moodunits user guide

Introduction

Many thanks for purchasing moodunits and I hope you find them enjoyable and inspiring. -Rob.

Audio Units (AU) are a system-level plug-in architecture provided by Core Audio in Apple's macOS and iOS operating systems. Audio Units are a set of application programming interface (API) services provided by the operating system to generate, process, receive, or otherwise manipulate streams of audio in near-real-time with minimal latency [**Wikipedia**]

In other words, think of Audio Units (referred to as AUs) as building-blocks for your music projects. An instrument AU could be a full-featured synthesiser emulation or a modelled classic drum machine. An effect AU could be a reverb, delay, or even a guitar amplifier emulation.

In the iOS music making world, Apple are encouraging music app developers to embrace AU (specifically AUv3) technology. In many cases this has resulted in functionally rich instrument apps originally designed to run in standalone mode being re-worked to be made AUv3 compatible. So essentially the same app (pretty much) running in an AU host such as GarageBand or AUM.

In contrast, with moodunits, I wanted to design small and easy to use components that are only intended to exist in the AU world:

Please note: moodunits have been designed as a set of instrument and effect Audio Units. You need to load moodunits into any AUv3 compatible host application running on iPad or iPhone, such as GarageBand (shown above) or AUM.

I also wanted the moodunits user interfaces to be simple and consistent across both iPhone and iPad. In fact I hope that I've made moodunits so intuitive, you shouldn't even need to read this user guide! Feel free to skip to my "holiday snaps" in the final section instead.

Alternatively, please read on for a quick overview of each moodunit and its parameters.

MU Waverley

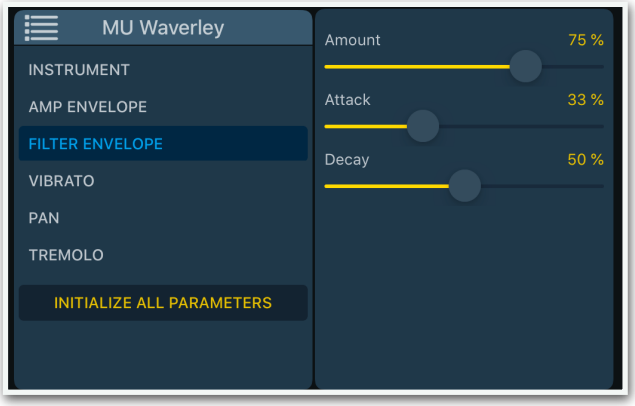
Waverley is the principal instrument in the moodunits collection. It's sample-based, but it isn't a fully-fledged sampling app that allows you to load and edit your own samples. There are already great apps out there that allow you to do that.

Waverley in moodunits is pre-loaded with 30 factory sounds, that can be tweaked to taste via parameters that will hopefully be familiar to most of you. However, don't worry if some parameter names look technical or scary - just experiment! You can't really "break" Waverley or make "bad" sounds with it. An additional 50 factory sounds are available as a free download from the MU Store.

Probably the most popular type of sounds used in iOS music making come from analog synthesisers. Sometimes these sounds are generated by modelling but in Waverley's case, they come from samples of real analog gear. On the one hand, it's really easy to mathematically generate a perfect saw wave, but sometimes the problem is that it sounds… perfect. Analog synthesisers tend to produce less than perfect waveforms, and it's generally agreed that's a big part of what makes them sound "good".

By using samples, Waverley instruments capture some of the "magic" of the real gear, without having to use CPU-intensive modelling techniques. This means you can run more instances of Waverley in your host as not only is Waverley light on CPU, it's very efficient with memory too. As well as basic analog sounds such as saw and square wave, Waverley also has sounds with effects already applied using top-end boutique signal processors, so you might be able to find a big pad sound in Waverley that you can use in a project, without having to run a bigger / more demanding instrument going through a bunch of other effects AUs.

Another usage scenario for Waverley is if you're just sketching out an idea, perhaps on a less-capable device like your iPhone while you're on the move. Maybe the instrument you really want to use only runs on iPad, but there's a Waverley sound that gets you pretty close and you don't run the risk of getting distracted with dozens of parameters or a complex UI. So let's take a closer look at the UI in general, which applies to all moodunits.



