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*Energy Solutions Provider*

# RENTAL generators

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# GENERATORS SPECIFICATIONS

# Generators specifications



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Genset Ref :	R22C3	R90C3	R110C3	R550C3
Engine :	Mitsubishi	<b>John Deere</b>	John Deere	<b>Volvo</b>
	S4Q2-Z361SD	<b>4045HFS86</b>	4045HFS87	<b>TAD1651GE</b>
Alternator :	LSA 40 M5	<b>LSA 43.2 L8</b>	LSA 44.2 VS45	<b>LSA 47.2 M7</b>
	Reg R438	<b>REG R450</b>	Reg R450	<b>Reg R450</b>
Rated Power (PRP) :	20 kVA	<b>81 Kva</b>	100 Kva	<b>500 kVA</b>
	16KW	<b>65</b>	80KW	<b>400kW</b>
Voltage :	400/230 V	<b>400/230 V</b>	400/230 V	<b>400/230 V</b>
Rated Frequency :	50 Hz	<b>50 Hz</b>	50 Hz	<b>50 Hz</b>
Controller :	NEXYS	<b>TELYS</b>	TELYS	<b>TELYS</b>
		<b>Synchroniser</b>	Synchroniser	<b>Synchroniser</b>
Breaker :	32/4	<b>160/4</b>	160/4	<b>800/4</b>
Dry weight (kg):	794	<b>2100</b>	2140	<b>6082</b>
Tank capacity (L):	153	<b>527</b>	527	<b>1481</b>
Autonomy @ 50% load (h)	45		36.9	<b>26.9</b>

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# Test report



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Fiche d'Essais Spécifiques - Loueurs 50Hz  
SPECIFIC TEST RECORD FOR RENTAL GENSET

Ref: FORM-0187 Indice H PAGE 1/2

N° ID / Identification number: 39908919  
N° Série / Serial number: 15001244

N° AFFAIRE / Order number: AN156720-016

Date: 23/02/15  
Client: Kamont Baltic AS  
Contrôleur: By A0398  
Plateforme: 32  
Platform: K280-02F

MOFEUR / Engine	ALTERNATEUR / Alternator	RADIA / Cooling system
Marque: John Deere Type: 6045 HES 86 Numéro de série: D16045L297387	Marque: M.16045 Type: A16045L10283 Numéro de série: 32063/2	Type: 023 COFFRET / ARMOIRE Type: 16045L10283
Régulation électronique Marque: John Deere Platine: ECM	Régulation de tension Type: NA IP: 23	Type: 16045L10283 Version soft: 3.4.2 Indice schéma: C

Tests coffret, armoire électrique ou bornier moteur / Check of control panel- engine terminal block		
Intensité préchauffage air Fuel preheating current	NA A	<input checked="" type="checkbox"/>
Intensité pompe fuel Fuel pump current	NA A	<input checked="" type="checkbox"/>
Préchauffage eau Preheating current	NA A	<input checked="" type="checkbox"/>
Tension chargeur batterie Charging voltage	NA V	<input checked="" type="checkbox"/>
Tension alternateur moteur Charging engine alternator	OK V	<input checked="" type="checkbox"/>
Défaut non démarrage Engine Over Cranking Circuit		<input checked="" type="checkbox"/>

Protection + divers / Protection + Various		
Disjoncteur de puissance type / Circuit breaker type	NA 160A	<input checked="" type="checkbox"/>
Type de disjoncteur	bipolaire (2 P) / tripolaire (3 P) / 4 pôles (3 P+N)	<input checked="" type="checkbox"/>
Calibre TC mesure / Measurement CT	150/5	<input checked="" type="checkbox"/>

