



## The role of power generation in substations

The different types of substations we've discussed are all essential building blocks of the power system. They enable the smooth transfer of electricity from generation to consumption, safely and with minimal losses, across vast networks. This article examines the functions of four different types of substations within the electrical grid: step-up, step-down, transmission, and distribution. Voltage transformation is essential in power systems. For balanced three-phase systems, the real power transferred is:  $P = \sqrt{3} V_L I_L$ . In a less simple way, substation is the key part of electrical generation, transmission, and distribution systems. Substation transforms voltage from high to low or from low to high as necessary. Substation also dispatches electric power from generating stations to the consumption center. Electric

Explore the different types of electrical substations, including step-up, step-down, distribution, mobile, and more. Learn about their functions, voltage levels, and designs in our comprehensive guide. As the demand for electrical power continues to grow, it can be met through power generation

In the intricate web of power systems, substations play a pivotal role in ensuring the efficient and reliable transmission and distribution of electrical energy. As a leading substation supplier, I have witnessed firsthand the significance of these facilities in modern infrastructure. This blog

While often overlooked, substations play a vital role in ensuring that electricity is transmitted and distributed effectively, making them the backbone of our electrical infrastructure. What is a Substation? A substation is a facility in the electrical grid where voltage is transformed, managed

In the simplest terms, an electrical substation is a part of an electrical generation, transmission, and distribution system that transforms voltage from high to low, or the reverse. Picture it as a giant switchboard in the electrical grid, controlling and directing the flow of electrical energy. Understanding the Role of Substations Along the Transmission Path

The different types of substations we've discussed are all essential building blocks of the power system. They enable the smooth transfer of electricity from generation to

The basic things about substations you MUST know in the middle

Substation Equipment Transformers Circuit Breakers Disconnecting Switches Substation Bus Surge Arresters Insulators and Conductors Protective Relays Fuses Substation Location

All power transmission lines must be isolated to avoid safety hazards. Large strings of insulators are used at substations and at other points along the power distribution system to isolate the current carrying conductors from their steel supports or any other ground mounted equipment. Insulators may be made of porcelain, rubber or a thermoplastic

See more on [electrical-engineering-portal](#)

#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 .b\_ans.b\_vidAns #serpvidans.vsacf .mc\_vtvc,#b\_results .b\_ans.b\_vidAns #serpvidans.vsacf .mc\_vtvc\_th,#b\_results .b\_ans.b\_vidAns #serpvidans.vsacf .cico,#b\_results .b\_ans.b\_vidAns #serpvidans.vsacf .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



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.vrhtc,#b_results .b_ans.b_vidAns #serpvidans.vsacf .vrhtpc{border-radius:var(--mai-smtc-corner-  
list-card-nested-default))#b_results .b_ans.b_vidAns #serpvidans.vsacf .mmlist  
.mc_vtvc,#b_results .b_ans.b_vidAns #serpvidans.vsacf .mmlist .mc_vtvc  
.mc_vtvc_meta{margin:0)#b_results .b_ans.b_vidAns #serpvidans.vsacf .mmlist .mc_vtvc  
.mc_vtvc .mc_vtvc_meta_channel,#b_results .b_ans.b_vidAns #serpvidans.vsacf .mmlist  
.mc_vtvc .mc_vtvc_meta .mc_vtvc_meta_row_channel{color:var(--smtc-foreground-content-  
neutral-primary))#serpvidans.vsacf,#serpvidans.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);height:a  
uto;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{color:var(--smtc-foreground-content-n  
eutral-primary);height:var(--mai-smtc-padding-card-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
```



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.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:var(--mai-smtc-padding-card-default)}.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)}.vsacf .va_tt .vsb_tr_chd .mc_vtvc_th_dock.rmoverlay{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-image-stop-0) 0%,var(--mai-smtc-background-ctrl-on-image-rest) 100%)}.vsacf .va_tt a.vsb_tr_t{padding:0 var(--mai-smtc-padding-card-default);font:var(--acf-font-title-2-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.vsaf .vsb_tr_chd .mc_vtvc_tot .mc_vtvc_title strong{font-size:14px;line-height:20px;display:unset}#serpvidans.vsaf .va_tt .b_sldrp .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}#serpvidans.vsaf .b_module_expansion_control .b_btnContainer .b_CompactExpansion{background-color:var(--bing-smtc-background-ctrl-neutral-rest);display:flex;justify-content: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-foreground-content-brand-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-
```