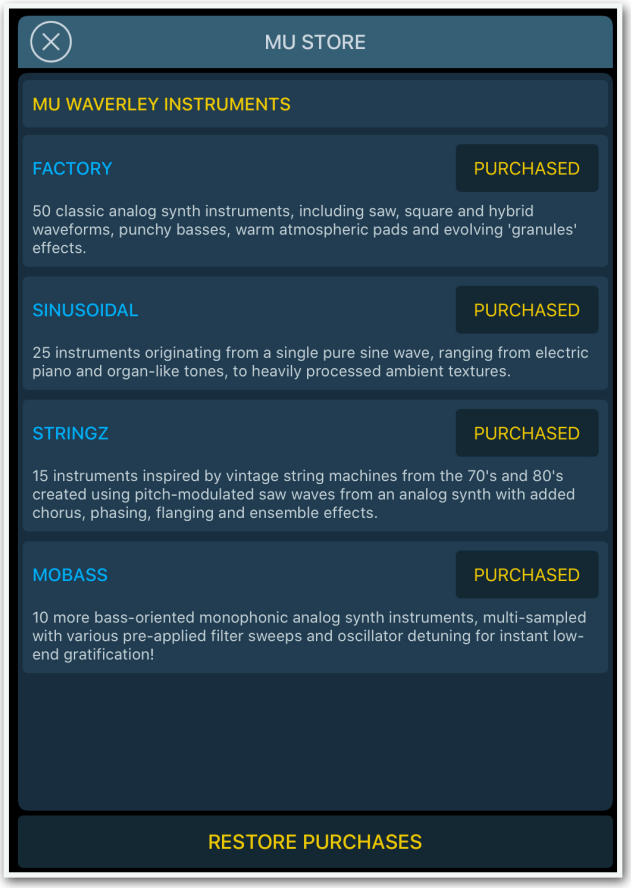
This is the default Waverley view seen here running in GarageBand on iPhone. On iPad, if the host window is large enough, a larger view is displayed showing all parameters. The left pane defaults to a categories selector, in this case, the filter envelope. The right pane shows the parameters and their values for that category. That's it basically! Unselecting a category will expand the right hand view to show a table view of all parameters.

For each factory preset, the parameters have settings that try and showcase that particular sound. You can either tweak these to your tastes and save them as user presets, or you can tap the initialize all parameters button to "start from scratch". Please note that user preset management is specific to the AU host you're using.

MU Store

But Waverley isn't just about analog gear. You can expand your musical palette via purchases and downloads from the MU Store as In-App purchases. The MU Store includes range of conventional, as well as "impossible" instruments that will hopefully inspire you during your music creation process.

The MU Store is accessible from the main moodunits app. Here's the store UI on an iPad. Please note the libraries listed and purchase / download status will vary from what you see here.



To use the store, you need to be connected to the Internet (ideally using Wi-Fi) and have In-App Purchases enabled for your Apple ID.

If you need to restore your purchases, after a clean / re-install for example, you can initiate that process via the Restore Purchases button.

After you have purchased a set of instruments, you also need to download the additional content before you can use the instruments. The button will show "Download" once the instruments have been purchased.

After downloading, you're all good to go, and the next time you start up a Waverley instance, the additional instruments should appear in the instruments browser in the Waverley UI.

When new instruments are made available in the MU Store, you also need to update the moodunits app, to see them.

QUICK GUIDE FOR DOWNLOADING NEW INSTRUMENTS

Here is a step by step guide for purchasing and downloading new instruments:

1. Launch the App Store app and search for “moodunits”
2. If you haven’t already, download the latest version of moodunits (version 1.3.1 or higher)
3. Quit the App Store app
4. If you have an AU host running (such as AUM or GarageBand) with instances of MU Waverley, please either close the host entirely, or remove the instances of Waverley - whichever is easiest.
5. Launch the moodunits app
6. The initial screen should have an MU STORE button (tap it)
7. You are now in the MU STORE and should see a list of new instruments and features
8. You can purchase and download new instruments from here
9. Once purchased, you can download new instruments at any time, for example, when you have a faster internet connection
10. When an instrument is showing as “PURCHASED” you can now use it in an Waverley instance in your AU host of choice. You can also shut down the main moodunits app.

TROUBLESHOOTING

If you receive errors from the App Store relating to payment, please check you’re using the correct Apple ID and you’re using the same ID that you originally purchased new instruments in the case of restoring purchases.

