



Wind turbines without wind

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France has taken a bold step into the future with bladeless wind turbines, harnessing wind energy in a whisper instead of a roar. This innovation offers a potential answer to the aesthetic, ...

Recent advancements developed by researchers at the University of Glasgow have reimagined BWT technology, emphasizing silent operation and enhanced efficiency. This article ...

Unlike their bladed counterparts, bladeless wind turbines don't have the familiar spinning rotors. Instead, they have a tall, thin profile and oscillate in response to wind patterns. Bladeless wind ...

Once a turbine is going, it can take hours to slow back down, and that could explain why they are turning without wind. They could also be drawing power from the grid to rotate the blades during cold periods ...

There is a 2,400 W garden-sized bladeless turbine that is so unconventional that it might just work when the weather won't. It will revolutionize wind power.

Because they can generate energy with winds as low as 7 mph, they can be installed in cities where traditional wind turbines are impractical. They also produce less than 20 hertz of noise, a ...

This is the bladeless wind turbine, or BWT, a promising new frontier in wind energy innovation. And thanks to a breakthrough study from engineers at the University of Glasgow, its ...

How Do Wind Turbines Work Without Wind? How Fast Do Wind Turbines Spin? Have you ever been driving on a windless day and seen the windmills turning? How can that be? The fact is, if they are turning, there must have been some wind blowing. It could be just slightly windy; it only takes a slight breeze of to turn a turbine. Once a turbine is going, it can take hours to slow back down, and that could explain why they are... See more on energywarden Reviews: 9 Published: Nov 9, 2019 #b_results li.b_ans.b_mop.b_mopb, #b_results li.b_ans.b_nonfirsttopb {border-radius: 6px; box-shadow: 0 0 1px rgba(0,0,0,.05); margin-top: 12px; margin-bottom: 10px; padding: 15px 19px 10px} #b_results

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20px;gap:10px;background:#fff}@charset "UTF-8";#b_results
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.mc_vtvc_htb,#b_results .b_ans.b_vidAns #serpvidans.vsacf .vrhc,#b_results .b_ans.b_vidAns
#serpvidans.vsacf .vrhcp,#b_results .b_ans.b_vidAns #serpvidans.vsacf .vrhtc,#b_results .b_ans.b_vidAns
#serpvidans.vsacf .vrhtpc{border-radius:var(--mai-smtc-corner-list-card-default)}#b_results .b_ans.b_vidAns
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.mc_vtvc_meta_channel,#b_results .b_ans.b_vidAns #serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta
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idans.vsacf .expctn .expbody,#serpvidans.vsacf
.mmlist{display:flex;flex-direction:column;gap:var(--smtc-gap-between-content-medium)}#serpvidans.vsacf
.cico{height:auto}#serpvidans.vsacf .mc_vtvc_ban_lo{top:0;right:auto}#serpvidans.vsacf .mc_cwvc .mc_vtvc
.mc_vtvc_meta,#serpvidans.vsacf .mmlist .mc_vtvc
.mc_vtvc_meta{height:auto;padding:var(--smtc-gap-between-content-xx-small) 0
var(--smtc-gap-between-content-xx-small)
var(--smtc-gap-between-content-medium);display:flex;flex-direction:column;justify-content:space-between}#
serpvidans.vsacf .mc_cwvc .mc_vtvc .mc_vtvc_meta .mc_vtvc_title,#serpvidans.vsacf .mmlist .mc_vtvc
.mc_vtvc_meta
.mc_vtvc_title{color:var(--smtc-ctrl-link-foreground-brand-rest);font:var(--bing-smtc-text-global-body2);heig
ht:auto;display:-webkit-box;-webkit-line-clamp:2;-webkit-box-orient:vertical}#serpvidans.vsacf .mc_cwvc
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.mc_vtvc_meta_block,#serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block_area,#serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block{display:flex;flex-direction:column;gap:var(--smtc-padding-ctrl-text-side)}#serpvidans.
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.mc_cwvc .mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_block .mc_vtvc_meta_row,#serpvidans.vsacf .mmlist
.mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_block_area .mc_vtvc_meta_row,#serpvidans.vsacf .mmlist
.mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_block .mc_vtvc_meta_row
.mc_vtvc_meta_row{color:var(--smtc-foreground-content-neutral-primary);height:var(--mai-smtc-padding-car
d-default);font:var(--bing-smtc-text-global-caption1)}#serpvidans.vsacf .mc_cwvc .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block_area .mc_vtvc_meta_row .mc_vtvc_meta_row_channel::before,#serpvidans.vsacf
.mc_cwvc .mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_block .mc_vtvc_meta_row
.mc_vtvc_meta_row_channel::before,#serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block_area .mc_vtvc_meta_row .mc_vtvc_meta_row_channel::before,#serpvidans.vsacf
.mmlist .mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_block .mc_vtvc_meta_row
.mc_vtvc_meta_row_channel::before{content:" . " }#serpvidans.vsacf .mc_cwvc .mc_vtvc .mc_vtvc_meta
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.mc_vtvc_meta_block_area .mc_vtvc_meta_pubdate,#serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block
.mc_vtvc_meta_pubdate{color:var(--bing-smtc-foreground-content-neutral-tertiary);padding-bottom:0}.vsacf
.mc_cwvc .mc_vtvc_con_rc,.vsacf .mmlist .mc_vtvc_con_rc{display:flex}.vsacf .mc_cwvc .mc_vtvc_con_rc
.mc_vtvc_meta_w,.vsacf .mmlist .mc_vtvc_con_rc .mc_vtvc_meta_w{height:auto}.vsacf
.b_title{padding-left:0}.vsacf .b_title
.mmtitle{font:var(--bing-smtc-text-global-subtitle1-strong);margin-bottom:0}.vsacf .b_title .mmtitle
a::after{content:"";margin:5px 5px 0 0;border-top:2px solid
var(--smtc-foreground-content-neutral-primary);border-right:2px solid
var(--smtc-foreground-content-neutral-primary);background-size:7px
7px;width:7px;height:7px;transform:rotate(45deg);display:inline-block;margin-left:4px}#serpvidans.vsacf
.b_title .mmtitle{margin-bottom:0}#serpvidans.vsacf .b_title .mmtitle
a{color:var(--smtc-foreground-content-neutral-primary)}#serpvidans.vsacf
.mc_cwvc{width:100%;margin-bottom:var(--smtc-gap-between-content-x-small)}#serpvidans.vsacf
.mc_cwvc .mc_vtvc{box-shadow:none}#serpvidans.vsacf .mc_cwvc .mc_vtvc
.mc_vtvc_meta{height:100%;padding:var(--smtc-gap-between-content-x-small) 0
var(--smtc-gap-between-content-x-small)
var(--mai-smtc-padding-card-default);background:var(--bing-smtc-background-ctrl-fade-on-image-stop-0)}#s
erpvidans.vsacf .mc_cwvc .mc_vtvc .mc_vtvc_meta
.mc_vtvc_title{font:var(--bing-smtc-text-global-body1)}#serpvidans.vsacf .cardless.mmlist
.mc_vtvc_con_rc,#serpvidans.vsacf .cardless.mmlist .mc_vtvc_th{height:auto}#serpvidans.vsacf
.vsb_tr_c.va_tt{margin:0}#serpvidans.vsacf .vtbc .mv_vtvc_play,#serpvidans.vsacf .vtbc
.mv_vtvc_play_ext{position:static}#serpvidans.vsacf .va_tt
.mc_vtvc_ban_lo{display:block}#serpvidans.vsacf
.mc_bc{width:auto;border-radius:var(--smtc-ctrl-badge-sm-corner);padding:var(--smtc-padding-ctrl-text-side)
var(--smtc-gap-between-content-xx-small)}#serpvidans.vsacf .rmts .mc_bc
ems{display:none}#serpvidans.vsacf a.vsb_tr_t{color:var(--smtc-foreground-content-neutral-primary)}.vsacf
.va_tt .vsb_tr_chd .mc_vtvc_th_dock.rmoveoverlay{height:36px}.vsacf .va_tt .vsb_tr_chd
.mc_vtvc_th_dock{height:92px;background:linear-gradient(180deg,var(--bing-smtc-background-ctrl-fade-on-i
mage-stop-0) 0%,var(--mai-smtc-background-ctrl-on-image-rest) 100%)}.vsacf .va_tt a.vsb_tr_t{padding:0
0;font:var(--bing-smtc-text-global-body-2-alt-strong)}.vsacf .va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_meta,.vsacf .va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_title{color:var(--mai-smtc-foreground-ctrl-on-image-rest)}.vsacf
span.vcmt_ctt{font:var(--bing-smtc-text-global-caption2);margin:var(--smtc-gap-between-content-xx-small) 0
0;height:16px}#serpvidans.vsacf .vsb_tr_chd .mc_vtvc_tot .mc_vtvc_title
strong{font-size:14px;line-height:20px;display:unset}#serpvidans.vsacf .va_tt .b_sldrp
.slide:not(:first-child){margin-left:var(--smtc-gap-between-content-small)}#serpvidans.vsacf .va_tt
.vsb_tr_chd .mc_vtvc
.mc_vtvc_title{white-space:normal;display:-webkit-box;-webkit-line-clamp:2;-webkit-box-orient:vertical}#se
rpvidans.vsacf .b_module_expansion_control .b_btnContainer
.b_CompactExpansion{background-color:var(--bing-smtc-background-ctrl-neutral-rest);display:flex;justify-co
```

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ntent:center;align-items:center;gap:4px;width:fit-content;height:auto;padding:8px 12px }#serpvidans.vsacf
.b_module_expansion_control .b_btnContainer .b_CompactExpansion
.b_CompactExpansionBtnText{font:var(--bing-smtc-text-global-caption1-strong);color:var(--bing-smtc-foregr
ound-ctrl-neutral-primary-alt-rest)}#serpvidans.vsacf .b_module_expansion_control .b_btnContainer
.b_CompactExpansion .b_arrow{display:flex;margin:0;height:auto}#serpvidans.vsacf
.b_module_expansion_control .b_btnContainer .b_CompactExpansion .b_arrow
path#Shape{fill:var(--bing-smtc-foreground-ctrl-neutral-primary-alt-rest)}#serpvidans.vsacf
.b_module_expansion_control
.b_btnContainer::after{content:"";position:absolute;width:100%;bottom:20px;left:0;height:1px;border-radius:
1px;background:var(--smtc-stroke-ctrl-on-neutral-rest)}#b_results
.b_ans.b_vidAns{box-shadow:none;padding:12px 20px 0}#b_results .b_ans.b_vidAns
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.b_ans.b_vidAns .cardless .salink{margin:0}#b_results .b_ans.b_vidAns .mmlist
.mc_vtvc{margin-top:10px}#b_results .b_ans.b_vidAns .mmlist .mc_vtvc
.mc_vtvc_meta{display:flex;flex-direction:column;justify-content:space-between;margin:0 10px 4px
12px}#b_results .b_ans.b_vidAns .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_channel{color:#111}#b_results .b_ans.b_vidAns .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_row_channel,#b_results .b_ans.b_vidAns .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block_area{color:#666}#b_results .b_ans.b_vidAns .mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block_area{bottom:0;height:unset}.b_dark .vsa.cardless
.mc_vtvc{background-color:unset}.mmtitle>a{display:block}.mc_fh{height:100%;border-radius:6px}.mc_tc_
bs{overflow:hidden}#mc_cwvc_1770329344300 { width:356px; max-width: 100%; } .mc_vtvc
.mc_vtvc_meta { padding: 16px 16px 16px 16px; } .mc_vtvc .mc_vtvc_meta_w { height: 139px; margin-top:
-0px; } .mc_vtvc .mc_vtvc_title { height: 54px; line-height: 18px; margin-bottom: 18px; margin-top: 0px; }
.mc_vtvc .mc_vtvc_meta_block_area { height: 35px; } .mc_vtvc .vtmu, .mc_vtvc .vtpl { bottom: 147px; }
.mc_vtvc_th_dock { height: 139px; } .mc_vtvc_th .cico { height: 200px; }
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rgba(0,0,0,.05);line-height:0;margin:0;position:relative;border-radius:6px;overflow:hidden}.mc_vtvc.noshado
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r:#71777d;display:block;text-decoration:none;width:100%}.mc_vtvc>a:focus::after{outline:2px solid
#00a89d;width:100%;height:100%;content:"";outline-offset:-2px;position:absolute;top:0;left:0}.mc_vtvc_th{ba
ckground-color:#d5d5d5;position:relative}.mc_vtvc_th
.cico{border-radius:0}.mc_vtvc_ban_lo,.mc_vtvc_ban_up{position:absolute;vertical-align:middle}.mc_vtvc_
ban_lo{bottom:0}.mc_vtvc_ban_up{top:0}.mc_vtvc_title{font-weight:normal;margin-bottom:11px;overflow:
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a:hover{text-decoration:underline}.mc_vtvc_src_ico{float:left;margin-right:4px}.mc_vtvc_act{height:16px;m
argin-top:-40px;padding:12px
8px;z-index:1}.mc_vtvc_actc{right:16px;bottom:16px;position:absolute;display:inline-block;z-index:1}.mc_v
tvc_act_sep{border-top:1px solid #d5d5d5;height:40px;margin:0 8px}.mc_vtvc_fh
.mc_vtvc_act_sep,.mc_vtvc_fh .mc_vtvc_act{visibility:hidden}#serpvidans
.b_topTitle{margin-bottom:8px}.mc_vtvc_htc{width:100%;height:100%;position:absolute;top:0;bottom:0;left
```