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```
content-brand-rest))#serpvidans.vsacf .b_module_expansion_control .b_btnContainer::after{conte
nt:"";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}.mmtitle>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.no
shadow{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%;hei
ght: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_ba
n_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_vtvc_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-b
ottom: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;botto
m:0;left:0;right:0}.mc_vtvc_ht{width:100%;padding:0 16px;line-height:16px;color:#fff;text-decor
ation:underline;word-break:break-word;box-sizing:border-box;vertical-align:middle;text-align:cen
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```
ter}.mc_vtvc_th_live_b{background-color:#c80000;color:#fff;display:inline-block;padding:2px
8px;font:11px/14px Arial;border-radius:2px;text-
transform:uppercase;height:15px;width:26px;position:absolute;left:8px;top:110px}.isvctrl .isv
.mc_vtvc_ban_up{left:0;right:initial}.mc_vtvc_ban_lo,.mc_vtvc_ban_up{right:0}.vt_text.b_lRigh
t.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%;background:rgba(0,
0,0,.7);position:absolute;top:0;bottom:0;left:0;right:0;display:table}.mc_vtht{width:100%;padding
:0 16px;line-height:16px;color:#fff;text-decoration:underline;word-break:break-word;box-
sizing:border-box;vertical-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}.emptyStyleFor
DebuggingPurpose{top:0}.mc_vtvc_center_play{width:32px;height:32px;background-size:contai
n;position:absolute;margin:auto;bottom:0;top:0;left:0;right:0;box-shadow:none;border-radius:0}.m
c_vtvc_center_play.rmvbg{width:32px;height:32px;background-
image:none}.mc_vtvc_htb,.mc_vtvc_ht{display:none}.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%22%20height%3D%22%20viewBox%3D%220%200%22%20fill%3D%
22none%22%20xmlns%3D%22http%3A%2F%2F .w3 %2F2000%2Fsvg%22%3E%0D%0A%20
%20%20%20%3Crect%20width%3D%22%20height%3D%22%20rx%3D%22%20fill%3D
%22black%22%20fill-opacity%3D%220.6%22%2F%3E%0D%0A%20%20%20%20%3Cpath%2
0d%3D%22M14.%.1923C13.%.209.62986%.%.%.4997V20.5C12%.%.%.%.8073L22.%.3073
C23.%.%.%.%.6926L14.%.1923Z%22%20fill%3D%22white%22%20fill-
opacity%3D%220.9%22%2F%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;color: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
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.mc_vtvc_th,.cardless.mmmlist .mc_vtvc_th .cico,.cardless.mmmlist .mc_vtvc_th div.rms_img{border-
radius:6px}.cardless.mmmlist .mc_vtvc_th{height:111px}.cardless.mmmlist .mc_vtvc_htc{border-
radius:6px;overflow:hidden}#serpvidans.vasac.cardless{box-shadow:none}.cardless.mmmlist
.mc_bc{padding:2px 8px;line-height:14px;border-radius:2px;font-weight:normal}.mc_vtvc: hover
.mc_vtvc_title{text-decoration:underline}.mc_vtvc_meta{box-sizing:border-box;display:inline-bl
ock;line-height:18px;position:relative;width:100%}.mc_vtvc_meta_block{bottom:0;position:absol
ute;width:100%}.mc_vtvc_meta_row{line-height:16px;font-size:11px;height:17px;overflow:hidde
n;text-overflow:ellipsis;white-space:nowrap}.mc_vtvc_meta_row a{display:inline-
block}.mc_vtvc_meta_row a: hover{text-decoration:underline}.mc_vtvc_meta_block_area{positio
n:relative}.mc_vtvc_meta_block,.mc_vtvc_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{lin
e-height:18px;padding-bottom:4px;font-weight:bold;color:#00809d;text-transform:uppercase;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-dec
oration:none}.mc_vtvc_meta_pubdate{color:#444;padding-bottom:3px}.mc_vtvc_meta_channel{
color:#444}.mc_vtvc_meta_w,.mc_vplvc_meta_w{position:relative}.mc_vtvc_meta_bg_w,.mc_v
plvc_meta_bg_w{height:100%;width:100%;overflow:hidden;position:absolute;top:0}.mc_vtvc_m
eta_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{t
op:0}.emptyStyleForDebuggingPurpose{top:0}.emptyStyleForDebuggingPurpose{top:0}.emptySt
yleForDebuggingPurpose{top:0}.emptyStyleForDebuggingPurpose{top:0}.emptyStyleForDebugg
ingPurpose{top:0}.vtbc .mv_vtvc_play{display:inline-
```



## The role of power generation in substations