The other potential problem area is with downloads. If you receive errors during the download process and / or messages about not being able to copy files, it’s likely that there is an issue with the download cache. **In most cases, simply re-launching the moodunits app helps**. Alternatively power-cycling the device / switching it off and on again also seems to clear the cache problem and you can try the download again. If all else fails, deleting the app and starting over again usually works.

Another thing to try is only attempt one download at a time if you have several purchases. This also seems to reduce the chance of errors. Please note that currently, you can only have five simultaneous downloads.

Please accept my sincere apologies if you do have problems with downloads. Hopefully things will get better and I will continue to try and improve the process.

When you first load a Waverley instance into an AU host, the app does some file housekeeping - this is a one-off operation, but this is why it’s best not to have a Waverley instance active when you purchase new instruments. If you don’t see your new instruments in Waverley, this is probably why. Simply close all Waverley instances, then re-open one and you should see your new instrument(s).

MU Presets

All moodunit presets can be accessed via the host (check your host documentation) or from within the moodunit UI itself, by tapping the list button in the top left view.

Here we can see one of the presets and their parameters for the vibrato and pan categories. Note the right hand view is in “show all” mode and is a scrollable table view.

Note that for hosts that allow the UI of Audio Units to be re-sized, such as AUM, moodunits will switch to a double or single table view if the window is not wide enough as shown here with the effects on the left hand side of the screen:

MU Waverley parameters

INSTRUMENT

- **Name**: selects the name of the sample instrument to use as the basis of your sound. Waverley comes with 30 different analog synth sounds as standard. You can "scroll" through the sounds using the next and previous buttons.
- **Tone**: sets the overall tone of the instrument using a low-pass filter. Please note this isn't designed to be a "performance" parameter that you tweak - it's more intended as a way of setting your foundation sound. For classic filters sweeps, we have a dedicated filter moodunit filter for that!

AMP ENVELOPE

- **Attack**: controls the rise time of the amplitude envelope. Set to minimum for a quick, percussive attack, or set to maximum for a long evolving swell.
- **Decay**: controls the time it takes for the sound to fade away when you release a key.

Maybe you're wondering why Waverley doesn't have a traditional ADSR envelope. This is because Waverley is based on real sounds that have a fixed decay and sustain portion. It's also slightly confusing, but simplified envelopes like this tend to use decay as the term for the R portion of an ADSR envelope. Another way of thinking about this is attack = rise, decay = fall.

FILTER ENVELOPE

- **Amount**: controls the strength of the filter envelope effect. A filter envelope is an alternative way of adding dynamic expression over time to the sound. For example, it allows a sound to become increasingly brighter over time, then once at maximum, less bright as the sound decays. To get the desired effect, please note that you may have to tweak the amp envelope and filter envelope parameters so they play nice together.
- **Attack**: controls the rise time of the filter envelope, i.e. how long it takes to reach the maximum setting as determined by the instrument tone control and filter envelope amounts.
- **Decay**: controls the fall time of the filter envelope, down to a level determined by the filter amount.

The filter envelope is really much easier to understand when you hear it rather than the way I've described it above! Take a look at the Saw 1 preset (first in the list) and see how the amp and filter envelopes are set. Listen to how the tone gets brighter quite quickly, but then takes a long time to become less bright. This is a classic "brass" type synth sound where I guess we try and emulate the poor trumpet player running out of breath towards the end of a long sustained note!

VIBRATO

- **Rate**: this is the rate of the vibrato in Hertz (cycles per second). Setting a slow rate can be really effective for pad type sounds where you want a slow, almost imperceptible drift. Many of the FX presets use this effect.
- **Amount**: this is the amount, width or depth of the vibrato effect measured in cents (100th of a semitone). The amount is also assigned to the modulation controller.

TUNING

- **Transpose**: transposes instrument up or down by an octave in semitone increments.
- **Fine**: fine tunes instrument +/- 50 cents (100 cents = 1 semitone)
- **Drift Time**: sets the time to vary the tuning according to Drift Amount range.
- **Drift Amount**: sets the tuning range (up to +/- 25 cents) of the drift (zero is no drift).

TREMOLO

- **Rate**: sets the frequency of the tremolo amplitude modulation in Hertz. You can also tap the button twice to set this value.
- **Depth**: sets the depth or amount of the tremolo effect from a subtle pulse to a fairly intense throb. Zero depth effectively means the tremolo effect is off.

