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Title: Double-fed asynchronous generator for wind power

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Doubly fed electrical generators are similar to AC electrical generators, but have additional features which allow them to run at speeds slightly above or below their natural synchronous speed. This is ...

Doubly-Fed Induction Generators, or DFIGs, are a type of electrical generator that play a significant role in the realm of renewable energy, particularly wind energy systems. Their unique ...

The Doubly Fed Induction Generator (DFIG) is a widely used technology in renewable energy, particularly in wind power generation. Its unique design allows for variable speed operation ...

The doubly-fed induction generator (DFIG) is an improvement over its predecessor, the squirrel cage induction machine (SCIM), for generator use cases. It is particularly suitable for cases ...

University of Strathclyde, Glasgow United Kingdom2. Steady-state operation of the Doubly-Fed Induction Generator (DFIG)3. Rotor power convertersRSC - TransformerThe Rotor-Side Converter (RSC)The Grid-Side Converter (GSC)Basic Control of Real and Reactive Power using the RSC2 - VEGrid4. Control system4.2 Grid-side converter control5.1 Industrial applicationsRotorPublished in print edition November, 2010This chapter introduces the operation and control of a Doubly-fed Induction Generator (DFIG) system.

The DFIG is currently the system of choice for multi-MW wind turbines. The aerodynamic system must be capable of operating over a wide wind speed range in order to achieve optimum aerodynamic efficiency by tracking the optimum tip-speed ratio. Ther...See more on cdn techopen #b\_results .b\_vidAns{border-radius:6px;box-shadow:0 0 0 1px rgba(0,0,0,.05);padding:16px 20px;gap:10px;background:#fff}@charset "UTF-8";#b\_results

.b\_ans.b\_vidAns{box-shadow:none!important;padding:var(--smtc-gap-between-content-medium) 0!important;background:var(--bing-smtc-background-ctrl-fade-on-image-stop-0)}#b\_results #serpvidans.vsaf .mc\_vtvc,#b\_results #serpvidans.vsaf .mc\_vtvc\_th,#b\_results #serpvidans.vsaf .cico,#b\_results #serpvidans.vsaf .mc\_vtvc\_htb,#b\_results #serpvidans.vsaf .vrhc,#b\_results #serpvidans.vsaf .vrhpc,#b\_results #serpvidans.vsaf .vrhtc,#b\_results #serpvidans.vsaf

```
.vrhtpc{border-radius:var(--mai-smtc-corner-list-card-default)}#b_results #serpvidans.vsacf .mmlist
.mc_vtvc,#b_results #serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta{margin:0}#b_results
#serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_channel,#b_results #serpvidans.vsacf
.mmlist .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_row_channel{color:var(--smtc-foreground-content-neutral-primary)}#serpvidans.vsacf,#serpv
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
.mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_block_area,#serpvidans.vsacf .mc_cwvc .mc_vtvc .mc_vtvc_meta
.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.
vsacf .mc_cwvc .mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_block_area .mc_vtvc_meta_row,#serpvidans.vsacf
.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
.mc_vtvc_meta_block_area .mc_vtvc_meta_pubdate,#serpvidans.vsacf .mc_cwvc .mc_vtvc .mc_vtvc_meta
.mc_vtvc_meta_block .mc_vtvc_meta_pubdate,#serpvidans.vsacf .mmlist .mc_vtvc .mc_vtvc_meta
.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.vsaf
.b_title .mmtitle{margin-bottom:0}#serpvidans.vsaf .b_title .mmtitle
a{color:var(--smtc-foreground-content-neutral-primary)}#serpvidans.vsaf .cardless.mmlist
.mc_vtvc_con_rc,#serpvidans.vsaf .cardless.mmlist .mc_vtvc_th{height:auto}#serpvidans.vsaf
.vsb_tr_c.va_tt{margin:0}#serpvidans.vsaf .vtbc .mv_vtvc_play,#serpvidans.vsaf .vtbc
.mv_vtvc_play_ext{position:static}#serpvidans.vsaf .va_tt
.mc_vtvc_ban_lo{display:block}#serpvidans.vsaf
.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.vsaf .rmts .mc_bc
ems{display:none}#serpvidans.vsaf a.vsb_tr_t{color:var(--smtc-foreground-content-neutral-primary)}.vsaf
.va_tt .vsb_tr_chd .mc_vtvc_th_dock.rmoverlay{height:36px}.vsaf .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%)}#serpvidans.vsaf .va_tt a.vsb_tr_t{padding:0
0;font:var(--bing-smtc-text-global-body-2-alt-strong)}.vsaf .va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_meta,.vsaf .va_tt .vsb_tr_chd .mc_vtvc
.mc_vtvc_title{color:var(--mai-smtc-foreground-ctrl-on-image-rest)}.vsaf
span.vcmt_ctt{font:var(--bing-smtc-text-global-caption2);margin:var(--smtc-gap-between-content-xx-small) 0
0;height:16px}#serpvidans.vsaf .vsb_tr_chd .mc_vtvc_tot .mc_vtvc_title
strong{font-size:14px;line-height:20px;display:unset}#serpvidans.vsaf .va_tt .b_slldr
.slide:not(:first-child){margin-left:var(--smtc-gap-between-content-small)}#serpvidans.vsaf .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.vsaf .b_module_expansion_control .b_btnContainer
.b_CompactExpansion{background-color:var(--bing-smtc-background-ctrl-neutral-rest);display:flex;justify-co
ntent:center;align-items:center;gap:4px;width:fit-content;height:auto;padding:8px 12px}#serpvidans.vsaf
.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.vsaf .b_module_expansion_control .b_btnContainer
.b_CompactExpansion .b_arrow{display:flex;margin:0;height:auto}#serpvidans.vsaf
.b_module_expansion_control .b_btnContainer .b_CompactExpansion .b_arrow
path#Shape{fill:var(--bing-smtc-foreground-ctrl-neutral-primary-alt-rest)}#serpvidans.vsaf
.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
.vasac{padding:unset;margin:0}#b_results .b_ans.b_vidAns .vsa .b_attribution{padding-bottom:0}#b_results
.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}.b_CompactExpandText{display:inline}#serpvidans
.b_module_expansion_control{padding-bottom:0}#serpvidans .b_module_expansion_control
.b_CompactExpansion{height:40px;line-height:40px;bottom:-6px;padding-left:20px;padding-right:20px;border-radius:20px;z-index:6}#serpvidans .b_module_expansion_control
.b_CompactExpansionBtnText{line-height:40px}#serpvidans .btitle .b_topTitle,#serpvidans .mc_vtvc
.mc_vtvc_title{margin-bottom:0}#serpvidans
.mc_vtvc_meta_pubdate{padding-bottom:0}#serpvidans{position:relative;--va-expbody-padding:0 0 24px;--va-ptop:0px;--va-pbop:0px}#serpvidans
.expbody{overflow-x:visible!important;overflow-y:clip!important;box-sizing:border-box;padding:var(--va-expbody-padding)}#serpvidans.ssize .expbody{max-height:calc(375px - var(--va-ptop) - var(--va-pbop))}#serpvidans.msize .expbody{max-height:calc(535px - var(--va-ptop) - var(--va-pbop))}#serpvidans.lsize .expbody{min-height:536px}#serpvidans .b_removeShadow
.expbody{max-height:unset}#serpvidans .b_removeShadow .expbody .grad,#serpvidans .b_removeShadow
.expbody .expext{display:none}#b_results
.b_ans.b_vidAns{--va-ptop:16px;--va-pbop:0px;--va-pleft:20px;--va-pright:20px;border-radius:6px;box-shadow:0 0 0 1px rgba(0,0,0,.05);padding:var(--va-ptop) var(--va-pright) var(--va-pbop) var(--va-pleft);margin-bottom:30px;gap:10px}#b_results .b_ans.b_vidAns .b_moreLink{padding:9px 0 0 0}.mmlist>a{display:block}.mc_fh{height:100%;border-radius:6px}.mc_tc_bs{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; } .mc_vtvc{background-color:#fff;box-shadow:0 0 0 1px rgba(0,0,0,.05);line-height:0;margin:0;position:relative;border-radius:6px;overflow:hidden}.mc_vtvc.noshadow{box-shadow:none}.mc_vtvc_con_rc{border-radius:6px;overflow:hidden;position:relative}.mc_vtvc>a{color:#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{background-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:hidden;color:#111;height:54px;line-height:18px}.mc_vtvc_title
a{display:inline-block;color:#111}.mc_vtvc_title
a:hover{text-decoration:underline}.mc_vtvc_src_ico{float:left;margin-right:4px}.mc_vtvc_act{height:16px;margin-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
```