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```

:0;right:0}.mc_vtvc_htb{ width:100%;height:100%;background:rgba(0,0,0,.7);position:absolute;top:0;bottom:
0;left:0;right:0}.mc_vtvc_ht{ width:100%;padding:0
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ical-align:middle;text-align:center}.mc_vtvc_th_live_b{ background-color:#c80000;color:#fff;display:inline-bl
ock;padding:2px
8px;font:11px/14px
Arial;border-radius:2px;text-transform:uppercase;height:15px;width:26px;position:absolute;left:8px;top:110p
x}.isvctrl
.isv
.mc_vtvc_ban_up{left:0;right:initial}.mc_vtvc_ban_lo,.mc_vtvc_ban_up{right:0}.vt_text.b_lRight
.b_lLeft{margin:0
0
0
1px;height:14px;line-height:14px;padding:2px
8px;background:rgba(0,0,0,.75);border-radius:2px;font-weight:bold}.mc_vthtb{ width:100%;height:100%;bac
kground:rgba(0,0,0,.7);position:absolute;top:0;bottom:0;left:0;right:0;display:table}.mc_vtht{ width:100%;pad
ding:0
16px;line-height:16px;color:#fff;text-decoration:underline;word-break:break-word;box-sizing:border-box;vert
ical-align:middle;text-align:center;display:table-cell}.vt_text.b_lRight
.b_lLeft{margin:0
0
0
1px;height:14px;line-height:14px;padding:2px
8px;background:rgba(0,0,0,.75);border-radius:2px;font-weight:bold}.emptyStyleForDebuggingPurpose{ top:0
}.emptyStyleForDebuggingPurpose{ top:0}.mc_vtvc_center_play{ width:32px;height:32px;background-size:c
ontain;position:absolute;margin:auto;bottom:0;top:0;left:0;right:0;box-shadow:none;border-radius:0}.mc_vtvc
_center_play.rmvbg{ width:32px;height:32px;background-image:none}.mc_vtvc_htb,.mc_vtvc_ht{ display:no
ne}.vt_onhv
.mc_vtvc_htb{ display:table}.vt_onhv
.mc_vtvc_ht{ display:table-cell}.mc_vtvc_center_play{ display:inline-block}.vt_onhv
.mc_vtvc_center_play{ display:none}.mc_vtvc
.vtmu,.mc_vtvc
.vtpl{ bottom:163px}.vsarf
.mc_vtvc
.vtmu,.vsarf
.mc_vtvc
.vtpl{ bottom:122px}.svarh
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.vtmu,.svarh
#mmcar
.mc_vtvc
.vtpl{ bottom:137px}.svarht
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#mmcar
.mc_vtvc
.vtpl{ top:8px;left:8px}.mc_vtvc_center_play{ background-image:url(data:image/svg+xml,%3Csvg%20width
%3D%2232%22%20height%3D%2232%22%20viewBox%3D%220%200%2032%2032%22%20fill%3D%22
none%22%20xmlns%3D%22http%3A%2F%2F%2F2000%2Fsvg%22%3E%0D%0A%20%20%20%20%3Cr
ect%20width%3D%2232%22%20height%3D%2232%22%20rx%3D%2216%22%20fill%3D%22black%22%
20fill-opacity%3D%220.6%22%2F%3E%0D%0A%20%20%20%20%3Cpath%20d%3D%22M14.2354%201
0.1923C13.2355%209.62986%2012%2010.3524%2012%2011.4997V20.5C12%2021.6472%2013.2355%202
2.3698%2014.2354%2021.8073L22.2356%2017.3073C23.2551%2016.7339%2023.2551%2015.2661%2022.
2357%2014.6926L14.2354%2010.1923Z%22%20fill%3D%22white%22%20fill-opacity%3D%220.9%22%2
F%3E%0D%0A%3C%2Fsvg%3E)}.mc_vtvc_meta{ box-sizing:border-box;display:inline-block;line-height:18
px;position:relative;width:100%}.mc_vtvc_meta_block{ bottom:0;position:absolute;width:100%}.mc_vtvc_m
eta_row{ line-height:16px;font-size:11px;height:17px;overflow:hidden;text-overflow:ellipsis;white-space:now
rap}.mc_vtvc_meta_row
a{ display:inline-block}.mc_vtvc_meta_row
a:hover{ text-decoration:underline}.mc_vtvc_meta_block_area{ position:relative}.mc_vtvc_meta_block,.mc_v
tvc_meta_block
a{ color:#444}.b_dark
.mc_vtvc_meta_block{ color:#edebe9}.mc_vtvc_meta_row>:nth-of-type(n+2)::before{ content:"
"}.mc_vtvc_meta_row
.mc_vtvc_meta_row_channel::before{ content:"
"}.mc_vtvc_kmt_title{ line-height:18px;padding-bottom:4px;font-weight:bold;color:#00809d;text-transform:u
ppercase;font-size:11px}.mc_vtvc_kmt,.mc_vtvc_con_rc.onhov
.wkmt

