

Re: compressed air to store wind energy

Source: <http://sci.tech-archive.net/Archive/sci.energy/2005-03/0451.html>

From: Don Kelly (*dhky_at_peeshaw.ca*)

Date: 03/19/05

Date: Sat, 19 Mar 2005 05:10:24 GMT

<analyst41@hotmail.com> wrote in message
news:1111061689.582352.63120@o13g2000cwo.googlegroups.com...
>
> *Don Kelly wrote:*
>> <analyst41@hotmail.com> wrote in message
>> news:1111020255.806234.183730@o13g2000cwo.googlegroups.com...
>>>
>>> *bigcat@meeow.co.uk wrote:*
>>>> *analyst41@hotmail.com wrote:*
>>>>> *bigcat@meeow.co.uk wrote:*
>>>>>> *Bruce Sinclair wrote:*
>>>>>>> *In article*
>>>>>>> <1110934909.812320.33720@l41g2000cwc.googlegroups.com>,
>>>>>>> *analyst41@hotmail.com wrote:*
>>>>>>>> *bigcat@meeow.co.uk wrote:*
>>>>>>>>> *Brian Elmegaard wrote:*
>>>>>
>>>>>> *If your negativity is based on expertise, I can't challenge*
> *that.*
>>>>>> *Please feel free to provide relevant facts and figures to prove*
> *its*
>>>> *a*
>>>>> *"hopeless idea".*
>>>>>
>>>>> *Have you run the numbers yet or not?*
>>>>
>>>> *Have you ?*
>>>>
>>>> *I am not making a positive assertion and am only enquiring if the*
>>>> *concept is viable. I do not claim to be an expert on the economics*
> *of*
>>>> *energy storage . You are making a negative assertion regarding*
> *CAES –*
>>> *the burden of proof is on you.*
>>>>
>>>> *If you check out the website I provided, you would find*
>>>>

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> > > http://www.espcinc.com/CAES_AI_Novel.htm
> > >
> > > start quote:
> > >
> > > *This concept, due to its lowest cost, is the best alternative for
> > > improvement of economics of wind power plants and other renewable
> > > energy sources by storing the renewable energy (whenever it is
> > > produced) and by releasing it in a controlled fashion as needed
> during
> > > peak hours.*
> > >
> > > end quote.
> > -----
> > *The concept is not new. Nor has your reference anything to do with
> wind
> > power. It has all to do with separating the compressor from the gas
> turbine,
> > allowing a larger generator and electrical output with the same
> turbine as a
> > source.*
> > *The "economics" involved are not those with wind as a source. They
> are the
> > economics involved with the difference in electricity costs at peak
> and off
> > peak periods and that a gas turbine will require about 30% of the
> input
> > energy to compress air for combustion— the scheme simply uses off
> peak
> > energy which is far cheaper to do this and allowing more output bang
> for the
> > buck at the gas turbine.*
> >
> > *The proposal to use wind energy has nothing to do with this.
> > Direct operation of compressors by wind turbines is unlikely to be
> feasible
> > or economic as good operating speeds for compressors and for wind
> turbines
> > are not really compatible. I doubt if anyone has really crunched the
> numbers
> > or looked seriously at design problems.*
> > *It is probably more feasible and ultimately more efficient and
> cheaper to
> > use wind energy to produce electricity as done now, rather than a
> dedicated
> > wind unit –compressor facility. Dump the wind energy into the
> electrical
> > grid when it is available. Draw energy from the grid at off peak
> hours to
> > compress air. If the wind is blowing, it will supply some of this
> energy, if
> > not, some other source is needed.*

Re: compressed air to store wind energy

> > --

> > *Don Kelly*

> > *dhky@peeshaw.ca*

> > *remove the urine to answer*

> >

> > >

>

>

> *OK – what we need is a global optimization of the whole grid. On the*

> *one side we have the demand, which can be somewhat managed through*

> *time-of-day pricing – but can be taken as a given as a first*

> *approximation.*

>

> *Currently on the supply side we have coal, oil, gas etc. which are*

> *highly concentrated sources, supplemented with some storage to match*

> *supply to demand. The world needs to plan for a future in which the*

> *supply side has to be evolved towards less concentrated sources –*

> *wind, wavepower, solar etc. That would mean that the stored-energy*

> *component of supply would have to dramatically increase – whether it*

> *happens at the site of the wind turbine or*

> *at a centralized location using the electricity from the wind is a*

> *matter of economics.*

>

> *I understand that Denmark's grid currently has 20 pct windpower and*

> *some are calling for 50 pct by 2025. Surely they would need large*

> *scale energy storage to achieve this – and as far as I can tell CAES is*

> *one of the viable alternatives.*

There are such things as optimal load dispatch and unit scheduling as well as long term planning methods for generation planning for the future. These have been around for quite a while– some for 60years and some for 40 years. The generation planning for the future has pretty well gone because of deregulation –in favour of quick buck now rather than what is best in the long term. Certainly use of renewables should grow, but any mix of generation should consider all sources available in the region – and their costs in terms of capital cost, operating cost and ecological cost. Is this being doen at present– in some places it is –in others not. Storage has its place but true large scale energy storage is still in terms of piles or tanks of unburnt fuel or water behind a dam.

As for Denmark – certainly they can go to 50% windpower, as long as they are tied to the German grid which will back them up when wind fails to meet the load.

The CAES scheme is not energy storage. It is high pressure combustion air storage and simply means that the compressor part of a gas turbine cycle can be run separately from the turbine. If wind energy can provide this compression when it is needed– fine but it is better to think of the wind simply displacing another source–*when* it can do so. It has to be taken into account as part of a system, not on its own.

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