```
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(
X//////////9/gMdvAAACnRSTIMAETNEVWaImbvuo4D1oAAAAB9JRE
FUCB1jmMoABKuaQcSqQhCxKgFGgLhNQlKpQAwA8zkLyQA16F0AAAAASUVORK5CYII=
)}.mc_bc_w{height:18px;padding:8px;text-align:right}.mc_bc{background-
color:rgba(0,0,0,.75);padding: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);opacit
y:1}.mmsi{height:16px;width:16px;position:relative;top:5px;padding-right:var(--smtc-gap-betwee
n-content-xx-small)}.vrhdata{display:none}.mmgrid>div{width:197px;display:inline-
block;margin-right:8px;margin-bottom:8px;box-shadow:0 0 1px rgba(0,0,0,.05);position:relative
;vertical-align:top;overflow:hidden;white-space:normal;border-radius:6px}.vsarr
.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:.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:.9px){#serpvidansrr
.mmgrid>div{width:124px;height:164px}#serpvidansrr      .mmgrid>div      .cico,#serpvidansrr
.mmgrid>div      .cico      .rms_img{width:124px;height:76px}#serpvidansrr      .mc_vtvc
```



## The role of power generation in substations

```
.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 #ecec; 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 .vi
deo_metadata>h3{white-space:nowrap;overflow:hidden;text-overflow:ellipsis;-webkit-line-clamp:
1;line-height:15px;height:15px;font-size:13px;color:#000;margin-bottom:20px;font-
family:"Arial",Helvetica,Sans-Serif;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="M"] .pffvt,.vrhc line.nhvpv[data-tps="L"] .pffvt{display:inline-
flex}.vrhc line.nhvpv .vrhc.pffv .vrhc{display:none}.vrhc line.nhvpv .vrhc.pffv .player_ol{back
ground:var(--mai-smtc-background-ctrl-on-image-hover);transition:background-color .5s;display:f
lex;align-items:center;justify-content:center;padding:var(--smtc-gap-between-content-x-
small);gap: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{he
ight:100%;width:100%;overflow:hidden}.smtplayerhtml5 video{min-height:100%;min-
width:100%}.smtplayerhtml5 .videoplaying{background-color:#000}.smtplayerhtml5.hide{displa
y:none}.pffvt{display:none;color:var(--mai-smtc-foreground-ctrl-on-image-rest);font:var(--bing-
smtc-text-global-subtitle2-strong)}.pffvi{mask:url(/rp/ui07wU6K7FR_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 .vrhc.pffv .vrhc{display:none}.hvpv.h5s .vrhc.pffv .player_ol{background:var(--
mai-smtc-background-ctrl-on-image-hover);transition:background-color .5s;display:flex;align-ite
```



## The role of power generation in substations

```
ms:center;justify-content:center;padding:var(--smtc-gap-between-content-x-small);gap: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;position: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:pointer}.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:inline-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:relative;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 .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/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 .vt_vp,.vrhc.popout .vt_vp,.vrhc.mousefollow .vt_vp{position:absolute;bottom:0;border:1px solid #ccc;padding:0;top:0;left:0;z-index:3}.vrhtc
```



## The role of power generation in substations

```
.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:abso-
lute!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.popout,.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
}.vrhcp{position:relative;top:0;left:0;display:table-row}.vrhcp
.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,.vr
hc: visited{color:#000;text-decoration:none}.vrhc.vrh_clc{cursor:pointer}a.hover-anchor{display:
block;height:100%;width:100%;text-decoration:none}.vrhstat{height:0;overflow:hidden}.vsb_tr_c
{position:relative;width:100%;overflow:hidden;background:#1d1b28;height:583px;margin-
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;heigh-
t:70px;overflow:hidden;color:#fff;text-overflow:ellipsis;display:-webkit-box;-webkit-box-
```



## The role of power generation in substations