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```
.mc_vtvc_meta_row,.mc_vtvc_con_rc.onhov .wkmt .tbc_tt{display:none}.mc_vtvc_con_rc.onhov .wkmt
.mc_vtvc_title{max-height:18px;margin-bottom:18px;overflow:hidden}.mc_vtvc_con_rc.onhov.mmsts
.mc_vtvc_title{visibility:hidden}.mc_vtvc_con_rc.onhov
.mc_vtvc_kmt{display:block}.mc_vtvc_kmt_content
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0 16px 0 0;color:#444}.mc_vtvc_meta
.mc_vtvc_kmt_title{line-height:18px}.mc_vtvc_title:hover{text-decoration:none}.mc_vtvc_meta_pubdate{co
lor:#444;padding-bottom:3px}.mc_vtvc_meta_channel{color:#444}.mc_vtvc_meta_w,.mc_vplvc_meta_w{po
sition:relative}.mc_vtvc_meta_bg_w,.mc_vplvc_meta_bg_w{height:100%;width:100%;overflow:hidden;posit
ion:absolute;top:0}.mc_vtvc_meta_bg_w .cico,.mc_vplvc_meta_bg_w
.cico{border-radius:0;overflow:visible}.dg_u .mm_vidch_th_c{overflow:visible}.dg_u .mm_vidch_th_bg
img{margin-top:-20px}.emptyStyleForDebuggingPurpose{top:0}.mc_vtvc_meta_w
.mc_vtvc_meta{background:rgba(255,255,255,.75)}.mc_vtvc_meta_bg_w img,.mc_vtvc_meta_bg_w
.mc_vtvc_cb_w{filter:blur(25px);transform:scale(1.2)}body[--video-metadata-channel-color:#3c3c3c]body.b
_dark[--video-metadata-channel-color:unset].vsarf .mc_vtvc_meta_pubdate{color:unset}.vsarf
.mc_vtvc_meta_channel{color:var(--video-metadata-channel-color)}.vsarf .mc_vtvc .mc_vtvc_meta_w
.mc_vtvc_title,.vsarf .mc_vtvc .mc_vtvc_meta_w .mc_vtvc_title strong{font-weight:bold}.vsarf
.mc_vtvc_meta_w .mc_vtvc_meta_row{font-size:13px}.emptyStyleForDebuggingPurpose{top:0}.vsarf
.mc_vtvc_th
.cico{height:132px}.emptyStyleForDebuggingPurpose{top:0}.emptyStyleForDebuggingPurpose{top:0}.empt
yStyleForDebuggingPurpose{top:0}.emptyStyleForDebuggingPurpose{top:0}.emptyStyleForDebuggingPurp
ose{top:0}.emptyStyleForDebuggingPurpose{top:0}.emptyStyleForDebuggingPurpose{top:0}.vtbc
.mv_vtvc_play{display:inline-block;position:absolute;bottom:8px;left:9px;height:8px;width:7px}.vtbc
.mv_vtvc_play_ext{background:url(/rp/Lp38sn_O4jegSK0IHxZVxyp-yKQ.png) -172px
-31px;display:inline-block;height:8px;width:12px;position:absolute;bottom:8px;left:6px}.vtbc
.pivot{height:20px;width:8px;min-width:8px}.vtbc
.mv_vtvc_play{background:url(
MAAADHKvg1AAAIVBMVEX////////////////////9/gMdvAAAACnRSTIMAETNEVWAlmbv
uo4D1oAAAAB9JREFUCB1jmMoABKuaQcSqQhCxKgFGgLhNQIkpQAwA8zkLyQA16F0AAAASUVO
RK5CYII=)}.mc_bc_w{height:18px;padding:8px;text-align:right}.mc_bc{background-color:rgba(0,0,0,.75);p
adding:2px
8px;line-height:14px;color:#fff;display:inline-block;vertical-align:middle;border-radius:2px;font-weight:bold}
.mc_bc_w .pivot{text-align:center;margin-right:1px;height:14px}.vsarr .mmgrid .mc_bc_w
.mc_bc{background-color:rgba(0,0,0,.75);opacity:1}.mmsi{height:16px;width:16px;position:relative;top:5px;
padding-right:var(--smtc-gap-between-content-xx-small)}.mmsi-microsoftnews,.mmsi-msn{top:3px}.vrhdata
{display:none}.vrhc line.nhvpv .pffvi,.vrhc line.nhvpv[data-tps="S"] .pffvt,.vrhc line.nhvpv[data-tps="M"]
.pffvt,.vrhc line.nhvpv[data-tps="L"] .pffvt{display:inline-flex}.vrhc line.nhvpv .vrhct.pffv
.vrhc{display:none}.vrhc line.nhvpv .vrhct.pffv
.player_ol{background:var(--mai-smtc-background-ctrl-on-image-hover);transition:background-color
.5s;display:flex;align-items:center;justify-content:center;padding:var(--smtc-gap-between-content-x-small);ga
p:var(--smtc-gap-between-content-x-small);box-sizing:border-box}.mc_vtvc_th img{transition:all .3s
ease-out}.nhvpv+.mc_vtvc_th
```



Wind turbines without wind