Contrôle tension de sortie des prises utilisateurs / Sockets output voltage		
Prises Amps / sockets A	Plastron prises conforme au schéma électrique / Sockets panel conformity regarding theel	Sens de rotation conforme / Phase rotation conformity
Y04 / 12FA	U 1/2: 400 U 2/3: 400 U 1/3: 400 U 1/N: 230 U 1/Terre: 230	<input checked="" type="checkbox"/>
Y02 / 63A	U 1/2: 400 U 2/3: 400 U 1/3: 400 U 1/N: 230 U 1/Terre: 230	<input checked="" type="checkbox"/>
Y03 / 32A	U 1/2: 400 U 2/3: 400 U 1/3: 400 U 1/N: 230 U 1/Terre: 230	<input checked="" type="checkbox"/>
Y04 / 16A	U 1/2: 400 U 2/3: 400 U 1/3: 400 U 1/N: 230 U 1/Terre: 230	<input checked="" type="checkbox"/>
Y05 / 16A	U 1/2: 400 U 2/3: 400 U 1/3: 400 U 1/N: 230 U 1/Terre: 230	<input checked="" type="checkbox"/>
Y06 / 16A	U 1/2: 400 U 2/3: 400 U 1/3: 400 U 1/N: 230 U 1/Terre: 230	<input checked="" type="checkbox"/>

Fiche d'Essais Spécifiques - Loueurs 50Hz  
SPECIFIC TEST RECORD RENTAL

Ref: FORM-0187 Indice H PAGE 2/2

N° Série / Serial number: 15001244

Relève des valeurs mini / maxi des plages d'ajustage tensions et vitesse  
Record maximum and minimum values

Ajustage tension / Voltage adjust: 400 V  
Ajustage vitesse / Speed adjust: 1500 rpm

Caractéristiques du groupe / Genset characteristics			
Power: 80 KVA	Service/ Duty: PRP	Speed: 1500 rpm	[Elect Gov] 49.5 - 50.5 Hz
Power: 64 KW	STBY	3000 rpm	[Mech Gov only] 50.9 - 52 Hz
Voltage: 400/430 V			[Mech Gov only] 49.5 or greater
Intensity: 115 A			[R16] 49.5Hz or greater
			53.5Hz or less

Paliers / Stages	F Hertz	U Volts	I Ampères	P Kilowatts	Présent / Present	Indicateurs moteur / Engine indicators	Résultats / Results
0 %	50	400	400	0	<input checked="" type="checkbox"/>	Voltmètre batterie	16.1 V
25 %	50	399	399	24.2	<input checked="" type="checkbox"/>	Ampermètre batterie	NA A
50 %	50	398	398	47.6	<input checked="" type="checkbox"/>	Indicateur température eau	82 °C
75 %	50	398	398	71.3	<input checked="" type="checkbox"/>	Indicateur temp. huile	NA °C
100 %	50	397	398	94.1	<input checked="" type="checkbox"/>	Indicateur pression huile	3.2 bar
110 %	50	397	398	103.6	<input checked="" type="checkbox"/>	Lecteur fuel présente	<input checked="" type="checkbox"/>

IMPACT DE CHARGE MAXIMUM ( pour GE >44 KVA ) / Maximum step load ( only for > 44KVA )		
Dans les critères ISO 8528 CLASSE G2 / Within ISO 8528 CLASS G2 limits		
Impact de charge maximum / Maximum impact of load	64 KW	Echelon maxi (pour information) / Max KW: NA KW

Régime de neutre / Earth neutral		
TT	<input checked="" type="checkbox"/>	TNC / TN
Test différentiel / Differential test		
Protection différentielle non ajustable / Non adjustable differential protection	<input checked="" type="checkbox"/>	Protection différentielle ajustable / Adjustable differential protection
Calibre / Setting	30 mA	Régulation / Delay
Arrêt du GE sur défaut différentiel (injection de courant de fuite) / Genset stopped following a differential fault (with leakage current injection)		
Ouverture disjoncteur sur défaut différentiel / Opening of circuit breaker following a differential fault		
Réarmement manuel de la protection sur relais différentiel (Telys) / Manual reset of the protection on differential relay (Telys)		
Réarmement manuel de la protection sur relais différentiel (Nexys) / Manual reset of the protection on differential relay (Nexys)		
Déclenchement du disjoncteur et de bloc Vigi sur les disjoncteurs modulaires / Triggering of circuit-breaker and Vigi unit on modular circuit-breakers		
Pliage de la partie différentiel / Sealing of differential		