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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}#serpvindans
.b_topTitle{margin-bottom:8px}.mc_vtvc_htc{width:100%;height:100%;position:absolute;top:0;bottom:0;left
: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
16px;line-height:16px;color:#fff;text-decoration:underline;word-break:break-word;box-sizing:border-box;vert
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_IRight
.b_ILeft{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_IRight .b_ILeft{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 #mmcar .mc_vtvc .vtmu,.svarh #mmcar .mc_vtvc
.vtpl{bottom:137px}.svarht #mmcar .mc_vtvc .vtmu,.svarht #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)}.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
```

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.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
.mc_vtvc_th{height:111px}.cardless.mmlist
.mc_vtvc_htc{border-radius:6px;overflow:hidden}#serpvidans.vasac.cardless{box-shadow:none}.cardless.m
mmlist .mc_bc{padding:2px 8px;line-height:14px;border-radius:2px;font-weight:normal}.mmlist
.mc_vtvc: hover
.mc_vtvc_title{text-decoration:underline}.mc_vtvc_meta{box-sizing:border-box;display:inline-block;line-hei
ght:18px;position:relative;width:100%}.mc_vtvc_meta_block{bottom:0;position:absolute;width:100%}.mc_v
tvc_meta_row{line-height:16px;font-size:11px;height:17px;overflow:hidden;text-overflow:ellipsis;white-spac
e:nowrap}.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
.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
.b_factrow{line-height:17px;font-size:11px;max-height:34px;overflow:hidden;text-overflow:ellipsis;padding:
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
```



```
.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
.video_metadata{max-width:auto;padding:12px 16px}#serpvidansrr #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}#serpvidansrr .b_rich{padding-top:0}#serpvidansrr #vidans2
.videoPlayer{border-radius:6px 6px 0 0;overflow:hidden}#serpvidansrr #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}#serpvidansrr.vsarr1stbig #vidans2 .b_videocard .video_metadata
.actionmenu{display:none}#serpvidansrr #vidans2 .b_videocard .video_summary,#serpvidansrr #vidans2
.b_videocard .video_source{line-height:15px}#serpvidansrr #vidans2 .b_videocard .videoPlayer
.vtbc{right:0}.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 .vrhtc.pffv
.vrhc{display:none}.vrhc line.nhvpv .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}.mc_vtvc_th img{transition:all .3s
ease-out}.nhvpv+.mc_vtvc_th
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 .vrhc{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:none;
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}.vrhotdiv{display:inline-block}.vrhotnt{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.vrhotnt,.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}.vpbnt{width:0;background:#fff}.vpbnt.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,.volnt{position:absolute;bottom:0}.vol
.vol.bg.volnb{border-radius:0 0 2px 2px}.vol.volsliderHandle.bg{border-radius:2px 2px 0 0}.volnt
.volsliderHandle{height:70px;display:none;width:22px;float:left;bottom:18px;position:absolute;display:block
}.volnt.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;
margin:2px
4px;float:left}.volMuteHandle{width:22px;height:18px}.vo{background:url(/rp/fFZxBXEIP9WYOO0jhTaEl
yLhEVU.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/NosrIR4amKTs1zYxWy3laZN3HRk.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}.vrhtc
.hide{display:none}.vrh_clc.vt_vp,.vrh_clc.vrhtc.vrhi,.vrh_clc.player_ol{cursor:pointer}.vrh_clc
.cico{border-radius:0}.vrhtc{border:hidden;top:0;left:0;padding:0}.vrhc.mousefollow.vrhtc,.vrhc.popout
.vrhtc{background-color:#999}.vrhtpc.load
.player_ol{background:url(/rp/J_o2maogFDeUOsovPJL-ofEuxJ4.gif)center center no-repeat}.vrhc.line.vrhtc
```

```
.vrhi,.vrhc.popout .vrhtc .vrhi,.vrhc.mousefollow .vrhtc
.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}.vrhpc{position:relative;top:0;left:0;display:table-row}.vrhpc
.vrhtc{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}.grad{width:100%;height:24px;position:absolute;bottom:0;background:lin
ear-gradient(180deg,rgba(255,255,255,0) 0%,#fff 100%)}b_drk .grad,.b_dark
.grad{background:linear-gradient(180deg,rgba(41,40,39,0) 0%,#292827
95%)}b_module_expansion_control{padding-bottom:4px}.b_module_expansion
.b_expansion_wrapper{border-top:1px solid
#cdcdcd}.b_module_expansion_control.b_module_head>.b_module_expansion
.b_expansion_wrapper{border-top:0}.b_module_expansion
.b_expmob_rc{border-top:0}.b_module_expansion .b_expansion_wrapper,.b_module_expansion
.b_offpage_expansion a,#b_results .b_module_expansion .b_offpage_expansion
a{color:#666}.b_module_expansion .b_expansion_wrapper
.sv_ch{fill:#666}.b_module_expansion_control.b_module_head>.b_module_expansion
.b_expansion_wrapper,.b_module_expansion_control.b_module_head>.b_module_expansion
.b_offpage_expansion a,#b_results .b_module_expansion_control.b_module_head>.b_module_expansion
.b_offpage_expansion a{color:#666}.b_module_expansion_control.b_module_head>.b_module_expansion
.b_expansion_wrapper .sv_ch{fill:#666}#b_context .b_module_expansion
.b_expansion_wrapper{border-top:1px solid #ebebcb}#b_context
.b_module_expansion_control.b_module_head>.b_module_expansion
.b_expansion_wrapper{border-top:0}#b_pole .b_module_expansion .b_offpage_expansion
a{color:#666}#b_pole .b_module_expansion_control.b_module_head>.b_module_expansion
.b_offpage_expansion a{color:#666}#b_context .b_module_expansion .b_offpage_expansion
a{color:#666}#b_context .b_module_expansion_control.b_module_head>.b_module_expansion
.b_expansion_wrapper,#b_context .b_module_expansion_control.b_module_head>.b_module_expansion
.b_offpage_expansion a{color:#767676}#b_context
.b_module_expansion_control.b_module_head>.b_module_expansion .b_expansion_wrapper
.sv_ch{fill:#767676}.b_btnContainer{width:100%;height:46px;border-radius:0 6px 6px
0;position:absolute;bottom:-20px}.b_CompactExpansion:active{background-color:#00526b}.b_CompactExpa
nsion:hover{background-color:#106ebe;cursor:pointer}.b_CompactExpansion{background-color:#106ebe;col
or:#fff;border-radius:16px;height:30px}.b_CompactExpansion{display:inline-block;line-height:30px;text-alig
n:center;padding-left:16px;padding-right:16px;position:relative;left:50%;transform:translateX(-50%);bottom:-
```

11px;z-index:4;pointer-events:auto})html[dir="rtl"]

.b\_CompactExpansion{transform:translateX(50%)}.b\_CompactExpansion

.b\_arrow{margin-left:7px;margin-bottom:-1.75px;display:inline-block;height:.75em}.b\_algo\_group

.b\_CompactExpansion

.b\_arrow{margin-left:3px;height:7px;margin-bottom:0;width:12px}.b\_CompactExpansionBtnText{font-family:inherit;font-style:normal;font-weight:400;font-size:13px;line-height:20px;color:#fff;display:inline-block}Videos of Double-Fed Asynchronous Generator for wind PowerWatch video22:02Double Fed Induction Generator, DFIG for wind turbine, Introduction, Components and working, EV Pt1 ShreeDevi Classes10.7K viewsJan 2, 2022Watch video21:50Double Fed Induction Generator for wind turbine, core understanding, working & control, Eng Video ShreeDevi Classes4.8K viewsJan 6, 2022Watch video5:34Induction Generator 6 - Double-Fed Induction Generator WindPrime14.2K viewsNov 11, 2021Watch full videoSee more.iacfm