```

img{transform:scale(1.1)}.smtplayerhtml5{height:100%;width:100%;overflow:hidden}.smtplayerhtml5
video{min-height:100%;min-width:100%}.smtplayerhtml5
.videoplaying{background-color:#000}.smtplayerhtml5.hide{display:none}.pffvt{display:none;color:var(--ma
i-smtc-foreground-ctrl-on-image-rest);font:var(--bing-smtc-text-global-subtitle2-strong)}.pffvi{mask:url(/rp/ui
07wU6K7FR_inzG7DRbP1i8fGo.svg)
center
no-repeat;mask-size:12px;background:var(--bing-smtc-background-card-on-image-default);width:20px;height
:20px;flex-shrink:0;align-self:flex-start}[data-tps="L"]
.pffvt{font:var(--bing-smtc-text-global-subtitle2-strong)}[data-tps="L"]
.pffvi{width:22px;height:22px;mask-size:16px}[data-tps="S"]
.pffvt{font-size:0}[data-tps="S"]
.pffvi{width:24px;height:24px;mask-size:24px;align-self:center}.hvpv.h5s
.pffvt{display:inline-flex}.hvpv.h5s
.vrhtc.pffv
.vrhol{display:none}.hvpv.h5s
.vrhtc.pffv
.player_ol{background:var(--mai-smtc-background-ctrl-on-image-hover);transition:background-color
.5s;display:flex;align-items:center;justify-content:center;padding:var(--smtc-gap-between-content-x-small);ga
p:var(--smtc-gap-between-content-x-small);box-sizing:border-box}.pffvt{text-decoration:underline}.vrhcp
.vrhol{position:absolute;width:100%;height:35px;max-height:35px;bottom:0;left:0;padding:0;background:non
e;display:block;z-index:9}.vrhcp
.vrhol.hide,.vrhcp
.vrhol
.hide{display:none}.vrhot{white-space:nowrap;text-overflow:ellipsis;overflow:hidden;display:inline-block;po
sition:absolute;max-width:240px;height:18px;line-height:14px;margin-left:8px;top:10px;left:0;right:0;border-
radius:2px;padding-right:8px}.vrhot
div{display:inline-block}.vrhot
nt{color:#fff;font-size:11px;font-weight:bold;background-color:rgba(0,0,0,.75);padding:2px
8px;margin-left:0;top:0;box-sizing:border-box;position:relative}.vrhc
.ricons{position:absolute;right:8px;top:10px;left:auto;bottom:auto;height:18px;display:inline-block;cursor:poi
nter}.vrhol.icons_1
.vrhot{margin-right:27px}.vrhol.icons_2
.vrhot{margin-right:49px}.vrhol.icons_3
.vrhot{margin-right:79px}.vrhol
.vrhot
nt,.vsb_tr_chd
.vrhol.icons_1
.vrhot{margin-right:0}.vpb{position:absolute;display:block;bottom:0;left:0;height:4px}.vpb
div{position:absolute}.vpb
nt{width:0;background:#fff}.vpb
nt.test{display:none}.vpb.back{background-color:#999}.vrhcp
.vrhol.npb{height:36px;max-height:36px}.vrhol
.vadda{width:22px;height:18px;padding:0;margin-right:0;margin-left:2px;bottom:0;position:relative;display:i
nline-block;z-index:1;background:rgba(0,0,0,.75);border-radius:2px;overflow:hidden}.vrhol
.vadda.hide{display:none}.vrhol
.vadda
.mc_vfaa{margin:3px
5px}.ricons
.vol{float:left}.ricons
.adultFlag{float:right}.vol{width:22px;height:18px;bottom:0;margin-left:1px;margin-right:1px;position:relati
ve;display:inline-block}.vol.hide,.vol
.hide{display:none}.vol
.bg{background:rgba(0,0,0,.75);border-radius:2px}.vol.bg,.vol
nt{position:absolute;bottom:0}.vol
.vol.bg.volnb{border-radius:0 0 2px 2px}.vol
.volsliderHandle.bg{border-radius:2px 2px 0 0}.vol
nt
.volsliderHandle{height:70px;display:none;width:22px;float:left;bottom:18px;position:absolute;display:block
}.vol
nt
.volsliderHandle.hide{display:none}.volsliderHandle
.vsb{height:54px;width:4px;background-color:#999;margin:9px
auto
8px;position:relative;display:block;border-radius:2px}.volsliderHandle
.vsh{height:6px;width:14px;padding:9px
7px
9px
7px;margin:0
-12px;display:block;position:absolute;top:30px}.volsliderHandle
.vsh.hide{display:none}.volsliderHandle
.vshi{height:4px;width:14px;background-color:#fff;border-radius:2px}.volMuteIcon{width:16px;height:14px;

```

Wind turbines without wind

```
margin:2px
4px;float:left}.volMuteHandle{width:22px;height:18px}.vo{background:url(/rp/ffZxBXEIP9WYOO0jhTaElyLhEVU.svg)
no-repeat}.vm{background:url(/rp/fsX-ZVd03wB2TL0vmQJxSp4U9vs.svg)
no-repeat}.vl{background:url(/rp/YXYMPC1Rry_XJGc7Yg8lR4B2eEs.svg)
no-repeat}.vf{background:url(/rp/NosrlR4amKTs1zYxWy3laZN3HRk.svg)
no-repeat}@media(forced-colors:active){.vol{forced-color-adjust:none}.vrhc
line
.vt_vp,.vrhc.popout
.vt_vp,.vrhc.mousefollow
.vt_vp{position:absolute;bottom:0;border:hidden;padding:0;top:0;left:0;z-index:3}.vrhc
.hide{display:none}.vrh_clc
.vt_vp,.vrh_clc
.vrhc
.vrhi,.vrh_clc
.player_ol{cursor:pointer}.vrh_clc
.cico{border-radius:0}.vrhc{border:hidden;top:0;left:0;padding:0}.vrhc.mousefollow
.vrhc,.vrhc.popout
.vrhc{background-color:#999}.vrhpc.load
.player_ol{background:url(/rp/J_o2maogFDeUOsovPJJL-ofEuxJ4.gif)centercenterno-repeat}.vrhc
line
.vrhc
.vrhi,.vrhc.popout
.vrhc
.vrhi,.vrhc.mousefollow
.vrhc
.vrhi{position:absolute!important;border:hidden;z-index:2;padding:0;left:0;top:0}.player_ol{position:absolute
;width:100%;height:100%;bottom:0;border:hidden;z-index:7}.vrhc.popout,.vrhc
line,.vrhc.mousefollow{border-radius:6px;overflow:hidden;display:table-row-group;background:none}.vrhc.p
opout,.vrhc.mousefollow{z-index:4;box-shadow:0 4px 4px rgba(0,0,0,.1),0 2px 80px rgba(0,0,0,.2)}.vrhc
line{z-index:1;margin:0}.vrhc.popout,.vrhc
line{position:absolute;top:0}.vrhc.popout{border:1px
solid
#fff}.vrhc.mousefollow{position:fixed}.vrhcpc{position:relative;top:0;left:0;display:table-row}.vrhcpc
.vrhc{position:relative;overflow:hidden}.vrhc.hide{display:none}@keyframes
vh_fadein{from{opacity:0}to{opacity:1}}.vrhc.not(.hide){animation:vh_fadein
250ms}.vrhc
line
img{color:transparent}.vrhc
line.fullsize{height:100%}.vrhc,.vrhc.hover,.vrhc.link,.vrhc.active,.vrhc.visited{color:#000;text-decoration:no
ne}.vrhc.vrh_clc{cursor:pointer}a.hover-anchor{display:block;height:100%;width:100%;text-decoration:none
}.vrhstat{height:0;overflow:hidden}.mmlist
.mc_vtvc
.mc_vtvc_meta
{padding:12px 16px 16px 16px;}
.mmlist
.mc_vtvc
.mc_vtvc_meta_w
{height:112px;margin-top:-0px;}
.mmlist
.mc_vtvc
.mc_vtvc_title
{height:44px;line-height:22px;margin-bottom:0px;margin-top:0px;}
.mmlist
.mc_vtvc
.mc_vtvc_meta_block_area
{height:40px;}
.mmlist
.mc_vtvc
.vtmu,
.mmlist
.mc_vtvc
.vtpl
{bottom:120px;}
.mmlist
.mc_vtvc_th_dock
{height:112px;}
.mmlist
.mc_vtvc_th.cico
{height:131px;}
.mmlist
.mc_vtvc{margin:10px
1px
0}.mmlist
.mc_vtvc_con_rc{display:flex}.cardless
.mmlist
.mc_vtvc_con_rc{height:112px}.mmlist
.mc_vtvc
.mc_vtvc_meta{display:flex;flex-direction:column;justify-content:space-between;margin:0
10px
4px
12px;padding:0}.mmlist
.mc_vtvc_title{font-weight:400;font-size:16px;height:44px;line-height:22px;margin-bottom:0;margin-top:0;c
olor:unset}.mmlist
.mc_vtvc_meta_row{font-size:13px}.mmlist
.mc_vtvc
.mc_vtvc_meta_block_area{height:unset}.mmlist
.mc_vtvc
.vtmu,.mmlist
.mc_vtvc
.vtpl{bottom:8px}.cardless
.mmlist
.mc_vtvc{box-shadow:none}.cardless.mmlist
.mc_vtvc_center_play{width:32px;height:32px}.cardless.mmlist
.mc_vtvc_title{font-size:16px;color:unset}.cardless.mmlist
.mc_vtvc_meta_row{line-height:20px}.cardless.mmlist
.mc_vtvc_meta_pubdate{padding-bottom:2px;color:#666}.cardless.mmlist
.mc_vtvc_th,.cardless.mmlist
.mc_vtvc_th
.cico,.cardless.mmlist
.mc_vtvc_th
div.rms_img{border-radius:6px}.cardless.mmlist
```



Wind turbines without wind