Test circuit gasoil / Diesel fuel circuit test			
Vanne 3 voies présente / 3-way control valves present	<input checked="" type="checkbox"/>	1ère étape (alimentation extérieure) / first step	<input checked="" type="checkbox"/>
Contrôle sens du circuit de gasoil / Direction fuel circuit	Entrée (Asup) / Sortie (Aout)	Jauge fuel / Fuel gauge	Niveau bas / Niveau haut / low level / High level
Contrôle absence de fuites (circuit Gasoil) / No Leak			
Essais conformes au processus d'essai / Test records conform to instruction (IN-0104)			
SDMO Tester Visa: 10177			

## **PRP : *Prime Running Power***

Prime Power is available for an unlimited number of annual operating hours in variable load applications, in accordance with ISO 8528-1.

Possibility of 1 hour 10 % overload every 12 hours

## **ESP : Emergency Stand-by Power**

The standby power rating is applicable for supplying emergency power in variable load applications in accordance with ISO 8528-1.

Overload is not allowed.

# Performance class as per ISO 8528-5 (extract)

	Operational range values			
	Performance class			
	G1	G2	G3	G4
$\Delta$ Maximum F*	-15%	-10%	-7%	Agreement
$\Delta$ Maximum voltage	-25%	-20%	-15%	Agreement

# G2 Class criteria – ISO8528

- **In stabilized regime**

Voltage : +/- 2,5 %

Frequency : +/- 0,75%

- **On Load impact**

Frequency drop allowed :- 10%

Voltage drop allowed : - 20%

- **On load release :**

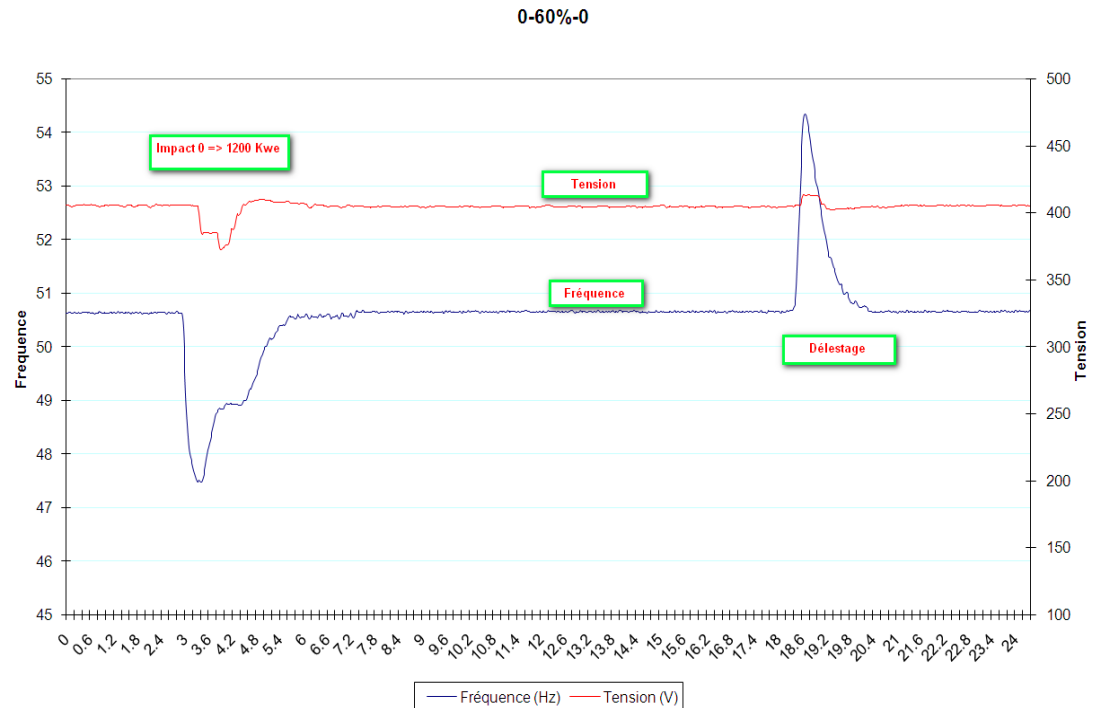
Frequency rise allowed : + 12%.