```
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-ima
ge:url(data:image/svg+xml,%3Csvg%20width%3D%227%22%20height%3D%22%20viewBox
%3D%220%200%207%22%20fill%3D%22none%22%20xmlns%3D%22http%3A%2F%2F.w3
%2F2000%2Fsvg%22%3E%0D%0A%20%20%20%20%3Cpath%20d%3D%22M0.186925%201
.19491L5.%207L0.186925%.8051C-0.0623082%.%20-0.0623082%.%200.186925%.7944C0.436
158%.%200.838112%.%201.08628%.7944L6.81334%207.49465C6.93212%207.36515%207%20
7.18433%207%207C7%206.81567%206.93212%206.63485%206.81334%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%3
D%22white%22%20fill-opacity%3D%220.7%22%2F%3E%0D%0A%3C%2Fsvg%3E)}.va_tt
.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:transparent;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;text-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
```



## The role of power generation in substations

.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() no-repeat;background-size:18px 18px;padding-right:22px}.va\_tt .vasig::before{content:"";background:url() no-repeat;background-size:18px 18px;padding-right:22px}.va\_tt .vastt::before{content:"";background:url(



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AABWdVznAAAA90lEQVR4AZWQu2sCQRDGJyYHCQdqPEKqSHr7NOZFyvQJi1YKYII1ir  
Y+ieoiKXYKZaniI3WIoqg4AMfhaAcCMJ93q2vwkXODz6WnZnf7swQEUU0w6D1Wn7y4cOJ  
O/sLL8cH8ps1ernCdYCueCoJm03iAyaLGWa3SzstDFg028BoBvnfdw4IWf+hTgtLVUX67ZcBcj  
CKV0HEl/h0epT2cgT8lBAlyjt+KNNsHMLU3yhUUebH+xGwWx+JRjOKdutUk+53wZVCPLG  
vnj/f2ZCFchXh6RjDwYS1dnFLHo8XvZIMNVuE7PyD1SScATcHyqhuNevQt8H62BZHiaf6ZtX  
qegAAAABJRU5ErkJggg==) 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.vasfb::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:18px}.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  
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;line-  
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/rKVnxf6wkbxI0DbA2Au3IVC5Sog.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}.vsb\_tr\_chd



## The role of power generation in substations