Please note the LFO timing for pan and tremolo isn't super accurate so probably isn't ideal for tempo-synced effects. These effects are better suited for adding a bit of interest and movement to your basic sounds. Have a listen to the FX factory presets to hear auto-pan and tremolo in use.

PAN

- **L / R**: sets the instrument pan position, left to right. Double-tap the indicator to set to centre.
- **LFO Time**: sets the frequency of a "low frequency oscillator" in seconds for an auto-pan type effect. You can also tap the tempo button twice to set the time.
- **LFO Depth**: sets the amount the pan is changed by the LFO. 100% will result in a maximum pan from hard left to hard right with the pan control in the centre position. Zero depth effectively means the auto-pan effect is off.

WAVERLEY PRESETS

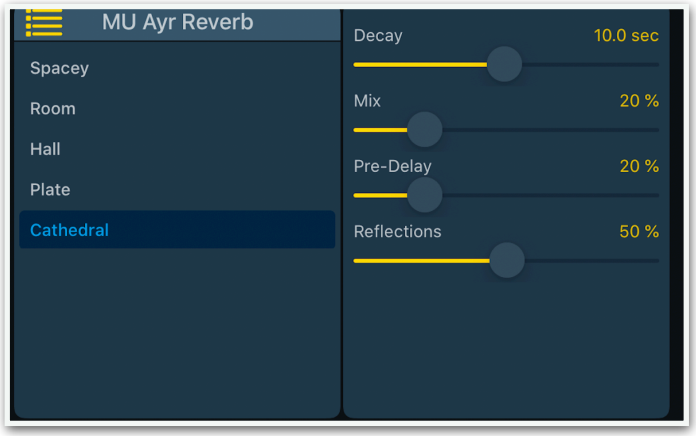
The moodunits app comes with Factory Lite sounds pre-installed which are based on samples from real analog gear. The additional Waverley factory sounds (MU Store free download) has 50 basic instrument sounds and a corresponding factory preset for each of those sounds. If you find a preset that's close to the sound you want to use in your project, but it's not quite "right", you may be able to get there by tweaking the parameters and saving it as a user preset. Also, your AU host should "state save" and changes you make.

Additional sounds can be purchased and downloaded from the MU Store accessible from the main moodunits app.

MU Effects

There are also some effects included with moodunits, and in keeping with the overall aim of keeping things simple, they are unlikely to ever replace your all-singing all dancing lush sounding delays or reverbs. However, if you're struggling with CPU or performance constraints, the moodunits effects might get you there. And of course there are very few parameters to worry about. Let's take a look at each effect in turn and their parameters. Check with your host user guide for details on adding effects to your signal chain.

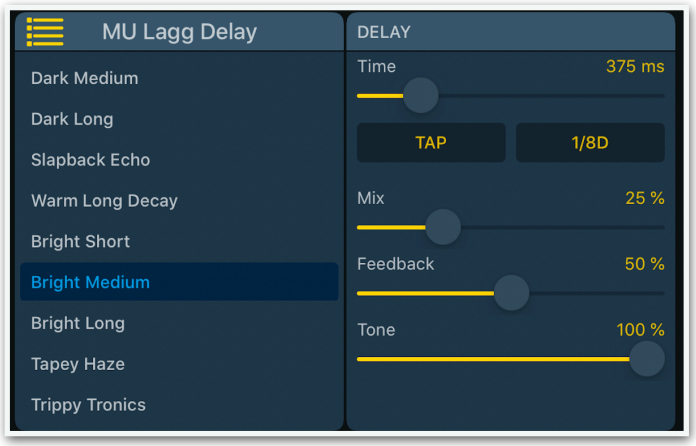
MU AYR REVERB



The Ayr reverb is a small but surprisingly flexible reverb unit that can emulate a small room or a gigantic ambient space with up to 20 seconds of decay time.

The pre-delay and reflections parameters change the character of the reverb, from direct and immediate, to diffuse and complex.