```
.mc_vtvc_th{height:111px}.cardless.mmlist
.mc_vtvc_htc{border-radius:6px;overflow:hidden}#serpvidans.vasac.cardless{box-shadow:none}.cardless.m
mllist .mc_bc{padding:2px 8px;line-height:14px;border-radius:2px;font-weight:normal}.mmlist
.mc_vtvc:hover
.mc_vtvc_title{text-decoration:underline}.mmgrid>div{width:197px;display:inline-block;margin-right:8px;m
argin-bottom:8px;box-shadow:0 0 0 1px
rgba(0,0,0,.05);position:relative;vertical-align:top;overflow:hidden;white-space:normal;border-radius:6px}.vs
arr .mmgrid>div,.vsarr1stbig .mmgrid>div{margin-right:8px;margin-bottom:8px}#serpvidansrr .mc_vtvc
.mc_vtvc_meta{height:auto}#serpvidansrr .mc_vtvc
.mc_vtvc_title{display:-webkit-box;-webkit-line-clamp:2;-webkit-box-orient:vertical}.mmgrid
.mc_tc{border:0}.vsa .mmgrid>div:nth-child(3n){margin-right:0}.vsa
.b_moreLink{padding-top:4px}#serpvidansrr
.mc_vtvc_meta_row{line-height:18px;font-size:100%;height:17px}.vsarr
.mmgrid>div:nth-child(2n){margin-right:0}#serpvidansrr .mc_vtvc .vtmu,#serpvidansrr .mc_vtvc
.vtpl{bottom:128px}.vsarr1stbig .mmgrid>div:nth-child(2){margin-right:0}#serpvidansrr.uipolish
.mc_vtvc_meta_pubdate,#serpvidansrr.uipolish .mc_vtvc_meta_channel,#serpvidansrr.uipolish #vidans2
.b_videocard .video_metadata .video_source{color:#767676}#serpvidansrr #vidans2 .b_videocard
.video_metadata_container,#serpvidansrr #vidans2 .b_videocard .video_metadata_container
.video_metadata>h3{width:100%}@media(max-width:1362.9px){#serpvidansrr
.mmgrid>div{width:168px;height:206px}#serpvidansrr .mmgrid>div .cico,#serpvidansrr .mmgrid>div .cico
.rms_img{width:168px;height:100px}#serpvidansrr .mc_vtvc .mc_vtvc_meta{padding:12px}#serpvidansrr
.mc_vtvc .mc_vtvc_title{height:32px;line-height:16px;margin-bottom:16px}#serpvidansrr .mc_vtvc
.mc_vtvc_meta_block_area{height:34px}#serpvidansrr
.mc_vtvc_meta_row{line-height:15px;font-size:13px;height:15px}#serpvidansrr
.mc_vtvc_meta_pubdate{padding-bottom:4px}#serpvidansrr .mc_vtvc .vtmu,#serpvidansrr .mc_vtvc
.vtpl{bottom:114px}#serpvidansrr #vidans2 .b_videocard .videoPlayer,#serpvidansrr #vidans2 .b_videocard
.videoPlayer .cico,#serpvidansrr #vidans2 .b_videocard .videoPlayer .cico
.rms_img{width:343px!important;height:194px!important;margin-right:0} }@media(max-width:1274.9px){#s
erpvidansrr .mmgrid>div{width:124px;height:164px}#serpvidansrr .mmgrid>div .cico,#serpvidansrr
.mmgrid>div .cico .rms_img{width:124px;height:76px}#serpvidansrr .mc_vtvc
.mc_vtvc_meta{padding:8px}#serpvidansrr .mc_vtvc
.mc_vtvc_title{height:32px;line-height:16px;margin-bottom:12px}#serpvidansrr .mc_vtvc
.mc_vtvc_meta_block_area{height:28px}#serpvidansrr
.mc_vtvc_meta_row{line-height:13px;font-size:11px;height:13px}#serpvidansrr
.mc_vtvc_meta_pubdate{padding-bottom:2px}#serpvidansrr .mc_vtvc .vtmu,#serpvidansrr .mc_vtvc
.vtpl{bottom:96px}#serpvidansrr #vidans2 .b_videocard .videoPlayer,#serpvidansrr #vidans2 .b_videocard
.videoPlayer .cico,#serpvidansrr #vidans2 .b_videocard .videoPlayer .cico
.rms_img{width:256px!important;height:144px!important;margin-right:0}#serpvidansrr .maskthumb
.mc_bc_w{padding:8px 4px 4px 8px}#serpvidansrr.withsplitline
.mmgrid>div:nth-last-child(1),#serpvidansrr.withsplitline
.mmgrid>div:nth-last-child(2){margin-bottom:24px}#serpvidansrr.withsplitline .mmgrid{border-bottom:1px
solid #ececec;margin-bottom:16px}#serpvidansrr #vidans2 .b_videocard
```

Wind turbines without wind

```
.video_metadata{max-width:auto;padding:12px 16px}#serpvideosrr #vidans2
.b_videocard{margin-bottom:12px;box-shadow:0 0 1px rgba(0,0,0,.05),0 2px 3px
rgba(0,0,0,.1);border-radius:6px}#serpvideosrr .b_rich{padding-top:0}#serpvideosrr #vidans2
.videoPlayer{border-radius:6px 6px 0 0;overflow:hidden}#serpvideosrr #vidans2 .b_videocard
.video_metadata>h3{white-space:nowrap;overflow:hidden;text-overflow:ellipsis;-webkit-line-clamp:1;line-he
ight:15px;height:15px;font-size:13px;color:#000;margin-bottom:20px;font-family:"Arial",Helvetica,Sans-Seri
f;font-style:normal;display:block}#serpvideosrr.vsbtr1stbig #vidans2 .b_videocard .video_metadata
.actionmenu{display:none}#serpvideosrr #vidans2 .b_videocard .video_summary,#serpvideosrr #vidans2
.b_videocard .video_source{line-height:15px}#serpvideosrr #vidans2 .b_videocard .videoPlayer
.vtbc{right:0}.vsb_tr_c{position:relative;width:100%;overflow:hidden;background:#1d1b28;height:583px;ma
rgin-bottom:16px}.vsb_tr_c.tr_nh{height:294px}.vsb_tr_c .mm_vrc h2,.vsb_tr_c .mm_vrc
.see_more{display:none}.vsb_tr_c .mm_vrc>div{padding-bottom:20px}.vsb_tr_c
.vsb_tr_t{position:absolute;top:16px;left:160px;font:normal 16px/19px
"Arial",Helvetica,Sans-Serif;font-weight:700;color:#fff;z-index:1}.vsb_tr_c
.vsb_tr_t::after{width:17px;height:12px;display:inline-block;background-size:7px
12px;background-repeat:no-repeat;background-position-x:right;opacity:.7;content:""}.vsb_tr_c
.vsb_tr_t: hover::after{opacity:1}.vsb_tr_c .mm_vrc
.mc_vtvc{background-color:#585858;border-radius:6px}.vsb_tr_c .mm_vrc
.mc_vtvc_con_rc{border-radius:6px}.vsb_tr_c .vsb_tr_chd{position:absolute;bottom:0;width:100%}.vsb_tr_c
.onhov .mc_vtvc_ban_lo{display:none}.vsb_tr_chd .mc_vtvc_tot
.mc_vtvc_title{line-height:15px}.vsb_tr_chd .mc_vtvc_tot .mc_vtvc_meta_row,.vsb_tr_chd .mc_vtvc_tot
.mc_vtvc_meta_row a{color:#dadada}.vsb_tr_chd .grad_b{top:30%;height:auto}.vsb_tr_chd .mc_vtvc_tot
.mc_vtvc_meta_row{font-size:12px;line-height:16px;height:16px}.vsb_tr_chd .mc_vtvc_tot
.meta_pd_content{display:none}.vsb_tr_chd .mc_vtvc_tot .mc_vtvc_title strong{font-weight:500}.vsb_tr_c
.slide video{object-fit:cover}.vsb_tr_c .mc_vtvc_th .cico{width:100%;height:100%}.vsb_tr_c
.vrhcac{width:647px;position:absolute;width:calc(42% - 160px);bottom:200px;margin:0 0 0
160px;height:auto;padding:0;pointer-events:auto}.vsb_tr_c .vrhcac .mc_vtvc_title{font:normal 30px/35px
"Arial",Helvetica,Sans-Serif;font-weight:700;height:70px;overflow:hidden;color:#fff;text-overflow:ellipsis;di
splay:-webkit-box;-webkit-box-orient:vertical;-webkit-line-clamp:2}.vsb_tr_c .vrhcac
.mc_vtvc_meta_block_area{height:50px;margin:12px 0 0 0}.vsb_tr_c .vrhcac
.mc_vtvc_meta_row{font:normal 13px/15px "Arial",Helvetica,Sans-Serif;margin:5px 0 5px
0;color:#dadada}.vsb_tr_c .mm_vrc .b_overlay .btn.bigrounded .cr>div,.vsb_tr_c .mm_vrc .b_overlay
.btn.bigrounded .cr>div: hover{background-image:url(/rp/qA6EopzJjTm5qQJvnXlrWGNP778.svg)}.vsb_tr_c
.vsb_tr_t::after{background-image:url(data:image/svg+xml,%3Csvg%20width%3D%227%22%20height%3D
%2214%22%20viewBox%3D%220%200%207%2014%22%20fill%3D%22none%22%20xmlns%3D%22http
%3A%2F%2F%2F2000%2Fsvg%22%3E%0D%0A%20%20%20%20%3Cpath%20d%3D%22M0.186925%2
01.19491L5.4643%207L0.186925%2012.8051C-0.0623082%2013.0792%20-0.0623082%2013.5214%200.18
6925%2013.7944C0.436158%2014.0685%200.838112%2014.0685%201.08628%2013.7944L6.81334%207.4
9465C6.93212%207.36515%207%207.18433%207%207C7%206.81567%206.93212%206.63485%206.8133
4%206.50535L1.08628%200.205616C0.837052%20-0.0685388%200.435097%20-0.0685388%200.186925%
200.205616C-0.0612477%200.479772%20-0.0623082%200.92192%200.186925%201.19491Z%22%20fill%
3D%22white%22%20fill-opacity%3D%220.7%22%2F%3E%0D%0A%3C%2Fsvg%3E)}.va_tt
```



Wind turbines without wind