Voltage rise allowed : + 25%.

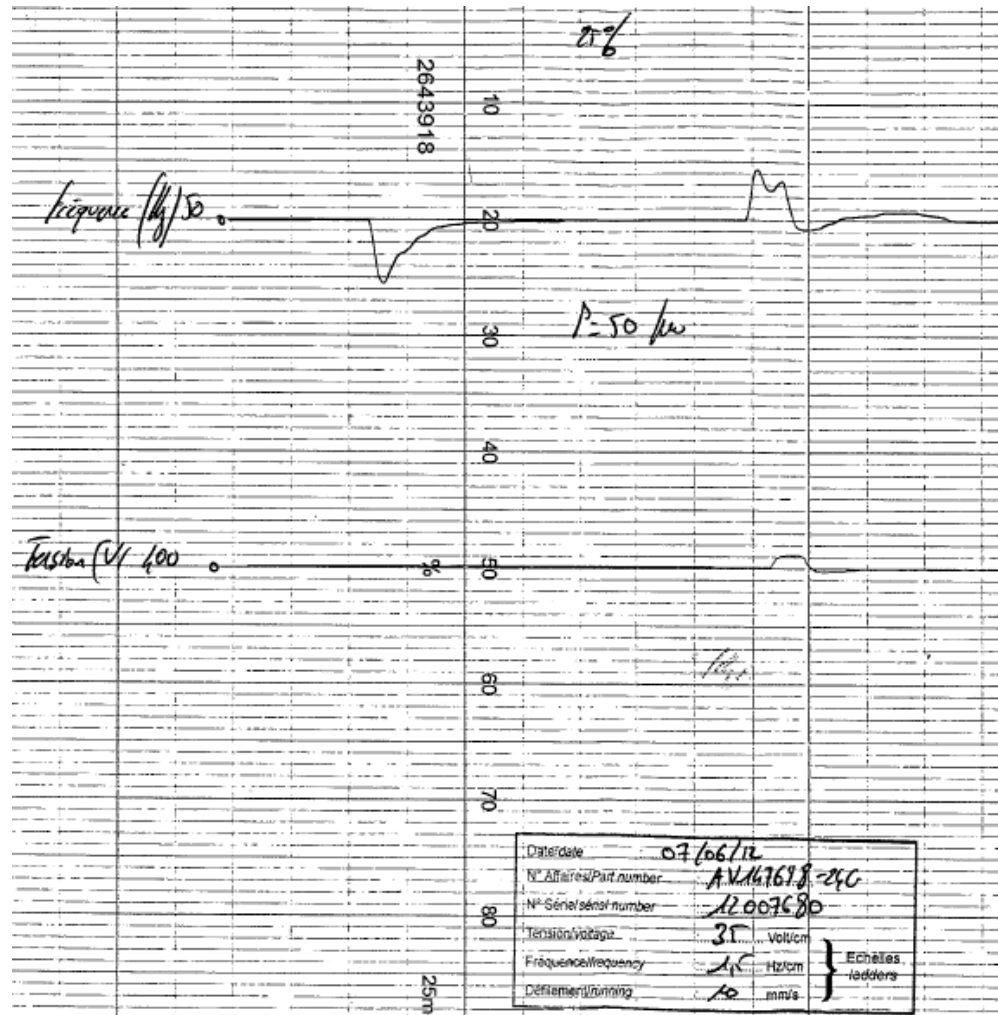
- **Response time :**

Frequency is back within +/- 0.75% of  $F_n$  within 5 secs

Voltage is back +/- 2.5% within 6 secs

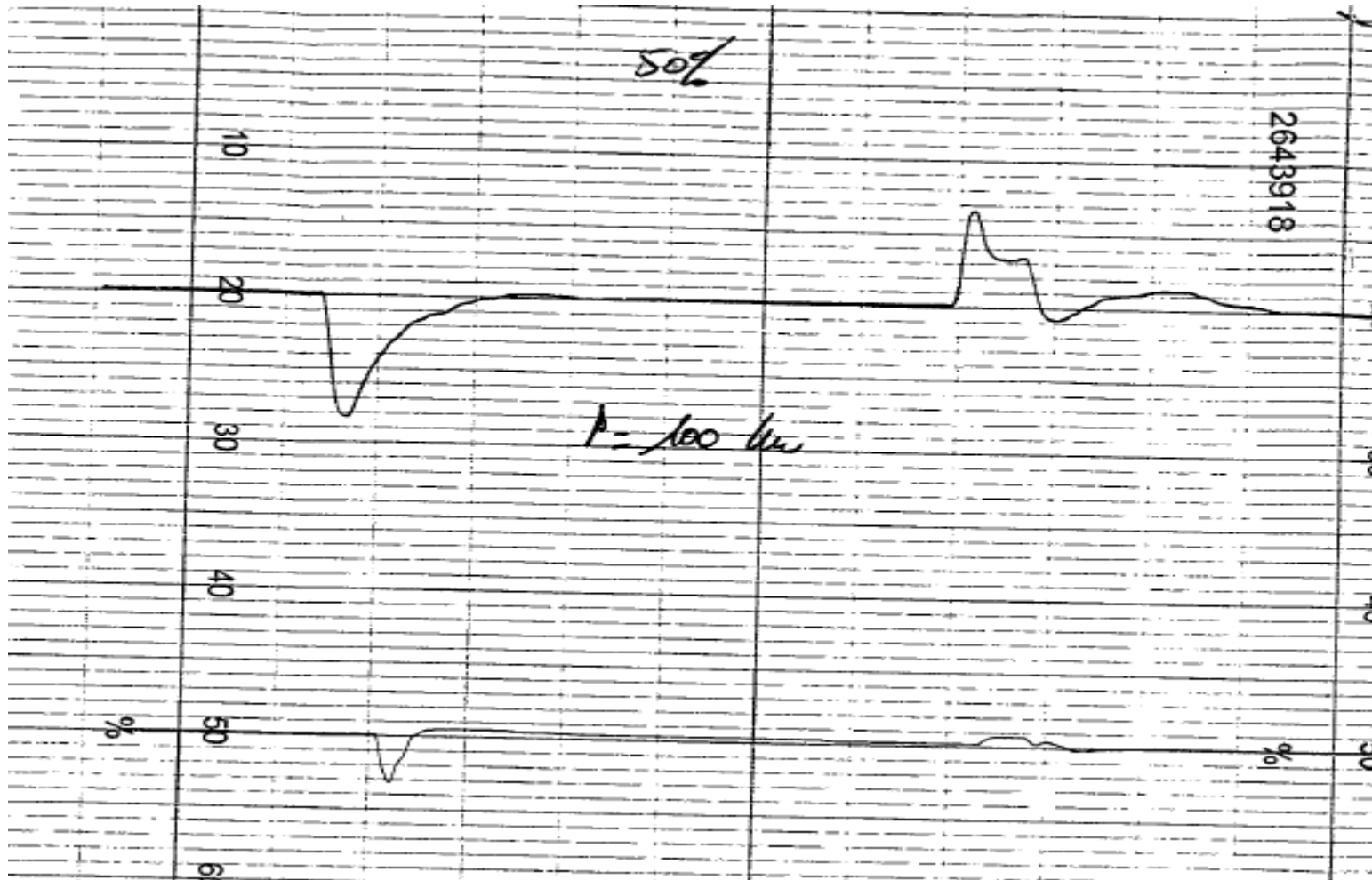