.iacf\_head{display:flex;align-items:center;gap:var(--smtc-gap-between-content-small);text-decoration-color:var(--smtc-foreground-content-neutral-primary);box-sizing:border-box;margin-bottom:var(--smtc-gap-between-content-x-small)}.iacfm .iacf\_head span{flex:1 1 0;white-space:nowrap;text-overflow:ellipsis;overflow:hidden;color:var(--smtc-foreground-content-neutral-primary);font:var(--bing-smtc-text-global-body3-strong)}.iacfm .iacf\_head div{display:flex;height:22px;width:22px;justify-content:center;align-items:center;transition:background 300ms ease-out;margin-right:-3px;border-radius:var(--mai-smtc-corner-list-card-default);overflow:hidden}.iacfm .iacf\_head .iacf\_chv{color:var(--smtc-foreground-content-neutral-primary)}[dir="rtl"] .iacfm .iacf\_head svg{transform:scaleX(-1)}.rel\_ent\_w{margin:4px 0 9px}.rel\_ent\_w .rel\_ent\_w:focus-visible{outline-offset:-6px}.rel\_ent\_w.rel\_ent\_crs{margin:6px 0 16px}.b\_top .rel\_ent\_w{margin-top:-4px}.b\_top .rel\_ent\_w.rel\_ent\_crs{margin-top:0}.b\_mm\_swipable .rel\_ent\_w{margin:4px 0 20px}.b\_rich .rel\_ent\_w{margin:-3px -16px 8px}.rel\_ent\_w.rel\_ent\_scr:not(.rel\_ent\_crs){height:50px;overflow:hidden}.rel\_ent\_c{white-space:nowrap;overflow:hidden;padding-left:1px;height:50px}.aqptmt:not(.rel\_ent\_crs) .rel\_ent\_c{display:flex}.rel\_ent\_wp .rel\_ent\_c{white-space:initial}.rel\_ent\_scr .rel\_ent\_c{overflow-y:hidden;-webkit-overflow-scrolling:touch;overflow-x:auto}.rel\_ent\_scr:not(.rel\_ent\_crs) .rel\_ent\_c{padding-bottom:12px}.b\_mm\_swipable .rel\_ent\_c{padding-left:10px;margin-top:-2px;margin-bottom:4px}.b\_rich .rel\_ent\_c{padding-left:15px}.rel\_ent\_w.rel\_ent\_crs .slide,.rel\_ent\_w.rel\_ent\_crs .slide:hover{width:auto;height:42px;border-radius:20px !important;box-shadow:none !important;overflow:visible}a.rel\_ent{display:inline-block;padding:0 16px 0 12px;margin:4px 8px 4px 0;border-radius:20px;border:1px solid #ddd;text-decoration:none;overflow:hidden;height:40px;max-width:80vw}:not(#lgVidAnsContainer)>.aqptmt .rel\_ent\_c a.rel\_ent{overflow:initial;display:flex}.slide a.rel\_ent{margin:0;box-shadow:none}.b\_slidebar .slide .rel\_ent .cico,.rel\_ent .cico,.rel\_ent>img{display:inline-block;vertical-align:middle;margin:2px 8px 2px -10px;border-radius:50%;background:#f7f7f7;flex-shrink:0}.rel\_ent\_tw{vertical-align:middle;font-size:12px;color:#444;line-height:16px;height:100%;float:right;display:table}.rel\_ent\_t{display:table-cell;vertical-align:middle;align-content:center}.aqptmt:not(.splt2) .rel\_ent\_tw,.aqptmt:not(.splt2) .rel\_ent\_tw .rel\_ent\_t{overflow:hidden;text-overflow:ellipsis;white-space:nowrap}.aqptmt:not(.splt2)

```
.rel_ent_tw{display:flex;overflow:hidden;text-overflow:ellipsis;align-items:center;white-space:nowrap}.rel_e
nt_w:not(.splt2) .rel_ent_t strong{display:inline-block;font-weight:normal}#b_results phead
.b_attribution{padding-bottom:8px}.iaplanner .b_moreLink{margin-top:11px}.iaplanner.iarnd
.b_moreLink{margin-top:3px}.b_ans .b_rich pserp.b_mBMargin{padding:0;border-top:0}.b_ans #vidans2
.b_rich .rel_ent_w{margin:6px 0 16px}.aqptmt a.rel_ent{border-color:#106ebe}.aqptmt:not(.splt2)
.rel_ent_tw,.aqptmt:not(.splt2) .rel_ent_tw .rel_ent_t{font-size:16px}#b_content .iacfic.mmkiaacf .iacfmit
.imgInfo{color:var(--smtc-ctrl-link-foreground-brand-rest)}#b_content .iacfic.mmkiaacf .iacfmit
a{text-decoration-color:var(--smtc-ctrl-link-foreground-brand-hover)}#b_content .iacfic.mmkiaacf .iacfmit
.imgInfo{font:var(--bing-smtc-text-global-body3)}#b_content .iacfic.mmkiaacf
.iacf_crsl[data-wptds-carousel]>div[data-wptds-carousel-scroll-container]{padding-bottom:52px}#b_content
.iacfic.mmkiaacf .iacfmit{box-sizing:initial;padding-bottom:52px}#b_content .iacfic.mmkiaacf .iacfmit
.imgInfo{text-overflow:ellipsis;display:-webkit-box;-webkit-line-clamp:2;-webkit-box-orient:vertical;align-sel
f:stretch;padding:0 var(--smtc-gap-between-content-xx-small);overflow:hidden}#b_content .iacfic.mmkiaacf
.iacfimgc{padding-bottom:var(--smtc-gap-between-content-x-small)}#b_content .acfImgAns
.salink{text-align:center;display:block;padding-bottom:var(--smtc-gap-between-content-medium);margin:-2px
0 0 0}#b_content .acfImgAns .salink acf-button-standard{display:inline-block;position:relative}#b_content
.acfImgAns .salink::before{border-bottom:1px solid
var(--smtc-stroke-ctrl-on-neutral-rest);width:100%;display:block;content:"";top:18px;position:relative}#b_con
tent .acfImgAns .rel_ent_w a.rel_ent{border:1px solid var(--acf-stroke-neutral-decorative)}#b_content
.acfImgAns .iaheader
.iacf_head{text-decoration-color:var(--smtc-foreground-ctrl-neutral-primary-hover)}#b_content .acfImgAns
.iaheader .iacf_head span,#b_content .acfImgAns .iaheader .iacf_head
svg{color:var(--smtc-foreground-content-neutral-primary);forced-color-adjust:auto}#b_content
.iacfic.mmkiaacf .iacf_plan .cico{border-radius:var(--mai-smtc-corner-card-default)}#b_content
.iacfic.mmkiaacf .iacf_plan .cico img{border-radius:var(--mai-smtc-corner-card-default)}#b_content
.iacfic.mmkiaacf{overflow:visible;padding:0}#b_content .iacfic.mmkiaacf
.iacf_crsl[data-wptds-carousel]{margin:0;padding-bottom:var(--smtc-gap-between-content-medium)}#b_cont
ent .iacfic.mmkiaacf .iacf_crsl[data-wptds-carousel]
[data-wptds-carousel-controls]{--wptds-carousel-control-opacity:1}#b_content .iacfic.mmkiaacf
.iacf_crsl[data-wptds-carousel]>div{padding:0}#b_content .iacfic.mmkiaacf .iacf_crsl[data-wptds-carousel]
[data-direction="end"]{margin-right:-22px}#b_content .iacfic.mmkiaacf .iacf_crsl[data-wptds-carousel]
[data-direction="end"] svg{transform:scaleX(-1)}#b_content .iacfic.mmkiaacf .iacf_crsl[data-wptds-carousel]
[data-direction="start"]{margin-left:-22px}#b_content .iacfic.mmkiaacf .iacf_crsl[data-wptds-carousel]
[data-direction="start"] svg{transform:scaleX(1)}#b_content .iacfic.mmkiaacf .iacf_crsl[data-wptds-carousel]
button{background:var(--smtc-background-card-on-primary-default-rest);box-shadow:var(--bing-smtc-shado
ws-card-hover-3);width:36px;border-radius:var(--smtc-corner-ctrl-lg-rest)}#b_content .iacfic.mmkiaacf
.iacf_crsl[data-wptds-carousel]
button:hover{background:var(--smtc-background-card-on-primary-default-hover)}#b_content
.iacfic.mmkiaacf .iacf_crsl[data-wptds-carousel]
button:active{background:var(--smtc-background-card-on-primary-default-pressed)}#b_content
.iacfic.mmkiaacf .iacf_crsl[data-wptds-carousel] button svg{transition:initial}#b_content .iacfic.mmkiaacf
```

```
.iacf_crsI[data-wptds-carousel] button svg
path{fill:var(--smtc-foreground-content-neutral-secondary);forced-color-adjust:auto}#b_content
.iacfic.mmkiaacf .iacfmit{position:absolute}#b_content .iacfic.mmkiaacf .iacfimgc{margin:auto}#b_content
.b_ans.b_imgansacf{padding:0!important}#b_content
.b_ans.b_top.b_imgansacf{background-color:initial!important}#b_content .acfImgAns .iaheader
.iacf_head{gap:0;padding:var(--smtc-gap-between-content-medium)
0;display:flex;align-items:center;box-sizing:border-box}#b_content .acfImgAns .iaheader
.iacf_head:hover{text-decoration:none}#b_content .acfImgAns .iaheader .iacf_head:hover
span{text-decoration:underline}#b_content .acfImgAns .iaheader .iacf_head:hover
.iacf_chv{background:initial}#b_content .acfImgAns .iaheader .iacf_head
div{display:flex;align-items:center;transition:background
300ms
ease-out;margin-right:-3px;border-radius:var(--smtc-corner-ctrl-rest);overflow:hidden;color:var(--bing-smtc-f
oreground-content-neutral-secondary-alt)}#b_content .acfImgAns .iaheader .iacf_head
span{width:initial;flex:none;font:var(--bing-smtc-text-global-subtitle1-strong);padding-inline-start:0;max-widt
h:90%;text-overflow:ellipsis;white-space:nowrap;overflow:hidden}#b_content .acfImgAns .iaheader
.iacf_head .iacf_chv{width:22px;justify-content:center;height:22px}#b_content .acfImgAns
.rel_ent_w{margin-top:0}#b_content .acfImgAns .rel_ent_w .b_slideexp{margin:0}#b_content .acfImgAns
.rel_ent_w .btn.rounded{top:initial;margin-top:1px}#b_content .acfImgAns .rel_ent_w
.btn.next{right:-14px}#b_content .acfImgAns .rel_ent_w
.cr>div{width:36px;height:38px;border-radius:var(--smtc-corner-ctrl-lg-rest);background:var(--bing-smtc-bac
kground-container);box-shadow:var(--bing-smtc-shadows-card-hover-3);border:initial}#b_content
.acfImgAns .rel_ent_w .cr>div:after{margin-inline-start:2px;top:0}#b_content .acfImgAns .rel_ent_w
.b_viewport{padding-top:0;margin-left:0;padding-left:0}#b_content .acfImgAns .rel_ent_w .b_viewport
.slide{height:38px;margin-left:0;margin-inline-end:var(--smtc-gap-between-content-x-small)}#b_content
.acfImgAns .rel_ent_w
a.rel_ent{border-radius:var(--smtc-corner-circular);background:var(--smtc-background-card-on-primary-defau
lt-rest);padding-left:0;height:38px}#b_content .acfImgAns .rel_ent_w
a.rel_ent:hover{background:var(--smtc-background-card-on-primary-default-hover)}#b_content .acfImgAns
.rel_ent_w a.rel_ent:active{background:var(--smtc-background-card-on-primary-default-pressed)}#b_content
.acfImgAns .rel_ent_w .cico{margin:var(--smtc-gap-between-content-xx-small)
var(--smtc-gap-between-content-x-small) var(--smtc-gap-between-content-xx-small)
var(--smtc-gap-between-content-xx-small)}#b_content .acfImgAns .rel_ent_w
.rel_ent_tw{font:var(--bing-smtc-text-global-caption1-strong)}#b_content .acfImgAns .rel_ent_w
.rel_ent_c{padding-left:0}#b_content .acfImgAns .rel_ent_w .b_slidebar{padding-inline-start:0}#b_content
.acfImgAns .rel_ent_w .rel_ent_c
.rel_ent:first-child{margin-inline-start:var(--mai-smtc-padding-card-default);align-items:center}html[dir=rtl]
#b_content .acfImgAns .iaheader .iacf_head svg{transform:scaleX(-1)}html[dir=rtl] #b_content .acfImgAns
.iacf_crsI[data-wptds-carousel] [data-direction="end"]{transform:scaleX(-1)}html[dir=rtl] #b_content
.acfImgAns .iacf_crsI[data-wptds-carousel] [data-direction="start"]{transform:scaleX(-1)}.iacfm .iacfmit
a:focus .isp_imgcont img,.iacfm .iacfmit a:focus .iacfimgc img,.iacfm .iacfmit a:focus .iacf_smol{outline:3px
dotted #1aebff;outline-offset:-5px}.iacfm .iacfmit .cico{position:relative}.iacfm .iacfmit
```