```
.mm_vrc{padding:11px 2px 0 0}.va_tt .vsb_tr_t{position:relative;top:auto;left:auto;font:normal 18px/22px
"Arial",Helvetica,Sans-Serif;font-weight:400;color:#4007a2;z-index:auto}.b_dark .va_tt
.vsb_tr_t{color:#82c7ff}.va_tt .vsb_tr_tp,.va_tt .vsb_tr_tl{display:inline-block;margin-right:5px}.va_tt
.vsb_tr_chd{position:relative}.vsb_tr_c.va_tt{--va-st-padding-bottom:16px;height:auto;background-color:tran
SPARENT;margin-top:22px;overflow:visible;padding-bottom:var(--va-st-padding-bottom);margin-bottom:0}.va_
tt .mc_vtvc_ban_lo,.va_tt .vsb_tr_t::after,.va_tt .mc_vtvc:hover .mc_vtvc_center_play,.va_tt .vsb_tr_chd
.vt_onhv .mc_vtvc .mc_vtvc_meta{display:none}.va_tt .mc_vtvc:hover .mc_vtvc_ht,.va_tt .mc_vtvc:hover
.mc_vtvc_htb{display:table-cell}.va_tt
.mc_vtvc_htb{padding-top:50px;background:linear-gradient(360deg,rgba(0,0,0,.6) 60.35%,rgba(0,0,0,0)
100%);font-size:11px;line-height:13px}.va_tt .mc_vtvc_ht{padding:0 24px;text-shadow:0 1px 2px
rgba(0,0,0,.2)}.va_tt .mc_vtvc_center_play{bottom:52px}.va_tt .mc_vtvc:hover
.mc_vtvc_title{max-height:52px;white-space:normal;display:-webkit-box;-webkit-box-orient:vertical;-webkit-
line-clamp:4}#serpvidans .va_tt .slide{margin-right:0;vertical-align:bottom;transition:width .2s,height
.2s}#serpvidans .va_tt .slide:not(:first-child){margin-left:8px}#serpvidans .va_tt
.mm_vrc>div{padding-bottom:0}.va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_meta{height:auto;padding:8px;color:#ddd}.va_tt .vsb_tr_chd
.mc_vtvc_th_dock{height:72px;position:absolute;bottom:0;background:linear-gradient(360deg,rgba(0,0,0,.55)
60.35%,rgba(0,0,0,0) 100%)}.va_tt
.mc_vtvc_meta_row_channel{font-size:13px;line-height:15px;font-weight:500;color:#fff;white-space:nowrap;
overflow:hidden;text-overflow:ellipsis;margin-bottom:6px}.va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_title{height:auto;font-size:11px;line-height:13px;color:#ddd;white-space:nowrap;overflow:hidden;t
ext-overflow:ellipsis}.va_tt .slide .mc_vtvc{width:100%}.va_tt .slide video{object-fit:cover}.va_tt
.mc_vtvc_th .cico{width:100%;height:204px}.va_tt .b_overlay
.btn.bigrounded{top:auto;bottom:0;margin-bottom:93px}.va_tt .vt_onhv
.mc_vtvc_htb{padding-top:86px}.va_tt .vsb_tr_chd .mc_vtvc .vtmu,.va_tt .vsb_tr_chd .mc_vtvc
.vtpl{bottom:6px}.va_tt .vcmt_ct,.va_tt .vcmt_ctt{display:block;margin-bottom:4px;font-size:11px}.va_tt
.vasyt::before{content:"";background:url(
AAAYCAYAAADgdz34AAABRkIEQVR4Ae2UT0rDQBjFX7QICtaoIOimAReiUNuV696jmx5A8AalZ/AIp
bdwIT2B6wqIWYkuWgnBP7jo+D7SkcmiM4kd6KYPfjNDeHlfJt8kwEYOBXqhgENOd+SgnJKQ7JFjsr3k/j
mZkg/yQn7IE7IncAwjvEImRHICskKzQMdjuOZWsrcWNS7hX+dmgQurNQzxD52YBQ6s1maTb3UCtNsoo
TOzwI7THkXAYAD0+9narVyTR9aGtVoqpyRRqtdzNXIs7qCCMqpWgXodqNVsrrkZ/ImiimMe6g4wHLqci
Qx6BzOXGwn93S7QaBQJF6Uy6B28Wq3y1HKSZC6uL7PAG1wFymSkG35FY/jX899Kfkxk6vE/JFIRrhvw
XJEH8r5C8Iw8kmudGyzbH037nI6Q9UnWu8i+eDnf38iamC7saVDkJG60Fv0CnB4IzftPhuMAAAAASUVO
RK5CYII=) no-repeat;background-size:18px 18px;padding-right:22px}.va_tt
.vasig::before{content:"";background:url(
AAAYCAYAAADgdz34AAAEsUIEQVR4Ad1UTWxUVRT+zn3vzbz5ozNtFQpRa2hDjC6qhKWICwjWTV
mwMRKIMSG44W9hXIGRRKPRUMMCEySgidHEExFXjxkgJEU0ISEhEaItg0bZU7bTz99689+49nvem5SfT
hVt5yc3ce+ee7zvfd869wP/9o/sXm4bKxUaAfQ6bnVkt9GZNiAwiuDpCmiM4MLDZwAKDmJNgJoKWGZ
O6ZZhPK0RHj44+O99GsGITuRhkzJkshwMF00ROwHM6hKzhCnjaREjFBCYmMHcDWYYmJSQKgbIQgi
7XIPXiEom9RKBcf1+X1gMF3USBZQjBk2sdPLY2h+6VTgJqSdYqybyVfWPGw9x4FeWxKiIhCY0FH9ZA
l7L2yt9vP0BQ0s2dHZJ5hxB05zReObIWvQMF/Jdv+uwMrrzZMx0l4gBsNI29q42gK/J6SzGB8bH9zf4E/PqJ
MUyN/A79ZxVpMSHFWgKMmGGSGuTXIZBbvxi9BzYgm1+PK3vOJgQe7N4I3HsEuoFOIYht6Xu+E79+
```



Wind turbines without wind

dAXTX40t1iCQodkRI2yxR6xiEpNWfjBEsVmVTy6iY/d6rO5zURmvwCcHbQTdknJJe3i875FkHV6c5G4uI0
dNyva46Dz0EqX6u0GFNPzRG1T78HsQxUqAYOQXQAq6+/NsJ90h34TcRlASBUUWFatWJev0xDjJlqcaZn
gKXPt9Bcb/4IxeK7wipjU+j84sdKL96AnqqKhrsGJCcNVIKi9oUaWojKKIuo4IMecm6k6bZogj5A9uIazVU3j
jGPFNGbI7/5RkqfnYQKw4NorLnU6lGC4YohFK+nLlnkVqarOB5dOAvuKglA8dakMNVyfYZBOcuAbOTI
FWDsuqEO7e5+e2PsPt7BLQORY0WgVxKkjkjJvmAgg6a4xLNwqVqIk/AiKSXWJMAxJnVEghRIJfXoniPC
hmQ1ZBNp+W5KCDlgYzmdgVqlgppqWkL91h8xoGRrbkwwNfgCrNU52RRS2YvnzsbNEJ67kGQvWbeSEkt
VHE9+ew3y4nlKIYIU0NrISibSj/6x9yk7fByZj98lff68KBD7tmxJjSPHU8sAaUWUUBPFaK22uQTf9DIPf
YLEy1NtZ1SaVD6PAP1A+9Dj09BmfbNjhbN0NPjqOxfzfz/G0my2Onf1WCyDMzYIFzeQVWscHsGtJz15N
1astmNL87Gbcna32bGqffAk5KbCQ5BdKzTYvEV8CXi7fhqSTG3BiXA02i+x7puwRcikIoOtXObp5idKDr
4HVAsLJi8SzY5y8yyHYhLGLCuzLk9GzBqkNg0hv34noh5/YTFwnIjdOdmC8JY8/E+YDFN95CBYLx+Gu
3U/XCcx24PK/yRddvQx/+D2pWSRvdyhg1s12gg59Chl9mDKW1MzAO3cE1rWvobr6oHKPin4N8QocCUAk
T0RlBgznoCd+I3NN8IwicqRdTSQqotNtBMgFw6qQH1JufOdcRnz7tPRzBfz3JehZI8BifODDeHUZNXAjJF
RtUNVipGyilNiWkmse6MvGjoaxnNTyN0NFV7172S3sstxML9nxBRL7I00c+my8BhmvwqZRJVovMKoSt
CDgQsQV+xbNq1OmYoZLo6PzeGi+fwFJbz1IhJBeawAAAABJRU5ErkJggg==)

no-repeat;background-size:18px 18px;padding-right:22px}.va_tt
.vastt::before{content:"";background:url(
AAAMCAYAAABWdVznAAAA90IEQVR4AZWQu2sCQRDGJyYHCQdqPEKqSHr7NOZFyvQJi1YKYII
1irY+ieoiKXYKZaniI3WIoqg4AMfhaAcCMJ93q2vwxODz6WnZnf7swQEUU0w6D1Wn7y4cOJO/sLL8c
H8ps1ernCdYCueCoJm03iAyaLGWa3SszDFg028BoBvnfdw4IWr+hTgtLVUX67ZcBcjCKV0HEl/h0epT2c
gT8lBAlyjt+KNNsHMLU3yhUUebH+xGwWx+JRjOKdutUk+53wZVCPLGvnj/f2ZCFchXh6RjDwYS1dnF
LHo8XvZIMNVuE7PyD1SScATcHyqhuNevQt8H62BZHiaf6ZtXqegAAAABJRU5ErkJggg==)

no-repeat;background-size:contain;padding-right:20px}.va_tt
.vasfb::before{content:"";background:url(/rp/zvtkyPveEhrXqHA-euzAa983fpQ.png)
no-repeat;background-size:contain;padding-right:20px}.vcmt_ctt.vasyt::before{background-size:15px
15px;padding-right:19px}.vcmt_ctt.vasig::before{background-size:15px
15px;padding-right:19px}.vcmt_ctt.vastt::before{background-size:contain;padding-right:17px}.vcmt_ctt.vasf
b::before{padding-right:17px}.mm_vrc{padding:24px 32px}@media screen and
(max-width:1022px){.mm_vrc{margin:0}@media screen and
(max-width:766px){.mm_vrc{margin:0}.mm_vrcc{padding:0 0 32px 0;margin-bottom:0}.mm_vrcc
h2{padding-bottom:20px}.mm_vrcc h2 a{font-family:"Segoe
UI",Arial,Helvetica;font-size:20px;color:#000;line-height:1.8px}.mm_vrcc .b_overlay
.btn{z-index:3}.mm_vrcc .vrhc{z-index:2}.mm_vrcc .mc_vtvc_th .cico{padding-bottom:0}#dg_c
.mm_vrc,#dg_c .mm_vrcc{padding:8px 16px 0 16px}#dg_c .mm_vrcc .mc_vtvc{width:100%}#dg_c
.mm_vrcc a:hover{text-decoration:underline}.isvctrl .mm_vrcc
.slide{overflow:visible}.mm_vrc{padding:16px 100px 0 160px}.mm_vrc .b_overlay
.btn.bigrounded.next{right:-44px}.mm_vrc .b_overlay .btn.bigrounded.prev{left:-44px}.mm_vrc .b_overlay
.btn.bigrounded .cr>div,.mm_vrc .b_overlay .btn.bigrounded
.cr>div:hover{box-shadow:none;border-radius:0;margin:0;background-position:16px
9px;background-size:12px
22px;background-color:transparent;background-image:url(/rp/rKVnxf6wkBxI0DBa2Au3IVC5Sog.svg)}.mm_
vrc .b_overlay .btn.bigrounded .cr>div{opacity:.7}.mm_vrc .b_overlay .btn.bigrounded
.cr>div:hover{opacity:1}.mm_vrc h2



Wind turbines without wind

