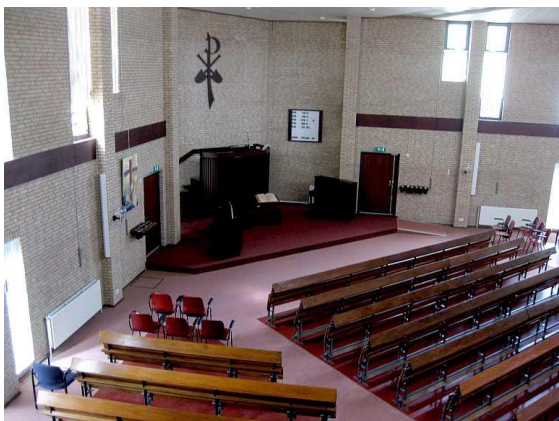
Sampling

Recording of the samples was done during the late evenings. Three evenings were enough to get all the sound needed on my computer. I used a Samson Meteor USB microphone. This is a 25mm diaphragm condenser microphone with a cardioid pickup pattern. It has a smooth, flat frequency response of 20Hz - 20kHz and is recording at 16-bit, 44.1/48kHz resolution. I know, this is not the top of the range, but is a good choice for a poor boy's first project.

From every octave 6 notes were recorded. C, E, G#, D, F#, A#.
Later we decided to use indeed 6 notes per octave for the 8' ranks and some others (Mixtuur and Cornet), and 3 notes per octave for most other ranks. By doing this way we had spare recordings if needed for most of the ranks. All ranks were recorded.

Every note was pressed for around 6 seconds, with 6 seconds of silence between each note. The church has not a very sparkling acoustics, caused by the wooden floor being partly covered with carpeting. When a note appeared to be irregular or of bad quality, an adjacent note was recorded.

Cleaning of the samples

We started the project by cleaning the selected samples using Audacity with high pass and low pass filtering. The frequency analyser that is included in Audacity was used to determine the parameters of the filtering. The results were acceptable but we were not very satisfied.

After an intensive discussion by email we found an alternative way to clean the samples without losing the chiffs, by using some defined steps in SPEAR software. This program is a sophisticated harmonics analyser with handy selection tools both in time, frequency and other harmonic properties.

More information about this method:
http://home.exetel.com.au/reimerorgans/ART/SAMPLE_CLEANING_USING_SPEAR.pdf

During cleaning, all important parameters were noted in a spread sheet, such as the amplification needed to achieve a nominal sample level of -3 dB, and also the frequency of the fundamental. Some use of this information was made in the later processing.

Looping of the samples

Retuning of the samples was a fairly simple matter by using the AP Tuner program, along with Audacity's Speed Change function. Looping of most samples was achieved using the Endless WAV program, with any necessary fine adjustments being made using Viena. Compound stops such as the Mixtuur and the Cornet presented a particular challenge, and a "patch" method was employed to produce genuine looping points. This involved using Audacity to copy an early section of each waveform and crossfading it with the original at a later point.

Building the soundfont

Viena was used to build the soundfont, using one of John Reimer's Earlwood Organ sound fonts as the basis, but replacing all its presets with new ones.

Building the disposition

To be honest, the disposition is not totally original. I started with an example disposition that comes with the jOrgan program. Things that are not needed were removed and other functions were added. The functions are closely based on existing dispositions from other disposition producers. I think they can easily recognize some parts from their own creations.

The goal was to build a disposition that is as close as possible to the original organ. I made my own pictures from the stops and wood of the organ in order to produce a skin that looks like the real thing. Some extra functions were added, such as a Sequencer, Transposer, Pitch and Temperament

All pictures were edited in Paintshop-Pro before putting it into the skin file. For adding and editing elements I also had to make changes in the xml file. For this I used the simple xls editor FirstObject.

Testing the disposition
Here the exciting part arrived. How are the different ranks sounding, is the chiff for every note O.K., is the volume for each key in balance, is the sound close to the original sound? Every note was played separately, and irregularities on different aspects were noted. Appropriate actions were discussed to correct this. In most cases it had to do with the cleaning of the note or too prominent a chiff at the beginning of the sample. Sometimes we decided to take an alternative note close to the original one to overcome bad recordings that were impossible to correct. In addition to the sound aspects, the technical functioning of all disposition elements was tested.

The result
Together with this document you can find the files belonging to the KLOP Virtual Organ. They consist of the disposition file, sound font file, skin file, a couple of midi files, and a Creative Commons license. The first version of this organ was made in jOrgan 3.20.

Generally we are quite satisfied with the result up to now. The sound comes close to the original "live" organ. The individual notes have a good quality, good sound and noise level. The balance in the sound font is good and a full spread across the audio range left to right has been incorporated, similar in some ways to C and C# chests.

Definitely there are still irregularities that we have overlooked. Please feel free to contact and let us know. Together with your remarks we shall be able to improve this disposition in the future.

Many thanks to John Reimer for his significant part in this project. And his patience while answering the countless emails with questions. I appreciated our excellent cooperation we have enjoyed in the last two years!

RIDDERKERK, AUGUST 3, 2013
Dries Nelemans
d.nelemansATgmail.com