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.cico::after{ content:"";position:absolute;left:0;top:0;width:100%;height:100%;background:rgba(0,0,0,.03)}.gs
_card .iacfmit img,.b_wpt_container .iacfmit img,.b_acf_card .iacfmit img{transition:transform .3s
ease-out}.gs_card .iacfmit:hover .iacfimgc img,.b_wpt_container .iacfmit:hover .iacfimgc img,.b_acf_card
.iacfmit:hover .iacfimgc
img{transform:scale(1.1)}.iacfc{ position:relative;height:100%;width:100%;background:#fff;overflow:hidden
;border-radius:inherit}.iacf_plan{ position:relative}.iacfmit
.mimg{ width:100%;height:100%;position:relative}.iacfc .iacfmit{ position:absolute}.iacfc .iacfmit
.cico{ border-radius:0}.iacfca{ padding:var(--mai-smtc-padding-card-default);box-sizing:border-box;overflow:
hidden;border-radius:var(--mai-smtc-corner-card-default)}.iacfca .iacf_crsl
.iacfmit{ overflow:hidden;position:relative}.iacfca .iacf_crsl .iacfmit
.cico{ overflow:hidden;border-radius:var(--mai-smtc-corner-list-card-default)}.iacfca .iacf_crsl .iacfmit .cico
img{ border-radius:inherit;transition:transform 300ms ease-out}.iacfca .iacf_crsl .iacfmit:hover .cico
img{transform:scale(1.1)}.iacfca .iacfmit a:focus,.iacfca .iacfmit a:focus img{outline:0}.iacfca .iacfmit
a:focus .cico::after{ border-radius:inherit;box-shadow:inset 0 0 0 3px
var(--bing-smtc-background-card-on-primary-alt-rest);outline:2px solid
var(--smtc-foreground-content-neutral-secondary);outline-offset:-2px}.iacfca
[data-wptds-carousel][data-default][data-variant="Normal"]{ margin:0
calc(-1*var(--mai-smtc-padding-card-default));height:auto}.iacfca
[data-wptds-carousel][data-default][data-variant="Normal"] [data-wptds-carousel-scroll-container]{ padding:0
var(--mai-smtc-padding-card-default)}.iacfca [data-wptds-carousel][data-default][data-variant="Normal"]
[data-wptds-carousel-scroll-container] ol{ width:fit-content;align-items:center}.iacfca
[data-wptds-carousel][data-default]
[data-wptds-carousel-control][data-direction="end"]{ margin-right:24px}.iacfca
[data-wptds-carousel][data-default]
[data-wptds-carousel-control][data-direction="start"]{ margin-left:24px}.iacfca
.iacf_pag{ position:absolute;bottom:8px;left:50%;transform:translate(-50%,0)}.cards.large
.iacfca{ height:200px}{dir="rtl"} .iacfca .iacf_pag{ transform:translate(50%,0)}.iacfm.iacfca
.iacf_crsl[data-wptds-carousel]
[data-wptds-carousel-control]{ background:var(--bing-smtc-background-ctrl-neutral-rest);border:0;height:56px
;width:16px;transition:width .3s;background-color:var(--smtc-foreground-ctrl-neutral-primary-hover)}.iacfm.iacfca .iacf_crsl[data-wptds-carousel]
[data-wptds-carousel-control] svg{ transition:transform .3s}.iacfm.iacfca .iacf_crsl[data-wptds-carousel]
[data-wptds-carousel-control]:hover{ width:24px;background:var(--smtc-background-ctrl-neutral-hover)}.iacf
m.iacfca .iacf_crsl[data-wptds-carousel] [data-wptds-carousel-control] path{ fill:currentColor}.iacfm.iacfca
.iacf_crsl[data-wptds-carousel] ol [data-direction="start"]{ border-radius:0 8px 8px
0;margin-left:16px}.iacfm.iacfca .iacf_crsl[data-wptds-carousel] ol [data-direction="start"]
svg{ transform:scale(.7)}.iacfm.iacfca .iacf_crsl[data-wptds-carousel] ol [data-direction="start"]:hover
svg{ transform:scale(1)}.iacfm.iacfca .iacf_crsl[data-wptds-carousel] ol
[data-direction="end"]{ border-radius:8px 0 0 8px;margin-right:16px}.iacfm.iacfca
.iacf_crsl[data-wptds-carousel] ol [data-direction="end"] svg{ transform:scale(-.7)}.iacfm.iacfca
.iacf_crsl[data-wptds-carousel] ol [data-direction="end"]:hover svg{ transform:scale(-1)}.iacfm.iacfca.iacf_fb
```

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.iacf_crsl[data-wptds-carousel] [data-wptds-carousel-control],.iacfm.iacfca.iacf_ss
.iacf_crsl[data-wptds-carousel]
[data-wptds-carousel-control]{background:var(--mai-smtc-background-ctrl-on-image-rest);color:var(--mai-smtc-foreground-ctrl-on-image-rest)}.iacfm.iacfca.iacf_fb .iacf_crsl[data-wptds-carousel]
[data-wptds-carousel-control] path,.iacfm.iacfca.iacf_ss .iacf_crsl[data-wptds-carousel]
[data-wptds-carousel-control] path{fill:currentColor}.iacfca .iacf_colg_crsl
[data-wptds-carousel-list]{width:fit-content}.iacfca .iacf_colg_crsl .iacfmit{position:absolute}.iacfca.iacf_colg_crsl
.cico{border-radius:0}.iacfca:not(.iacfh):has(>.iacf_colg_crsl){height:100%;width:100%;padding:0;overflow:hidden;border-radius:inherit}.iacfca:not(.iacfh):has(>.iacf_colg_crsl)
.iacfmit{border-radius:0}.iacfca:not(.iacfh):has(>.iacf_colg_crsl) [data-wptds-carousel][data-default]
[data-wptds-carousel-controls]{inline-size:calc(100% + var(--wptds-carousel-control-size) - var(--mai-smtc-padding-card-default)*2);transform:translateX(calc(0rem + var(--mai-smtc-padding-card-default) - (var(--wptds-carousel-control-size)/2))) translateY(-50%)}[data-wptds-carousel][data-default],[data-wptds-carousel][data-default]::before,[data-wptds-carousel][data-default]::after,[data-wptds-carousel][data-default] *,[data-wptds-carousel][data-default] *::before,[data-wptds-carousel][data-default] *::after{box-sizing:border-box;margin:0;padding:0}[data-wptds-carousel][data-default][hidden],[data-wptds-carousel][data-default]
[hidden]{display:none}[data-wptds-carousel][data-default][data-visually-hidden],[data-wptds-carousel][data-default]
[data-visually-hidden]{block-size:.0625rem;border:0;clip:rect(0 0 0 0);inline-size:.0625rem;margin:-.0625rem;overflow:hidden;padding:0;position:absolute}[data-wptds-carousel][data-default]{--wptds-carousel-control-bg-color:#fff;--wptds-carousel-control-border-color:#ddd;--wptds-carousel-control-box-shadow:0rem .125rem .1875rem rgba(0,0,0,.1);--wptds-carousel-control-fg-color:#767676;--wptds-carousel-control-size:2rem;display:block;position:relative;block-size:100%}[data-wptds-carousel][data-default]
[data-wptds-carousel-scroll-container]{overflow-x:auto;overflow-y:clip;scroll-behavior:smooth;block-size:100%;-ms-overflow-style:none;scrollbar-width:none}[data-wptds-carousel][data-default]
[data-wptds-carousel-scroll-container]::-webkit-scrollbar{display:none}[data-wptds-carousel][data-default]
[data-wptds-carousel-scroll-container]:focus-visible{outline-color:Highlight;outline-color:-webkit-focus-ring-color;outline-offset:.0625rem;outline-style:auto;outline-width:.0625rem}[data-wptds-carousel][data-default]
[data-wptds-carousel-list]{display:flex;gap:.5rem;list-style:none;block-size:100%}[data-wptds-carousel][data-default]
[data-wptds-carousel-list]> *{flex-grow:0;flex-shrink:0}[data-wptds-carousel][data-default]
[data-wptds-carousel-list]>:not([data-wptds-carousel-item]){display:none}[data-wptds-carousel][data-default]
[data-wptds-carousel-item]{block-size:100%}[data-wptds-carousel][data-default]
[data-wptds-carousel-item]> *{block-size:100%}[data-wptds-carousel][data-default]
[data-wptds-carousel-item]>img{display:block;inline-size:auto}[data-wptds-carousel][data-default]
[data-wptds-carousel-controls]{list-style:none;position:absolute;inline-size:calc(100% + var(--wptds-carousel-control-size));inset-block-start:50%;transform:translateX(calc(0rem - (var(--wptds-carousel-control-size)/2))) translateY(-50%);display:flex;align-items:center;justify-content:space-between;pointer-events:none}[data-wpt
```