```

a{font-family:"Arial",Helvetica,Sans-Serif;font-style:normal;font-weight:500;color:#111}.mm_vrc
h2{display:inline-block;padding-bottom:16px}.mm_vrc>div{position:relative;padding-bottom:32px}.mm_vrc
.see_more{position:absolute;right:0;top:3px}.mm_vrc
.see_more>a{font-family:"Arial",Helvetica,Sans-Serif;font-style:normal;font-weight:normal;font-size:16px;li
ne-height:18px;color:#000}#vsb_more{padding:16px 0 4px 160px;color:#111}#vsb_vid_cat .mm_vrc h2
a::after{display:inline-block;margin-left:12px;content:"";background-image:url(/rp/rKVnxf6wkbxI0DbA2Au3
IVC5Sog.svg);background-size:7px 14px;width:7px;height:14px;opacity:.7}#vsb_vid_cat .mm_vrc h2
a:hover::after{opacity:1}.mm_vrc .mm_vrc_sub{display:inline-block;margin-left:24px}.mm_vrc
.b_hList{position:absolute;height:20px;top:3px;overflow:hidden}.mm_vrc
.b_hList>li{padding-right:24px;padding-bottom:0}.mm_vrc .b_hList a{font:normal 13px/20px
"Arial",Helvetica,Sans-Serif;color:#111}.mm_vrc .mc_vtvc_tot .mmsts
.mc_vtvc_meta{display:none}.b_overlay
.btn.rounded{position:absolute;cursor:pointer;z-index:1;-moz-user-select:none;-khtml-user-select:none;-webki
t-user-select:none;-o-user-select:none;-ms-user-select:none;user-select:none}.b_overlay
.btn.rounded,b_overlay .btn.rounded .bg,.b_overlay .btn.rounded .cr,b_overlay .btn.rounded
.cr>div,.b_overlay .btn.rounded .vcac>div{border-radius:50%}.b_overlay .btn.rounded
.vcac{height:0}.b_overlay .btn.rounded{height:32px;width:32px;top:50%;margin-top:-16px}.b_overlay
.btn.rounded .bg,.b_overlay .btn.rounded:hover .bg{opacity:0}.b_overlay .btn.rtl.rounded
.cr{direction:ltr}.b_overlay .btn.hidden.rounded .cr,.b_overlay .btn.disabled.rounded
.cr{visibility:hidden}.b_overlay .btn.rounded .cr>div{border:1px solid #ecec;box-shadow:0 2px 3px 0
rgba(0,0,0,.1);height:30px;width:30px;overflow:hidden;background-image:none;background-color:#fff}.b_ov
erlay .btn.rounded .cr>div:hover{box-shadow:0 2px 4px 1px rgba(0,0,0,.14)}.b_overlay .btn.rounded
.cr>div:after{bottom:5px;background-color:#fff;transform-origin:-430px
0;display:inline-block;transform:scale(.5);position:relative}.b_overlay .btn.rounded
.cr>div:hover:after{transform-origin:-514px 0}.b_overlay .btn.ltr.rounded .cr>div:after{right:5px}.b_overlay
.btn.rtl.rounded .cr>div:after{left:5px}.b_overlay .btn.prev.ltr.rounded .cr,.b_overlay .btn.next.rtl.rounded
.cr{transform:scaleX(-1)}body .b_overlay .btn.rounded.next{right:-12px}body .b_overlay
.btn.rounded.prev{left:-13px}.ra_car_container .b_overlay .btn.prev.ltr.rounded .cr>div,.ra_car_container
.b_overlay .btn.next.rtl.rounded .cr>div{transform:unset}.ra_car_container .b_overlay .btn.rounded
.cr>div{background-position:0;border:unset}.ra_car_container .b_overlay .btn.rounded
.cr>div:after{content:unset}@media screen and (forced-colors:active){.b_overlay .btn.rounded.hidden
*,.b_overlay .btn.rounded.disabled *{background:none}.b_overlay .btn.rounded.hidden,.b_overlay
.btn.rounded.disabled{background:none}}.b_overlay .btn.rounded
.cr>div:after{content:url(/rp/EX_mgILPdYtFnI-37m1pZn5YKII.png)}.vsb_tr_chd .mc_vtvc .mc_vtvc_meta {
padding: 10px 10px 10px 10px; } .vsb_tr_chd .mc_vtvc .mc_vtvc_meta_w { height: 190px; margin-top: -0px;
} .vsb_tr_chd .mc_vtvc .mc_vtvc_title { height: 150px; line-height: 15px; margin-bottom: 0px; margin-top:
0px; } .vsb_tr_chd .mc_vtvc .mc_vtvc_meta_block_area { height: 20px; } .vsb_tr_chd .mc_vtvc .vtmu,
.vsb_tr_chd .mc_vtvc .vtpl { bottom: 198px; } .vsb_tr_chd .mc_vtvc_th_dock { height: 190px; } .vsb_tr_chd
.mc_vtvc_th_dock { height: 60px; } .tr_bt .mc_vtvc_th
img{height:auto;width:100%}.grad_b{position:absolute;width:100%;top:30%;bottom:0%;background:linear-
gradient(180deg,rgba(48,44,39,0) 0%,#302c27 100%)}.mc_vtvc_th_dock{width:100%;background:#302c27}.mc_vtvc_tot

```

Wind turbines without wind