MU LAGG DELAY

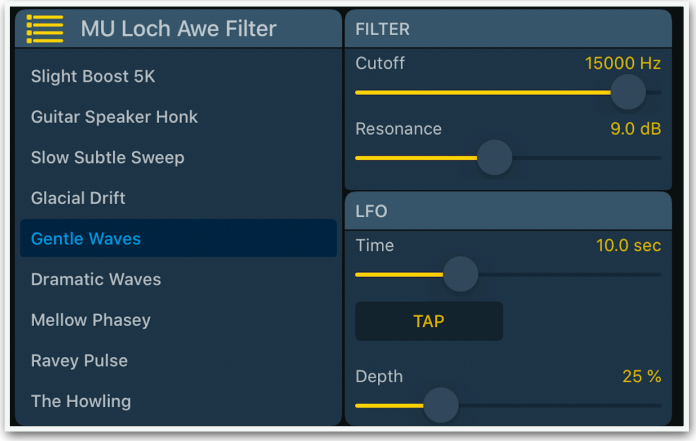


The Lagg delay is a simple, single delay line with a maximum delay time of 2000 ms.

You can set the delay time by tapping the tap button, or cycle through musical note divisions with the sync to host button on the right (showing a dotted 8th note here)

Adjust the tone control for darker repeats.

MU LOCH AWE FILTER

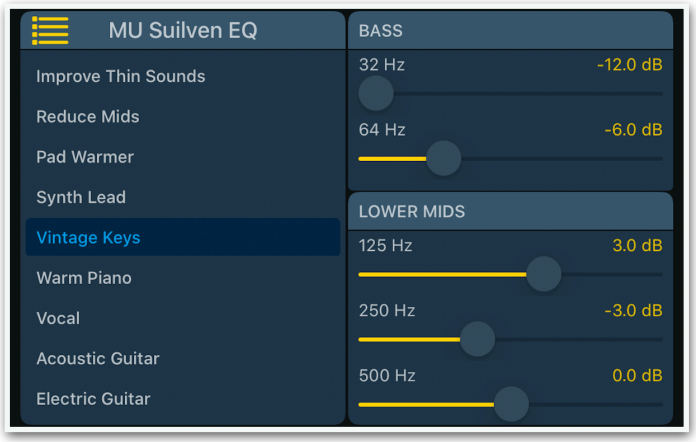


The Loch Awe filter is a classic low pass filter with a variable cutoff between 20Hz and 20KHz and a resonant peak boost of up to 20dB.

For classic automated sweep sounds, Loch Awe also has an LFO (0.5-30 secs) with variable depth to create those dramatic effects we all know and love so well!

Please note, timing is not super accurate, but random is sometimes good.

MU SUILVEN EQ

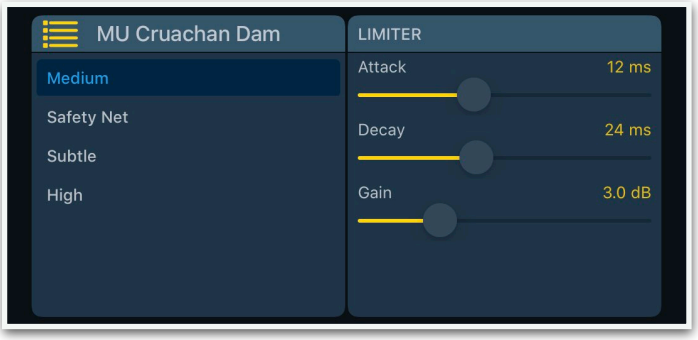


The Suilven EQ is a 10 band graphic equaliser covering useful bands split into bass, lower mids, upper mids and treble.

Each band can be cut or boosted by 12dB.

Top tip: the default preset “electronic” is borrowed from touchscaper and works especially well with synthesiser type sounds, especially those in Waverley. I tend to put Suilven on the end of the effects chain for almost everything!

MU CRUACHAN DAM LIMITER



The Cruachan Dam limiter is a simple peak limiter that allows you to create a “mastered” loudness effect, or simply catch high transients with the “safety net” preset. Optimum attack and decay times depend on the nature of the signal being processed, but the defaults are good general-purpose settings.

MU SCHILTRON DISTORTION

The Schiltron distortion could be your go-to moodunit for sonic mayhem! The formidable Schiltron also comes armed with a decimator, ring modulator and delay.

The clipping parameters allow you to create quite varied types of distortion by changing the balance between the linear and polynomial (squared and cubic) components.

Decimation does what it says on the tin! Increasing the rounding parameter increases the harshness of the effect.

Ring modulation is an unusual “sci-fi” type effect that generates multiple frequencies by mixing two other frequencies.

The delay feeds back into the distortion effect, allowing saturated repeats.