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ds-carousel][data-default]
[data-wptds-carousel-controls]>{*{flex-grow:0;flex-shrink:0}[data-wptds-carousel][data-default]
[data-wptds-carousel-control]{cursor:pointer;inline-size:var(--wptds-carousel-control-size);aspect-ratio:1;displ
ay:grid;place-content:center;border-radius:50%;background-color:var(--wptds-carousel-control-bg-color);bord
er:.0625rem solid
var(--wptds-carousel-control-border-color);box-shadow:var(--wptds-carousel-control-box-shadow);color:var(-
-wptds-carousel-control-fg-color);opacity:var(--wptds-carousel-control-opacity);pointer-events:all}[data-wptd
s-carousel][data-default]
[data-wptds-carousel-control]:active{--wptds-carousel-control-bg-color:#fff;--wptds-carousel-control-border-c
olor:#ddd;--wptds-carousel-control-box-shadow:0rem .125rem .1875rem
rgba(0,0,0,.1);--wptds-carousel-control-fg-color:#767676}[data-wptds-carousel][data-default]
[data-wptds-carousel-control]:focus-visible{outline-color:Highlight;outline-color:-webkit-focus-ring-color;out
line-offset:.0625rem;outline-style:auto;outline-width:.0625rem}[data-wptds-carousel][data-default]
[data-wptds-carousel-control] *{pointer-events:none}[data-wptds-carousel][data-default]
[data-wptds-carousel-control]>svg{display:block}[data-wptds-carousel][data-default]
[data-wptds-carousel-control][data-direction="start"]>svg{transform:scaleX(1)}[data-wptds-carousel][data-de
fault]
[data-wptds-carousel-control][data-direction="end"]>svg{transform:scaleX(-1)}[data-wptds-carousel][data-de
fault]
[data-wptds-carousel-control][aria-disabled="true"]{visibility:hidden;cursor:not-allowed}[data-wptds-carousel
][data-default] [data-wptds-carousel-announce]{block-size:.0625rem;border:0;clip:rect(0 0 0
0);inline-size:.0625rem;margin:-.0625rem;overflow:hidden;padding:0;position:absolute}[data-wptds-carousel]
[data-default][data-variant="Normal"],[data-wptds-carousel][data-default][data-variant="FullWidth"]{--wptds
-carousel-control-opacity:0}[data-wptds-carousel][data-default][data-variant="Normal"]:has([data-wptds-caro
usel-scroll-container]:focus-visible),[data-wptds-carousel][data-default][data-variant="Normal"]:has([data-wpt
ds-carousel-control]:focus-visible),[data-wptds-carousel][data-default][data-variant="FullWidth"]:has([data-w
ptds-carousel-scroll-container]:focus-visible),[data-wptds-carousel][data-default][data-variant="FullWidth"]:h
as([data-wptds-carousel-control]:focus-visible){--wptds-carousel-control-opacity:1}[data-wptds-carousel][dat
a-default][data-variant="Normal"][data-snap] [data-wptds-carousel-scroll-container]{scroll-snap-type:x
proximity}[data-wptds-carousel][data-default][data-variant="Normal"][data-snap]
[data-wptds-carousel-item]{scroll-snap-align:center;scroll-snap-stop:always}[data-wptds-carousel][data-defau
lt][data-variant="Normal"][data-snap]
[data-wptds-carousel-item]:first-of-type{scroll-snap-align:start}[data-wptds-carousel][data-default][data-vari
ant="Normal"][data-snap]
[data-wptds-carousel-item]:last-of-type{scroll-snap-align:end}[data-wptds-carousel][data-default][data-variant
="FullWidth"] [data-wptds-carousel-scroll-container]{scroll-snap-type:x
mandatory}[data-wptds-carousel][data-default][data-variant="FullWidth"]
[data-wptds-carousel-item]{inline-size:100%;scroll-snap-align:center;scroll-snap-stop:always}[data-wptds-car
ousel][data-default][data-variant="FullWidth"]
[data-wptds-carousel-item]:first-of-type{scroll-snap-align:start}[data-wptds-carousel][data-default][data-vari
ant="FullWidth"]
```

```
[data-wptds-carousel-item]:last-of-type{ scroll-snap-align:end}[data-wptds-carousel][data-default][data-variant="FullWidth"]
[data-wptds-carousel-item]>{*{ inline-size:100% }[data-wptds-carousel][data-default][data-bleed-inline]
[data-wptds-carousel-controls]{--control-side-gap:.25rem;inline-size:calc(100% - (var(--control-side-gap)*2));transform:translateX(calc(0rem + var(--control-side-gap))) translateY(-50%)}[data-wptds-carousel][data-desktop]
[data-wptds-carousel-control]:hover:not([aria-disabled="true"]):not(:active){--wptds-carousel-control-bg-color:#fff;--wptds-carousel-control-border-color:#ddd;--wptds-carousel-control-box-shadow:0rem .125rem .3125rem rgba(0,0,0,.14);--wptds-carousel-control-fg-color:#111}[data-wptds-carousel][data-desktop][data-variant="Normal"]:has([data-wptds-carousel-scroll-container]:hover),[data-wptds-carousel][data-desktop][data-variant="Normal"]:has([data-wptds-carousel-control]:hover),[data-wptds-carousel][data-desktop][data-variant="FullWidth"]:has([data-wptds-carousel-scroll-container]:hover),[data-wptds-carousel][data-desktop][data-variant="FullWidth"]:has([data-wptds-carousel-control]:hover){--wptds-carousel-control-opacity:1}[dir="rtl"]
[data-wptds-carousel][data-default] [data-wptds-carousel-controls]{ transform:translateX(calc(0rem + (var(--wptds-carousel-control-size)/2))) translateY(-50%)}[dir="rtl"] [data-wptds-carousel][data-default] [data-wptds-carousel-control][data-direction="start"]>svg{ transform:scaleX(-1)}[dir="rtl"]
[data-wptds-carousel][data-default]
[data-wptds-carousel-control][data-direction="end"]>svg{ transform:scaleX(1)}[dir="rtl"]
[data-wptds-carousel][data-default][data-bleed-inline]
[data-wptds-carousel-controls]{ transform:translateX(calc(0rem - var(--control-side-gap))) translateY(-50%)} .b_dark [data-wptds-carousel][data-default],.b_drk
[data-wptds-carousel][data-default]{--wptds-carousel-control-bg-color:#484644;--wptds-carousel-control-border-color:#545250;--wptds-carousel-control-box-shadow:0rem .125rem .1875rem rgba(0,0,0,.1);--wptds-carousel-control-fg-color:#d2d0ce} .b_dark [data-wptds-carousel][data-default]
[data-wptds-carousel-control]:active,.b_drk [data-wptds-carousel][data-default]
[data-wptds-carousel-control]:active{--wptds-carousel-control-bg-color:#484644;--wptds-carousel-control-border-color:#545250;--wptds-carousel-control-box-shadow:0rem .125rem .1875rem rgba(0,0,0,.1);--wptds-carousel-control-fg-color:#d2d0ce} .b_dark [data-wptds-carousel][data-desktop]
[data-wptds-carousel-control]:hover:not([aria-disabled="true"]):not(:active),.b_drk
[data-wptds-carousel][data-desktop]
[data-wptds-carousel-control]:hover:not([aria-disabled="true"]):not(:active){--wptds-carousel-control-bg-color:#605e5c;--wptds-carousel-control-border-color:#545250;--wptds-carousel-control-box-shadow:0rem .125rem .3125rem rgba(0,0,0,.14);--wptds-carousel-control-fg-color:#faf9f8}.gs_card .iacfic .iacfmit .iacfimgc,.gs_card .iacfic .iacfmit .cico,.b_wpt_container .iacfic .iacfmit .iacfimgc,.b_wpt_container .iacfic .iacfmit .cico{ width:100%!important;height:100%!important;border-radius:0}.gs_card .iacfic .iacfmit.iacfstc img,.gs_card .iacfic .iacfmit .iacfimgc img,.b_wpt_container .iacfic .iacfmit.iacfstc img,.b_wpt_container .iacfic .iacfmit .iacfimgc img{ width:100%;height:100%;object-fit:cover}acf-button-standard{ display:block;inline-size:fit-content;max-inline-size:100% }acf-button-standard,acf-button-standard::before,acf-button-standard::after,acf-button-standard::before,acf-button-standard
```

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*::after{ box-sizing:border-box;margin:0;padding:0 } acf-button-standard[hidden],acf-button-standard
*[hidden]{ display:none } acf-button-standard[data-visually-hidden],acf-button-standard
*[data-visually-hidden]{ block-size:1px;inline-size:1px;margin:unset;padding:unset;border:0;clip:rect(0 0 0
0);clip-path:inset(50%);overflow:clip;position:absolute;white-space:nowrap } .acf-button-standard__btn,.acf-bu
tton-standard__link{ font:var(--font);color:var(--color)!important;background-color:var(--background-color);b
order:1px solid
var(--border-color);display:grid;grid-auto-flow:column;align-items:center;gap:var(--smtc-gap-inside-ctrl-to-se
condary-icon);cursor:pointer;text-decoration:none!important } .acf-button-standard__btn>*,.acf-button-standar
d__link>* { min-inline-size:0;max-inline-size:100% } .acf-button-standard__btn[aria-disabled="true"],.acf-butto
n-standard__link[aria-disabled="true"]{ opacity:.3;cursor:not-allowed } .acf-button-standard__btn:focus-visible,
.acf-button-standard__link:focus-visible{ outline-width:2px;outline-style:solid;outline-color:var(--smtc-ctrl-foc
us-outer-stroke);outline-offset:2px } .acf-button-standard__label{ white-space:nowrap;overflow:clip;text-overfl
ow:ellipsis;max-block-size:calc(1*1lh) } acf-button-standard[data-shape="Pill"]
.acf-button-standard__btn,acf-button-standard[data-shape="Pill"]
.acf-button-standard__link{ border-radius:var(--smtc-corner-circular) } acf-button-standard[data-size="Default"
]
.acf-button-standard__link{ padding-block-start:var(--smtc-padding-ctrl-text-top);padding-block-end:var(--smtc
-padding-ctrl-text-bottom);padding-inline:var(--smtc-padding-ctrl-horizontal-default) } acf-button-standard[da
ta-style="Secondary"]{ --color:var(--bing-smtc-foreground-ctrl-neutral-primary-alt-rest);--background-color:va
r(--bing-smtc-background-ctrl-neutral-rest);--border-color:transparent } acf-button-standard[data-style="Second
ary"] .acf-button-standard__btn:hover:not([aria-disabled="true"]),acf-button-standard[data-style="Secondary"]
.acf-button-standard__link:hover:not([aria-disabled="true"]){ --color:var(--smtc-foreground-ctrl-neutral-primar
y-hover);--background-color:var(--smtc-background-ctrl-neutral-hover);--border-color:transparent } acf-button-
standard[data-style="Secondary"]
.acf-button-standard__btn:active:not([aria-disabled="true"]),acf-button-standard[data-style="Secondary"]
.acf-button-standard__link:active:not([aria-disabled="true"]){ --color:var(--smtc-foreground-ctrl-neutral-primar
y-pressed);--background-color:var(--smtc-background-ctrl-neutral-pressed);--border-color:transparent } acf-bu
tton-standard[data-weight="Strong"][data-size="Small"],acf-button-standard[data-weight="Strong"][data-size
="Default"]{ --font:var(--bing-smtc-text-global-caption1-strong) } acf-button-standard[data-weight="Strong"][d
ata-size="Large"]{ --font:var(--bing-smtc-text-global-body3-strong) } acf-icon{ display:block;inline-size:fit-cont
ent;max-inline-size:100%;pointer-events:none } acf-icon,acf-icon::before,acf-icon::after,acf-icon
*::before,acf-icon
*::after{ box-sizing:border-box;margin:0;padding:0 } acf-icon[hidden],acf-icon
*[hidden]{ display:none } acf-icon[data-visually-hidden],acf-icon
*[data-visually-hidden]{ block-size:1px;inline-size:1px;margin:unset;padding:unset;border:0;clip:rect(0 0 0
0);clip-path:inset(50%);overflow:clip;position:absolute;white-space:nowrap } .acf-icon__def{ display:none } .acf
-icon__icon{ display:block;inline-size:auto;color:inherit } [dir="rtl"]
.acf-icon__icon{ transform:scaleX(-1) } @media(forced-colors:active){ acf-icon{ color:ButtonText!important } } a
cf-icon[data-size="M"] .acf-icon__icon{ block-size:16px } #slideexp1_A9BBEF .slide { margin-right: 8px;
} #slideexp1_A9BBEFc .b_slidebar .slide { border-radius: 6px; } #slideexp1_A9BBEF .slide:last-child {
margin-right: 1px; } #slideexp1_A9BBEFc { margin: -4px; } #slideexp1_A9BBEFc .b_viewport { padding:
4px 1px 4px 1px; margin: 0 3px; } #slideexp1_A9BBEFc .b_slidebar .slide { box-shadow: 0 0 0 1px rgba(0,