```
.mc_vtvc_th{background-color:transparent}.vsadc .grad_b{top:81.8%}.mc_vtvc_tot
.mc_vtvc_meta{line-height:15px;position:absolute;bottom:0%;background:transparent}.mc_vtvc_tot
.mc_vtvc_meta_row{line-height:16px;font-size:12px;height:16px}.mc_vtvc_tot
.mc_vtvc_meta_row,.mc_vtvc_tot .mc_vtvc_meta_row a{color:#dadada}.mc_vtvc_tot
.mc_vtvc_title,.mc_vtvc_tot .mc_vtvc_title a{color:#fff}.vsadc .mc_vtvc_tot
.mc_vtvc_title{line-height:18px}.vsadc .mc_vtvc_tot .mc_vtvc_meta_row,.vsadc .mc_vtvc_tot
.mc_vtvc_meta_row a{color:rgba(255,255,255,.7)}.vsadc
.mc_vtvc_meta_pubdate{padding-bottom:2px}.vtdc_default{background:#302c27}.vtdc_default_g{backgrou
nd:linear-gradient(180deg,rgba(48,2,39,0) 0%,#302c27
100%)).vtdc_black{background:#111}.vtdc_black_g{background:linear-gradient(180deg,rgba(17,17,17,0)
0%,#111
100%)).vtdc_blue{background:#3a4e74}.vtdc_blue_g{background:linear-gradient(180deg,rgba(58,78,116,0)
0%,#3a4e74
100%)).vtdc_brown{background:#69423d}.vtdc_brown_g{background:linear-gradient(180deg,rgba(105,66,6
1,0)
0%,#69423d
100%)).vtdc_grey{background:#464646}.vtdc_grey_g{background:linear-gradient(180deg,rgba(70,70,70,0)
0%,#464646
100%)).vtdc_green{background:#324f32}.vtdc_green_g{background:linear-gradient(180deg,rgba(50,79,50,0)
)
0%,#324f32
100%)).vtdc_orange{background:#8c5400}.vtdc_orange_g{background:linear-gradient(180deg,rgba(140,84,
0,0)
0%,#8c5400
100%)).vtdc_pink{background:#a3394b}.vtdc_pink_g{background:linear-gradient(180deg,rgba(163,57,75,0)
0%,#a3394b
100%)).vtdc_purple{background:#774077}.vtdc_purple_g{background:linear-gradient(180deg,rgba(119,64,1
19,0)
0%,#774077
100%)).vtdc_red{background:#811515}.vtdc_red_g{background:linear-gradient(180deg,rgba(129,21,21,0)
0%,#811515
100%)).vtdc_white{background:#464646}.vtdc_white_g{background:linear-gradient(180deg,rgba(70,70,70,0)
)
0%,#464646
100%)).vtdc_yellow{background:#755b00}.vtdc_yellow_g{background:linear-gradient(180deg,rgba(117,91,
0,0)
0%,#755b00
100%)).vtdc_teal{background:#256868}.vtdc_teal_g{background:linear-gradient(180deg,rgba(37,104,104,0)
0%,#256868
100%)).cipt,.cipg,.cipa,.cipl,.ciptr,.ciplr{display:inline-block}.cipa,.cipl,.ciplr{cursor:pointer}.vab{vertical-ali
gn:bottom}.vam{vertical-align:middle}.vat{vertical-align:top}.vabl{vertical-align:baseline}.vatt{vertical-alig
n:text-top;border-radius:0}.vatb{vertical-align:text-bottom} evronDown12,
evronUp12{background:url(/rp/QKITrqL25sGDqfRYQjkMWJWDeG8.png)
no-repeat;background-size:494px 58px;width:12px;height:12px} evronDown12{background-position:-372px
0} evronUp12{background-position:-372px -14px}@media(prefers-color-scheme:dark){#bpage.b_med
evronDown12{background-position:-386px 0}#bpage.b_med evronUp12{background-position:-386px
-14px}}#bpage.b_drk evronDown12{background-position:-386px 0}#bpage.b_drk
evronUp12{background-position:-386px -14px}.cipt,.cipl{margin-right:10px}.cipt .cico,.cipl .cico,.ciptr
```


Wind turbines without wind

li:nth-child(5){display:none}.b_imgSet .b_hList

li.wide_m:nth-child(3){display:none}@media(max-width:1274.9px){#b_context .b_entityTP .b_imgSet

li:nth-child(4){display:none}.b_imgSet .b_hList li.wide_m:nth-child(2){display:none}.rcimgcol

.b_imgSet{content-visibility:auto;contain-intrinsic-size:1px

124px}.rcimgcol{height:108px;padding-top:var(--smtc-gap-between-content-x-small);padding-bottom:var(--smtc-gap-between-content-x-small)}.b_algo:has(.b_agh)

.rcimgcol{padding-top:var(--smtc-gap-between-content-xx-small)}.rcimgcol

.b_imgSet{overflow:hidden}.rcimgcol .b_imgSet

ul{overflow-x:auto;overflow-y:hidden;white-space:nowrap;padding-left:0}.rcimgcol .b_imgSet

ul::-webkit-scrollbar{-webkit-appearance:none}.rcimgcol .b_imgSet

.b_hList>li{padding-right:var(--smtc-padding-ctrl-text-side)}.rcimgcol .b_imgSet

.cico{border-radius:unset}.rcimgcol .b_imgSet .b_hList>li:first-child .cico,.rcimgcol .b_imgSet

.b_hList>li:first-child .cico

a{border-radius:unset;border-top-left-radius:var(--mai-smtc-corner-card-default);border-bottom-left-radius:var(--mai-smtc-corner-card-default);overflow:hidden}.rcimgcol .b_imgSet .b_hList>li:last-child .cico,.rcimgcol

.b_imgSet .b_hList>li:last-child .cico

a{border-radius:unset;border-top-right-radius:var(--mai-smtc-corner-card-default);border-bottom-right-radius:var(--mai-smtc-corner-card-default);overflow:hidden}.rcimgcol .rcimgcol

.b_sideBleed{margin-left:unset;margin-right:unset}.rcimgcol .b_imgclgovr{cursor:pointer}.rcimgcol

.b_imgclgovr .cico img: hover{transform:scale(1.05);transition:transform .5s ease}#b_content

#b_results>.b_algo

.b_caption:has(.rcimgcol){padding-right:var(--mai-smtc-padding-card-default);margin-right:calc(-1*var(--mai-smtc-padding-card-default));margin-left:calc(-1*var(--mai-smtc-padding-card-default));padding-left:var(--mai-smtc-padding-card-default)}.rcimgcol .b_imgSet .b_hList .cico a{display:flex;outline-offset:-2px}.rcimgcol

.b_hList>li{position:relative;padding-bottom:0}.rcimgcol .b_hList>li

.iacf_smol{pointer-events:none;border-top-right-radius:var(--mai-smtc-corner-card-default);border-bottom-right-radius:var(--mai-smtc-corner-card-default);white-space:normal}.rcimgcol .b_hList

.cico{margin-bottom:0}.iacf_smol{display:flex;justify-content:center;align-items:center;gap:var(--smtc-gap-between-content-xx-small);width:100%;height:100%;background:rgba(0,0,0,.6);position:absolute;left:0;top:0;color:var(--mai-smtc-foreground-ctrl-on-image-rest);font:var(--bing-smtc-text-global-body2-strong);flex-wrap:wrap;align-content:center;text-align:center}.iacf_smol: hover{text-decoration:underline}.iacfmit[data-nohov]

.iacfimgc .cico img{transform:none}renovablesverdes Wind power that works without wind: hybrid technology and beyondSee MoreDiscover how new hybrid technologies and bladeless wind turbines make it possible to generate wind energy even without wind, improving performance and sustainability.

Vineyard Wind, a wind farm under construction about 15 miles off Martha's Vineyard, will have 62 turbines with blades more than 300 feet long. Now some entrepreneurs hope to prove that smaller, ...

Instead of rotating blades, these turbines utilize tall, slender masts that sway in response to wind currents. The oscillation, amplified when it matches the structure's natural vibration ...

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Wind turbines without wind

even without wind, improving performance and sustainability.

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