```
.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{posit
ion: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
.mc_vtvc_th{background-color:transparent}.vsadc .grad_b{top:81.8%}.mc_vtvc_tot .mc_vtvc_me
ta{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{background: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{backgro
und:#69423d}.vtdc_brown_g{background:linear-gradient(180deg,rgba(105,66,61,0) 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_gr
een_g{background:linear-gradient(180deg,rgba(50,79,50,0) 0%,#324f32 100%)).vtdc_orange{bac
kground:#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(119,64,119,0) 0%,#774077 100%)).vtdc_red{b
ackground:#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{ba
ckground:#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-align:bottom}.vam{vertical-align:middle}.vat{vertical-align:top}.vabl{verti
cal-align:baseline}.vatt{vertical-align:text-top;border-radius:0}.vatb{vertical-align:text-bottom}
evronDown12, evronUp12{background:url(/rp/QKlTrqL25sGDqfRYQjkMWJWDeG8.png) no-
repeat;background-size:494px 58px;width:12px;height:12px} evronDown12{background-
```



## The role of power generation in substations

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 .cico,.ciplr .cico{border-radius:0}.b\_action>.cipt,.b\_action>.cipl{float:left}.ciptr,.ciplr{margin-left:10px}.sw\_play{height:16px;width:16px}:not(.dc\_aud\_wrp)>.sw\_play{background-image:url( E6UAFKUAE6QAFKUAEqYAD58AE6QAE6UAFKQAEqUAD6QAE6MAE6QAD6cAE6QAF aQAFKQAEqQAFKUAEqQAFKUAEqIAFKMAEqMAE6MAD58AE6UAE6UAE6IAFKYAFK YAE6MaDJ//AAAAI3RSTlMAEGCfz//XyCQj79vMEDfIKAwok/vYL9gcHDPMM9QkK+fnz HYYSkAAAEVSURBVHgBdZMFkuwweEPVkJULx8nSMN7/jh/X1dUDKgjpyaTIZavQLUF6q2 rTo5o24aoaRVkH9MNOkk1DD3QW8AzV7M/zAtIDNGbyqKA5k9+d58OkKPukZFjmU0/0Qf6P deXGVcDu3wBQphcXpxH+vlioyhtyHRwLrWQeICCEzHyZvunlBmLImo0WtsEQQnZU2jMFQ wg5cFTCgiGEGF8CBUMMGReGdCpvnG/xaT7Ennc3RFyaOMZlOu7LXLF2Q8GL1tSyROMGx 3/00aSzH1bEyznOUKYZcC/C+XVh2nJT6Yk+yd7giz3wV/LstS8NfvgTPCN0qVkofAk8A+thMs nehzXQmqLmBVdqHXfZ97JPkPa3ldP6DeOGDIAP873EAAAAAEIftkSuQmCC);background-size:16px 16px}#slideexp1\_EFAD3E .slide { width: 94px; margin-right: 20px; }#slideexp1\_EFAD3Ec .b\_slidebar .slide { border-radius: 6px; }#slideexp1\_EFAD3E .slide:last-child { margin-right: 1px; }.b\_sldrp .slide{box-shadow:0 0 0 1px rgba(0,0,0,.05)}.b\_cards .cico,.b\_slidebar .slide .cico{border-radius:0}#b\_content .b\_wpt\_container .l\_ecrd\_imgsetgrid.l\_ecrd\_imgsetgrid\_actionlink .l\_ecrd\_imgsetgrid\_item .cico{border-radius:0!important}.b\_sldrp .slide.see\_more{box-shadow:0 0 0 0 rgba(0,0,0,0)}.b\_sldrp .slide.see\_more .carousel\_seemore{border:0}.b\_sldrp .slide.see\_more: hover{box-shadow:0 0 0 0 rgba(0,0,0,0)}#slideexp1\_EFAD3Ec { margin: -4px; } #slideexp1\_EFAD3Ec .b\_viewport { padding: 4px 1px 4px 1px; margin: 0 3px; }#slideexp1\_EFAD3Ec .b\_slidebar .slide[data-mini="1"] { display:none; }Videos of The Role of Power Generation In SubstationsWatch video12:38How Do Substations Work?Practical Engineering3.5M viewsAug 27, 2019Watch video0:44Substation | Types of Substations | Power Generating System.Basic Electrical Learning1.2K views6 months agoWatch video14:161. Substation Components - Power TransformersCMTEQ6.6K viewsJun 4, Watch full videoShort videosthe role of power generation in substations00:44Substation | Types of Substations | Power Generating System.00:13Electrical Substation || What is Power Grid01:54How Linemen Work on LIVE High Voltage Substations00:17How Electricity Works: Massive Transformers & High Voltage Power Distribution #shorts01:30The Importance of High Voltage Disconnect Switches in Electrical Substations00:47What is the Purpose of a Capacitor Bank in Substations? | 1 Minute Gyan | #capacitor | ACE OnlineSee allWatch full video.rcimgcol .cico { background: #f5f5f5; } .b\_drk .rcimgcol .cico, .b\_dark .rcimgcol .cico { background: unset; }.b\_imgSet .b\_hList



## The role of power generation in substations