```

# Double-fed asynchronous generator for wind power

0, 0, 0.05); -webkit-box-shadow: 0 0 0 1px rgba(0, 0, 0, 0.05); } #slideexp1\_A9BBEFC .b\_sidebar .slide.see\_more { box-shadow: 0 0 0 0px rgba(0, 0, 0, 0.00); -webkit-box-shadow: 0 0 0 0px rgba(0, 0, 0, 0.00); } #slideexp1\_A9BBEFC .b\_sidebar .slide.see\_more .carousel\_seemore { border: 0px; }#slideexp1\_A9BBEFC .b\_sidebar .slide.see\_more:hover { box-shadow: 0 0 0 0px rgba(0, 0, 0, 0.00); -webkit-box-shadow: 0 0 0 0px rgba(0, 0, 0, 0.00); }

Images of double-fed asynchronous Generator for Wind PowerAsynchronous Generator Wind TurbineGenerator For Wind PowerGenerator For Wind TurbineWind Turbine Dc GeneratorSynchronous Wind Turbine GeneratorLow Rpm Generator For Wind TurbineWind Power AlternatorWind Turbine Ac GeneratorSynchronous Generator In Wind TurbineDoubly-fed Wind Turbine Working Principle | Horizontal Axis Wind ...Doubly-fed Asynchronous Generator - DFAG - ESIGVariable Speed Wind Turbine Drives Doubly-Fed Asynchronous Generators ...Types Of Induction Generator Used In Wind Turbines at Alexandra Gabb blogWind Turbines Use Doubly-Fed GeneratorConfiguration of a doubly fed induction generator wind energy ...Double-fed induction-generator based wind turbine. | Download ...Wind turbine and the doubly fed induction generator system. | Download ...See all#b\_results h2 #kn\_p,#b\_results h3 #kn\_p,#b\_results h4 #kn\_p{position:relative;display:inline}#b\_pole #kn\_p,#b\_ans #kn\_p{display:none}#kn\_a{color:#4007a2;font:14px arial;left:-20px;position:absolute;top:25%}.b\_title #kn\_a,.b\_overflow #kn\_a{left:-3px;position:relative}ol#b\_results li.b\_ad,ol#b\_topw.b\_results\_eml li.b\_ad,ol#b\_topw li.b\_ad{background-color:transparent;border-right:0;border-bottom:1px solid #ebebeb;margin-bottom:1px;padding-right:0;padding-bottom:5px}ol#b\_results li.b\_adBottom,ol#b\_topw.b\_results\_eml li.b\_adBottom{border-top:1px solid #ebebeb;border-bottom:0;padding-bottom:0}ol#b\_context li.b\_ad,ol#b\_rrat\_cont li.b\_ad{background-color:transparent}.sb\_add cite{text-transform:lowercase}#b\_results .b\_ad .sb\_adTA .b\_caption,#b\_topw.b\_results\_eml .b\_ad .sb\_adTA .b\_caption,#b\_results .b\_ad .sb\_adTA .b\_vlist2col li,#b\_topw.b\_results\_eml .b\_ad .sb\_adTA .b\_vlist2col li,#b\_results .b\_ad .sb\_adTA .b\_factrow,#b\_topw.b\_results\_eml .b\_ad .sb\_adTA .b\_factrow,#b\_results .b\_ad .sb\_adTA .b\_bcfactrow,#b\_topw.b\_results\_eml .b\_ad .sb\_adTA .b\_bcfactrow,#b\_topw .b\_ad .sb\_adTA .b\_bcfactrow,#b\_topw .b\_ad .sb\_adTA .b\_vlist2col li,#b\_topw .b\_ad .sb\_adTA .b\_factrow,#b\_topw .b\_ad .sb\_adTA .b\_bcfactrow{padding-bottom:var(--smtc-gap-between-content-xx-small)}#b\_results .b\_ad .sb\_adTA .b\_vlist2col,#b\_topw.b\_results\_eml .b\_ad .sb\_adTA .b\_vlist2col,#b\_results .b\_ad .sb\_adTA .b\_factrow,#b\_topw.b\_results\_eml .b\_ad .sb\_adTA .b\_factrow,#b\_results .b\_ad .sb\_adTA .b\_bcfactrow,#b\_topw.b\_results\_eml .b\_ad .sb\_adTA .b\_bcfactrow,#b\_results .b\_ad .sb\_adig,#b\_topw.b\_results\_eml .b\_ad .sb\_adig,#b\_topw .b\_ad .sb\_adTA .b\_vlist2col,#b\_topw .b\_ad .sb\_adTA .b\_factrow,#b\_topw .b\_ad .sb\_adTA .b\_bcfactrow,#b\_topw .b\_ad .sb\_adig{margin-top:0}#b\_results .b\_ad h3.b\_adlabel,#b\_topw.b\_results\_eml .b\_ad h3.b\_adlabel,#b\_topw .b\_ad h3.b\_adlabel{margin-bottom:var(--smtc-gap-between-content-xx-small)}.b\_ad .pa\_mlo~.sb\_ad{margin-bottom:-6px}.b\_ad\_description{font:var(--bing-smtc-text-global-body3);color:var(--bing-ads-smtc-desktop-foreground-snippet-default)}div#b\_content ol#b\_results li.b\_ad,div#b\_content ol#b\_topw.b\_results\_eml li.b\_ad,div#b\_content ol#b\_topw li.b\_ad{border-bottom:0}div#b\_content ol#b\_results li.b\_adBottom,div#b\_content ol#b\_topw.b\_results\_eml li.b\_adBottom,div#b\_content ol#b\_topw li.b\_adBottom{border-top:0}#b\_results .sb\_add h2:hover a,#b\_topw.b\_results\_eml .sb\_add h2:hover a{text-decoration:underline}#b\_results .sb\_add h2:hover,#b\_topw.b\_results\_eml .sb\_add

```
h2:hover{cursor:pointer}.b_ad
li.b_adLastChild{margin-bottom:0}#b_results>li.b_ad{background-color:#fcfaf9}
#b_topw.b_results_eml>li.b_ad{background-color:#fcfaf9} #b_context>li.b_ad{background-color:#fcfaf9}
.b_dark #b_results>li.b_ad{background-color:inherit} .b_dark
#b_topw.b_results_eml>li.b_ad{background-color:inherit}.b_ad
.b_attribution>span{font-size:14px;color:#666}.b_ad
.b_attribution{text-overflow:ellipsis;overflow:hidden;white-space:nowrap}.b_ad .b_attribution
.b_adurl{white-space:nowrap;text-overflow:ellipsis;overflow:hidden;display:inline-block;vertical-align:bottom}.b_ad
h2.b_topTitleAd{font:var(--bing-smtc-text-global-title-2-alt)}#b_content:hover .b_ad.b_adTop
li:first-child .sb_adTA h2 a.b_ExpandAdUnderlineWithHeight{text-decoration:underline}.b_adBottom
.b_adscv{content-visibility:auto;margin-left:-22px;padding-left:22px;margin-right:-22px;padding-right:22px;
margin-bottom:-16px;padding-bottom:16px}#b_results .b_ad .b_attribution
.b_adurl:hover,#b_topw.b_results_eml .b_ad .b_attribution .b_adurl:hover,#b_results .b_ad .b_attribution cite
a:hover,#b_topw.b_results_eml .b_ad .b_attribution cite
a:hover{text-decoration:underline;cursor:pointer}#b_results .b_ad .ad_fl p:hover,#b_topw.b_results_eml
.b_ad .ad_fl p:hover,#b_results .b_ad .b_caption p:hover,#b_topw.b_results_eml .b_ad .b_caption
p:hover,#b_results .b_ad .b_caption p:hover .b_colorBlend,#b_topw.b_results_eml .b_ad .b_caption p:hover
.b_colorBlend,#b_results .b_ad .b_ad_description:hover,#b_topw.b_results_eml .b_ad
.b_ad_description:hover,#b_results .b_ad .b_caption div.b_secondaryText:hover,#b_topw.b_results_eml .b_ad