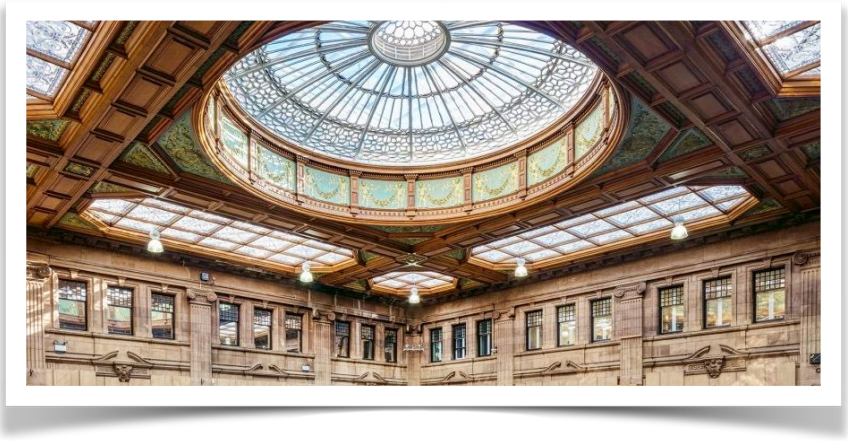
Please note! The Schiltron is capable of extreme high gain sounds and volume levels. Please watch your channel gain settings and look after your ears. As an added precaution, you could add the limiter ***after*** the distortion in your signal chain and select the “safety net” preset. This should catch anything over 0dB.

About those names…

I spent a significant part of my childhood in Scotland and decided to make it my home in 2016. As moodunits were “made in Scotland”, I thought it would be fitting to give each moodunit a name inspired by a place in Scotland I have visited or would like to visit someday.

WAVERLEY

Edinburgh Waverley railway station is the principal station serving Edinburgh, Scotland. It is the second busiest station in Scotland, after Glasgow Central [**Wikipedia**]



As a resident of Edinburgh, many an inspiring journey has started from this train station. Waverley is the principal instrument in the moodunits collection and I hope it helps to take you on inspiring musical journeys.

AYR REVERB

Ayrshire is a historic county and registration county in south-west Scotland, located on the shores of the Firth of Clyde [**Wikipedia**]

Childhood holidays were mostly spent on the West coast of Scotland. During the one weekend in July we call “summer” in Scotland, the skies can be amazing. I hope the Ayr reverb helps you sail off into the sunset!

LAGG DELAY

Lagg is a hamlet on the southern coast of the Isle of Arran in Scotland made up of a few houses and a hotel [**Wikipedia**]

During a walking holiday around Arran we stayed in Lagg. Next door to the hotel is a cycling-themed cafe where I was served this splendid cappuccino! The tartan “stairway to heaven” beckons you up, post night-cap, from the hotel lounge to your room!

Please excuse the terrible lag / delay wordplay.

LOCH AWE FILTER

Loch Awe is a large body of freshwater in Argyll and Bute, Scottish Highlands. It has also given its name to a village on its banks, variously known as Loch Awe, or Lochawe. There are islands within the loch such as Innis Chonnell and Inishail [**Wikipedia**]

The Scottish Highlands has almost fairytale like scenery in abundance and Loch Awe is no exception. It’s a place I visited while very young, so I hope to return one day soon.

More terrible wordplay here I’m afraid. I though Loch Awe sounded a bit like a wah-wah filter opening and closing.

SUILVEN EQ

Suilven is a mountain in Scotland. Lying in a remote area in the west of Sutherland, it rises from a wilderness landscape of moorland, bogs, and lochans known as Inverpolly National Nature Reserve. Suilven forms a steep-sided ridge some 2 km in length [**Wikipedia**]

I've never visited Suilven, but hope to one day and walk as much of the ridge as I can. It struck me that the mountain's distinctive profile reminded me somewhat of a graphic equaliser and I hope the Suilven EQ helps you take your mixes to new heights!

CRUACHAN DAM LIMITER

The Cruachan Power Station (also known as The Cruachan Dam) is a hydroelectric power station in Argyll and Bute, Scotland. The dam has a height difference of almost 400 metres and is one of only four pumped storage power stations in the UK and is capable of providing a "black start" capability to the National Grid. [**Wikipedia**]

SCHILTRON DISTORTION

A schiltron is a compact body of troops forming a battle array, shield wall or phalanx. The term is most often associated with Scottish pike formations during the Wars of Scottish Independence in the late 13th and early 14th centuries [**Wikipedia**]