```
.li.square_m,.b_imgSet .b_hList li.tall_m{width:75px}.b_imgSet .b_hList
li.tall_mlb{width:113px}.b_imgSet .b_hList li.tall_mln{width:96px}.b_imgSet .b_hList
li.wide_m{width:128px}.b_imgSet.b_Card .b_hList li{padding-left:1px;padding-
right:9px}.b_imgSet.b_Card .b_hList li.tall_wfn{width:80px;padding-right:6px}.b_imgSet.b_Card
.b_hList li:last-child{padding-right:1px}.b_imgSet.b_Card .b_imgSetData{padding:0 8px
8px;height:40px}.b_imgSet.b_Card .b_imgSetItem{box-shadow:0 0 0 1px rgba(0,0,0,.05),0 2px
3px 0 rgba(0,0,0,1);border-radius:6px;overflow:hidden}.b_imgSet .b_imgSetData p
a{color:#444;outline-offset:0}.b_subModule .b_clearfix.b_mhdr .b_floatR
.b_moreLink,.b_subModule .b_clearfix.b_mhdr .b_floatR .b_moreLink:visited,.b_subModule>.b_
moreLink,.b_subModule>.b_moreLink:visited{color:#767676}.b_imgSet .cico.b_placeholder{dis
play:flex;justify-content:center;background-color:#f5f5f5;background-clip:content-box}.b_imgSet
.cico.b_placeholder a{display:flex}.b_imgSet .cico.b_placeholder a
img{width:48px;height:48px;margin:auto}@media(max-width:.9px){#b_context .b_entityTP
.b_imgSet li:nth-child(5){display:none}.b_imgSet .b_hList li.wide_m:nth-
child(3){display:none}}@media(max-width:.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;paddi
ng-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:var(--mai-smtc-padding-card-default)}.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{border-radius:unset;border-top-left-r
adius:var(--smtc-corner-card-rest);border-bottom-left-radius:var(--smtc-corner-card-
rest);overflow:hidden}.rcimgcol .b_imgSet .b_hList>li:last-child .cico{border-radius:unset;border-
top-right-radius:var(--smtc-corner-card-rest);border-bottom-right-radius:var(--smtc-corner-card-
rest);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_c
aption:has(.rcimgcol){padding-right:var(--mai-smtc-padding-card-default);margin-right:calc(-1*va
r(--mai-smtc-padding-card-default));margin-left:calc(-1*var(--mai-smtc-padding-card-
default));padding-left:var(--mai-smtc-padding-card-default)}
sightsOverlay,#OverlayIFrame.b_mcOverlay sightsOverlay{position:fixed;top:5%;left:5%;bottom
:5%;right:5%;width:90%;height:90%;border:0;border-radius:15px;margin:0;padding:0;overflow:hi
dden;z-index:9;display:none}#OverlayMask,#OverlayMask.b_mcOverlay{z-index:8;background-
color:#000;opacity:.6;position:fixed;top:0;left:0;width:100%;height:100%}electricalampere Types
of Substations and Functions - electricalampere As the demand for electrical power continues to
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## The role of power generation in substations

grow, it can be met through power generation substations. There are different types of power generation substations, including thermal, The Role of Substations in Power Systems: A Key Player in They play an essential role in converting voltage levels and ensuring the smooth transmission of electricity from power plants to consumers. What is the role of a substation in power transmission and In the intricate web of power systems, substations play a pivotal role in ensuring the efficient and reliable transmission and distribution of electrical energy. As a leading substation Understanding the Role of Transformer Transformer substations are pivotal components in the vast network that forms our electrical power distribution system. They bridge the gap between electricity generation and its final consumption. Understanding Substations: The Backbone of Our It serves as an intermediary point between power generation facilities--such as power plants--and the end users, including homes, businesses, and industries. It perform several key functions, including voltage Understanding Substation Design: Principles and Considerations Transmission substations typically receive power from generating plants and convert it to a higher voltage to minimize energy losses during long-distance transmission. The Role of Substations in the Electrical Grid Electrical substations adjust high-voltage electricity from power plants to lower levels suitable for local distribution. This process involves transformers, switchgear, and other devices that Understanding the Role of Substations in Electrical Substations receive electrical energy directly from power plants through incoming power supply lines, known as 'feeders'. The incoming electricity is usually at a very high voltage, often too high for Understanding the Role of Substations Along the Transmission PathThe different types of substations we've discussed are all essential building blocks of the power system. They enable the smooth transfer of electricity from generation to The basic things about substations you MUST know in the middle In a less simple way, substation is the key part of electrical generation, transmission, and distribution systems. Substation transforms voltage from high to low or from low to high as Types of Substations and Functions As the demand for electrical power continues to grow, it can be met through power generation substations. There are different types of power generation substations, including thermal, The Role of Substations in Power Systems: A Key Player inThey play an essential role in converting voltage levels and ensuring the smooth transmission of electricity from power plants to consumers. Understanding the Role of Transformer Substations in Power Transformer substations are pivotal components in the vast network that forms our electrical power distribution system. They bridge the gap between electricity generation and its Understanding Substations: The Backbone of Our Electrical GridIt serves as an intermediary point between power generation facilities--such as power plants--and the end users, including homes, businesses, and industries. It perform several Understanding the Role of Substations in Electrical Grids: A Substations receive electrical energy directly from power plants through incoming power supply lines, known as 'feeders'. The incoming electricity is usually at a very high Understanding the Role of Substations Along the Transmission PathThe different types of substations we've discussed are all essential building blocks of the power system. They enable the smooth transfer of electricity from



## The role of power generation in substations

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generation to Understanding the Role of Substations in Electrical Grids: A Substations receive electrical energy directly from power plants through incoming power supply lines, known as 'feeders'. The incoming electricity is usually at a very high

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