.b_caption div.b_secondaryText:hover{cursor:pointer}.sb_add.sb_adTA
h2:not(.b_topTitleAd){font:var(--bing-smtc-text-global-subtitle1);line-height:var(--bing-ads-smtc-algo-title-line-height);color:var(--smtc-ctrl-link-foreground-brand-rest)}.sb_add.sb_adTA
.b_adTopIcon_container{display:flex;align-items:center;padding-bottom:var(--smtc-gap-between-content-x-small);margin-bottom:var(--smtc-gap-between-content-xxx-small);position:relative;height:38px;cursor:pointer}#b_results>.b_ad .sb_add.sb_adTA .b_adTopIcon_container .b_icondomian,#b_topw.b_results_eml>.b_ad
.sb_add.sb_adTA .b_adTopIcon_container
.b_icondomian{color:var(--smtc-foreground-content-neutral-primary)}.sb_add.sb_adTA
.b_adTopIcon_container
.b_icondomian{font:var(--bing-smtc-text-global-body3);line-height:var(--bing-ads-smtc-algo-site-name-line-height);position:absolute;top:0}.sb_add.sb_adTA .b_adTopIcon_container
.b_adTopIcon_domain{display:inline-flex}.b_dark #b_results>.b_ad .sb_add.sb_adTA
.b_adTopIcon_container .b_icondomian,.b_dark #b_topw.b_results_eml>.b_ad .sb_add.sb_adTA
.b_adTopIcon_container .b_icondomian{color:#111}z{a:1}#b_results .b_adTopIcon_container
.b_attribution,#b_context .b_adTopIcon_container .b_attribution,#b_rrat_cont .b_adTopIcon_container
.b_attribution{line-height:20px;padding:0}#b_content .b_ad .sb_add .b_adTopIcon_container cite,#b_content
.b_ad .sb_add .b_adTopIcon_container cite a,#b_content .sb_add .b_adTopIcon_container cite
a:visited,#b_content .sb_add .b_adTopIcon_container cite
a:hover{color:var(--smtc-foreground-content-neutral-secondary);text-decoration:none}#b_content
.b_adTopIcon_container .b_attribution,.sb_add.sb_adTA .b_adTopIcon_container .b_attribution
.b_adurl{font:var(--bing-smtc-text-global-body3);line-height:20px}.sb_add.sb_adTA .b_adTopIcon_container
.b_attribution{position:absolute}.sb_add.sb_adTA .b_adTopIcon_container
```

```

strong{display:contents}.b_adTopIcon_container .sw_ddgn:after{transform-origin:-180px -52px}#b_content
.b_adTopIcon_container .b_attribution,#b_results .sb_add.sb_adTA .b_adTopIcon_container .b_attribution
.b_adurl,#b_topw.b_results_eml .sb_add.sb_adTA .b_adTopIcon_container .b_attribution .b_adurl,#b_content
.b_adTopIcon_container .b_attribution:hover,#b_results .sb_add.sb_adTA .b_adTopIcon_container
.b_attribution .b_adurl:hover,#b_topw.b_results_eml .sb_add.sb_adTA .b_adTopIcon_container .b_attribution
.b_adurl:hover{text-decoration:none}.b_topAdSlug{color:#202124;margin-bottom:var(--smtc-gap-between-c
ontent-x-small);font:var(--bing-smtc-text-global-body3-strong);line-height:20px}z{a:1}z{a:1}.b_ad
.b_titleBL{background-color:var(--bing-smtc-ctrl-favicon-background);border:1px solid
var(--bing-smtc-stroke-ctrl-default);border-radius:var(--smtc-corner-circular);vertical-align:text-bottom;margi
n-right:var(--smtc-gap-between-content-small);width:26px;height:26px;text-align:center;display:inline-flex;ali
gn-items:center;justify-content:center;overflow:hidden}.b_ad .b_titleBL.b_titleBLlarge{border:1px solid
var(--bing-smtc-stroke-ctrl-subtle);border-radius:var(--mai-smtc-corner-list-card-default);width:unset;height:u
nset;margin-right:var(--smtc-gap-between-content-x-small);display:inline-block}.b_titleBL
.saa_f{transform:scale(calc(18/32));overflow:unset}.b_titleBL.b_titleBLlarge
.saa_f{overflow:unset;transform:unset;margin:var(--smtc-gap-between-content-xx-small)}.b_titleBL
img{border-radius:var(--mai-smtc-corner-favicon)}.b_titleBL.b_titleBLlarge
img{border-radius:var(--mai-smtc-corner-favicon)}.b_adcaret{display:inline-block}.b_adcaret
bubble_item{display:block;cursor:pointer;margin:0 14px 0
var(--smtc-padding-ctrl-sm-text-top)}.b_attribution a.b_adcaret div
bubble_item:has(span.sw_ddgn),b_attribution a.b_adcaret div bubble_item:has(span.sw_ddw),cite
a.b_adcaret div bubble_item:has(span.sw_ddgn),cite a.b_adcaret div
bubble_item:has(span.sw_ddw){display:block;cursor:pointer;padding:var(--smtc-gap-between-content-xx-sma
ll) var(--smtc-gap-between-content-x-small) 0 var(--smtc-gap-between-content-x-small);margin:0}.b_adcaret
bubble_item .sw_ddgn,b_adcaret bubble_item .sw_ddw{margin:var(--smtc-padding-ctrl-text-side)
calc(-1*var(--smtc-gap-between-content-xx-small)) var(--smtc-padding-ctrl-text-side)
calc(-1*var(--smtc-padding-ctrl-sm-text-top));display:block}.b_adcaret_content{text-align:center}.b_ad
.sb_adTA:not(:has(.b_adRebate))
.b_adcaret:not(.trgr_icon){margin-left:var(--bing-ads-smtc-url-icon-padding-left);margin-right:var(--bing-ads-
smtc-url-icon-padding-right)}.b_ad .sb_adTA:not(:has(.b_adRebate)) .b_adcaret:not(.trgr_icon)
bubble_item{margin:unset}.sb_add .hhTitle strong{font-weight:600}.sb_adTA
span.ad_sym,.format_sym{font-family:Calibri,"Segoe UI",Arial,Helvetica,sans-serif;line-height:0}.sb_adTA
span.ad_title_sym{font:var(--bing-smtc-text-global-body3);vertical-align:top}.sb_adTA
.b_adSlug{font:var(--bing-smtc-text-global-caption2);line-height:var(--bing-ads-smtc-ad-slug-line-height);bor
der-radius:var(--bing-ads-smtc-ad-slug-corner);display:inline-block}.b_adSlug{font-size:11px;font-weight:nor
mal;line-height:11px;border-radius:6px;display:inline-block}.b_adSlug{color:var(--bing-ads-smtc-desktop-for
eground-ad-slug-default);border:1px solid
var(--bing-ads-smtc-ad-slug-stroke);vertical-align:middle}.sb_adTA .b_adSlug,.ba_results
.b_adSlug{color:var(--bing-ads-smtc-desktop-foreground-ad-slug-default);border:1px solid
var(--bing-ads-smtc-ad-slug-stroke)}#b_context>li.b_ad .sb_adBrandSidebar.sb_adTA
.b_adSlug>a,#b_rrat_cont>li.b_ad .sb_adBrandSidebar.sb_adTA
.b_adSlug>a{color:var(--bing-ads-smtc-desktop-foreground-ad-slug-default)}.b_adSlug{padding:0

```

```
var(--smtc-gap-between-content-xxx-small) 0
var(--smtc-gap-between-content-xxx-small)}.b_adSlug{margin-right:var(--smtc-gap-between-content-xx-small)}
).sb_adTA .b_adSlug,.ba_results
.b_adSlug{margin-right:var(--smtc-padding-ctrl-text-side)}z{a:1}z{a:1}z{a:1}#b_results .b_ad .sb_adTA
.b_belowcaption,#b_topw.b_results_eml .b_ad .sb_adTA .b_belowcaption{padding-bottom:4px}#b_results
.b_ad .b_vlist2col.b_deep ul,#b_topw.b_results_eml .b_ad .b_vlist2col.b_deep ul,#b_topw .b_ad
.b_vlist2col.b_deep ul{width:292px}.b_ad .b_deep h3{font-size:20px;line-height:24px}.b_ad .b_deep h3
strong{font-weight:normal}#b_results .b_ad .sb_adTA .b_vlist2col.b_deep,#b_topw.b_results_eml .b_ad
.sb_adTA .b_vlist2col.b_deep,#b_results .b_ad .sb_add .b_deep+.b_moreLink,#b_topw.b_results_eml .b_ad
.sb_add .b_deep+.b_moreLink,#b_results .b_ad .esl_collpased,#b_topw.b_results_eml .b_ad
.esl_collpased,#b_topw .b_ad .sb_adTA .b_vlist2col.b_deep,#b_topw .b_ad .sb_add
.b_deep+.b_moreLink,#b_topw .b_ad
.esl_collpased{padding-left:var(--smtc-gap-between-content-medium)}#b_results .b_ad .b_vlist2col.b_deep
ul:first-child,#b_topw.b_results_eml .b_ad .b_vlist2col.b_deep ul:first-child,#b_topw .b_ad
.b_vlist2col.b_deep ul:first-child{margin-right:0}#b_results .b_ad
.b_vlist2col.b_deep>ul:nth-child(2),#b_topw.b_results_eml .b_ad
.b_vlist2col.b_deep>ul:nth-child(2),#b_topw .b_ad
.b_vlist2col.b_deep>ul:nth-child(2){margin-left:var(--smtc-padding-content-xx-large)}#b_results .b_ad
form.b_externalSearch,#b_topw.b_results_eml .b_ad form.b_externalSearch,#b_topw .b_ad
form.b_externalSearch{margin-left:var(--smtc-gap-between-content-medium)}.b_ads1line{white-space:nowra
p;overflow:hidden;text-overflow:ellipsis;display:block}.pa_item .b_attribution cite,#b_context .pa_item
.b_attribution cite,.pa_hover .b_attribution cite,.pa_item .b_footnote .pa_url cite,#b_rrat_cont .pa_item
.b_attribution cite{color:#111;opacity:.8}#bpage.b_drk .pa_item .b_footnote .pa_url
cite{color:#d2d0ce}#b_results .b_ad .sb_adTA .b_vlist2col li .ad_vsl,#b_topw.b_results_eml .b_ad .sb_adTA
.b_vlist2col li .ad_vsl,#b_topw .b_ad .sb_adTA .b_vlist2col li
.ad_vsl{padding-top:7px;display:block}#b_results .b_ad .b_deep span.ad_vsl,#b_topw.b_results_eml .b_ad
.b_deep span.ad_vsl,#b_topw .b_ad .b_deep span.ad_vsl{font:var(--bing-smtc-text-global-body1)}#b_results
.b_ad .b_deep span.ad_vsl strong,#b_topw.b_results_eml .b_ad .b_deep span.ad_vsl strong,#b_topw .b_ad
.b_deep span.ad_vsl strong{font-weight:400}#b_results .b_ad .b_vlist2col.b_deep
.ad_vsl,#b_topw.b_results_eml .b_ad .b_vlist2col.b_deep .ad_vsl,#b_topw .b_ad .b_vlist2col.b_deep
.ad_vsl{cursor:pointer}#b_results .b_ad .b_vlist2col.b_deep .ad_vsl,#b_topw.b_results_eml .b_ad
.b_vlist2col.b_deep .ad_vsl,#b_topw .b_ad .b_vlist2col.b_deep
.ad_vsl{margin-left:-16px;padding-left:16px;margin-right:-12px;padding-right:12px;margin-bottom:-8px;pad
ding-bottom:8px}#b_results .b_ad .b_vlist2col.b_deep li:hover .ad_vsl a,#b_topw.b_results_eml .b_ad
.b_vlist2col.b_deep li:hover .ad_vsl a,#b_topw .b_ad .b_vlist2col.b_deep li:hover .ad_vsl
a{text-decoration:underline}#b_results .b_ad .b_vlist2col.b_deep li,#b_topw.b_results_eml .b_ad
.b_vlist2col.b_deep li,#b_topw .b_ad .b_vlist2col.b_deep li{padding:0 7px 7px
16px;margin-bottom:2px;margin-top:2px;margin-left:-16px}#b_results .b_ad .b_vlist2col.b_deep div.ad_vsl
h3 a strong,#b_topw.b_results_eml .b_ad .b_vlist2col.b_deep div.ad_vsl h3 a strong,#b_topw .b_ad
.b_vlist2col.b_deep div.ad_vsl h3 a strong{color:#4007a2}#b_results .b_ad
.b_vlist2col.b_deep,#b_topw.b_results_eml .b_ad .b_vlist2col.b_deep,#b_topw .b_ad
```

# Double-fed asynchronous generator for wind power

.b\_vlist2col.b\_deep{overflow:unset}#b\_results .b\_ad .b\_vlist2col.b\_deep  
a.ad\_vslWiderClk,#b\_topw.b\_results\_eml .b\_ad .b\_vlist2col.b\_deep  
a.ad\_vslWiderClk{white-space:nowrap;overflow:hidden;text-overflow:ellipsis;display:block}#b\_content  
li.b\_ad  
a.cbtn.ad\_actlink{color:#666;min-width:68px;max-width:110px;white-space:nowrap;line-height:26px}#b\_res  
ults li.b\_ad a.cbtn.ad\_actlink,#b\_topw.b\_results\_eml li.b\_ad  
a.cbtn.ad\_actlink{background-color:#f5f5f5;border-radius:16px;min-width:40px;max-width:110px;white-spac  
e:nowrap;line-height:26px}#b\_results li.b\_ad a.cbtn.ad\_actlink:hover,#b\_topw.b\_results\_eml li.b\_ad  
a.cbtn.ad\_actlink:hover{background-color:#fff}.b\_ad  
.b\_CTABtn\_P{position:absolute;right:0;display:flex;align-self:center}.ad\_mrrtngscr{font-weight:bold;line-hei  
ght:var(--bing-ads-smtc-algo-url-line-height)}.b\_ad .csrc,.pa\_item .csrc{padding-right:0}.csrc  
.sw\_rtcOLOR{color:#d32f2f;font-weight:bold;font-family:"Segoe UI",Arial,Helvetica,Sans-Serif}.b\_dark .csrc  
.sw\_rtcOLOR{color:#f66}.csrc .sw\_rtright{padding-left:5px}.csrc .sw\_rtleft{padding-right:5px}.csrc  
.nobg{background-image:none}.csrc  
.rms\_st{padding-right:1px;vertical-align:inherit;max-height:14px;max-width:14px}#b\_content .b\_ad  
.b\_secondaryText .b\_colorBlend,#b\_results>.b\_ad .b\_colorBlend,#b\_topw.b\_results\_eml>.b\_ad  
.b\_colorBlend,#b\_results>.b\_ad .b\_accentColor,#b\_context>.b\_ad .b\_accentColor,#b\_rrat\_cont>.b\_ad  
.b\_accentColor,#b\_topw.b\_results\_eml>.b\_ad .b\_accentColor,#b\_context>.b\_ad  
.b\_colorBlend,#b\_rrat\_cont>.b\_ad .b\_colorBlend,#b\_dynRail>.b\_ad .b\_colorBlend,.pa\_hover  
.b\_secondaryText .b\_colorBlend,#b\_pole .pa\_carousel .b\_secondaryText  
.b\_colorBlend{color:var(--bing-ads-smtc-desktop-foreground-snippet-default)}.hsl\_carousel{padding-top:4px  
;padding-bottom:4px}.hsl\_carousel .b\_slideexp{margin-bottom:0}.hsl\_carousel  
.slide{cursor:pointer;height:100%;width:auto!important}.hsl\_carousel  
.sl\_item{padding:8px;font-size:14px;line-height:20px}.hsl\_carousel .sl\_item  
strong{font-weight:normal}#slideexp2\_AB20E0 .slide { margin-right: 8px; }#slideexp2\_AB20E0c  
.b\_slidebar .slide { border-radius: 6px; }.slide\_mask { background-color: black; } #slideexp2\_AB20E0  
.slide:last-child { margin-right: 0px; }#slideexp2\_AB20E0 .slide:first-child { margin-left: 0px; }  
#slideexp2\_AB20E0 .slide:first-child .slide\_mask { opacity: 0; }#slideexp2\_AB20E0c { margin: -4px; }  
#slideexp2\_AB20E0c .b\_viewport { padding: 4px 1px 4px 1px; margin: 0 3px; } #slideexp2\_AB20E0c  
.b\_slidebar .slide { box-shadow: 0 0 0 1px rgba(0, 0, 0, 0.05); -webkit-box-shadow: 0 0 0 1px rgba(0, 0, 0,  
0.05); } #slideexp2\_AB20E0c .b\_slidebar .slide.see\_more { box-shadow: 0 0 0 0px rgba(0, 0, 0, 0.00);  
-webkit-box-shadow: 0 0 0 0px rgba(0, 0, 0, 0.00); } #slideexp2\_AB20E0c .b\_slidebar .slide.see\_more  
.carousel\_seemore { border: 0px; }#slideexp2\_AB20E0c .b\_slidebar .slide.see\_more:hover { box-shadow: 0 0  
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# Double-fed asynchronous generator for wind power

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Abstract: The paper describes the engineering and design of a doubly fed induction generator . (DFIG), using back-to-back PWM voltage-source converters in the rotor circuit.

Doubly fed induction generator (DFIG) is one of the main technologies employed in wind energy conversion systems (WECSs). The history of the development of this technology, its importance, and ...

One crucial technology that has enabled the efficient harnessing of wind energy is the Doubly Fed Induction Generator (DFIG). In this article, we will explore the world of DFIG in wind ...

This chapter introduces the operation and control of a Doubly-fed Induction Generator (DFIG) system. The DFIG is currently the system of choice for multi-MW wind turbines. The aerodynamic system ...

The Doubly Fed Induction Generator (DFIG) is a specialized form of induction generator used widely for large-scale wind power generation. It is designed to operate efficiently despite the ...

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