# Test Sheet - load impact at 25% load

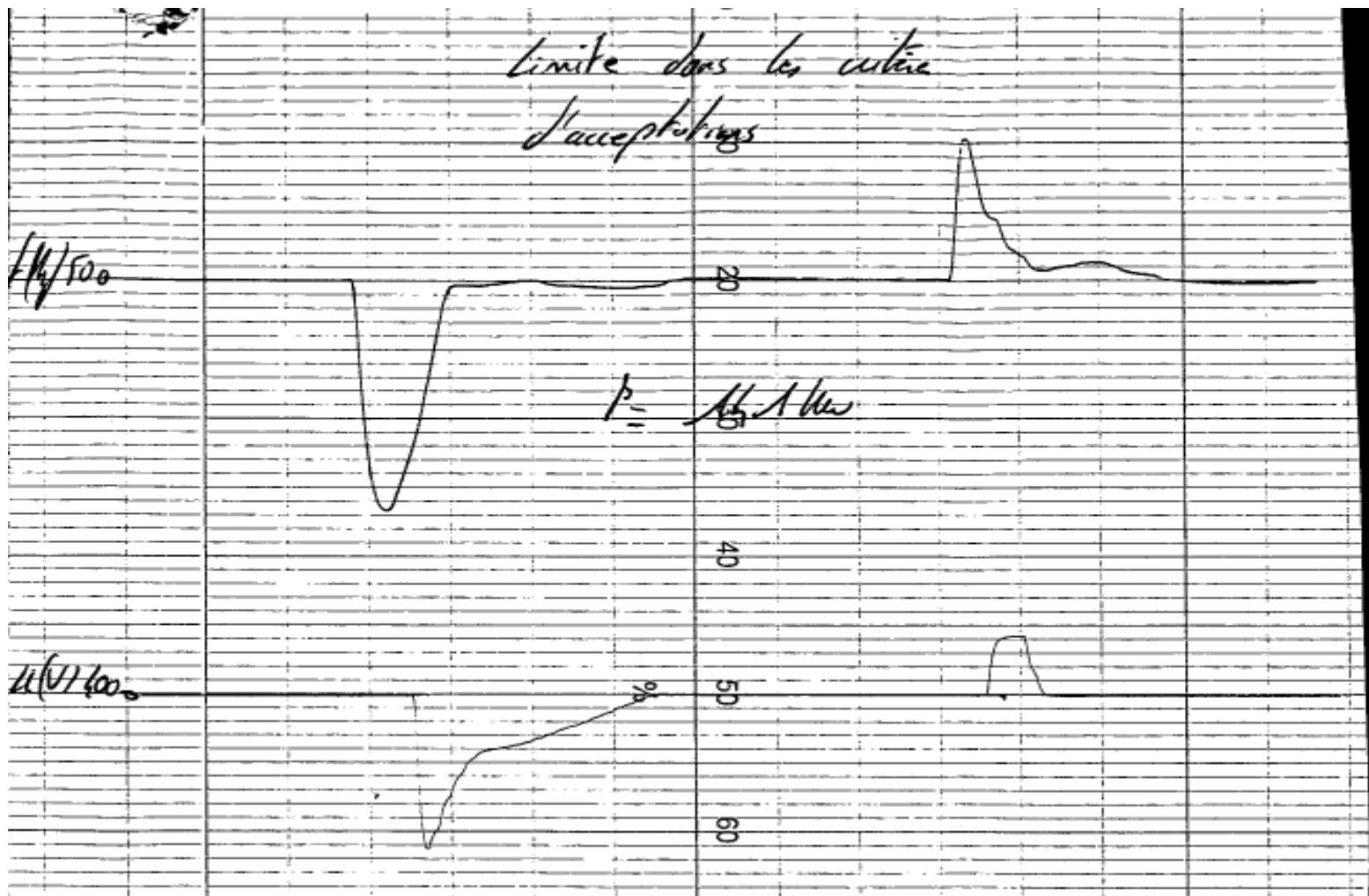




# Test Sheet - load impact at 50% load



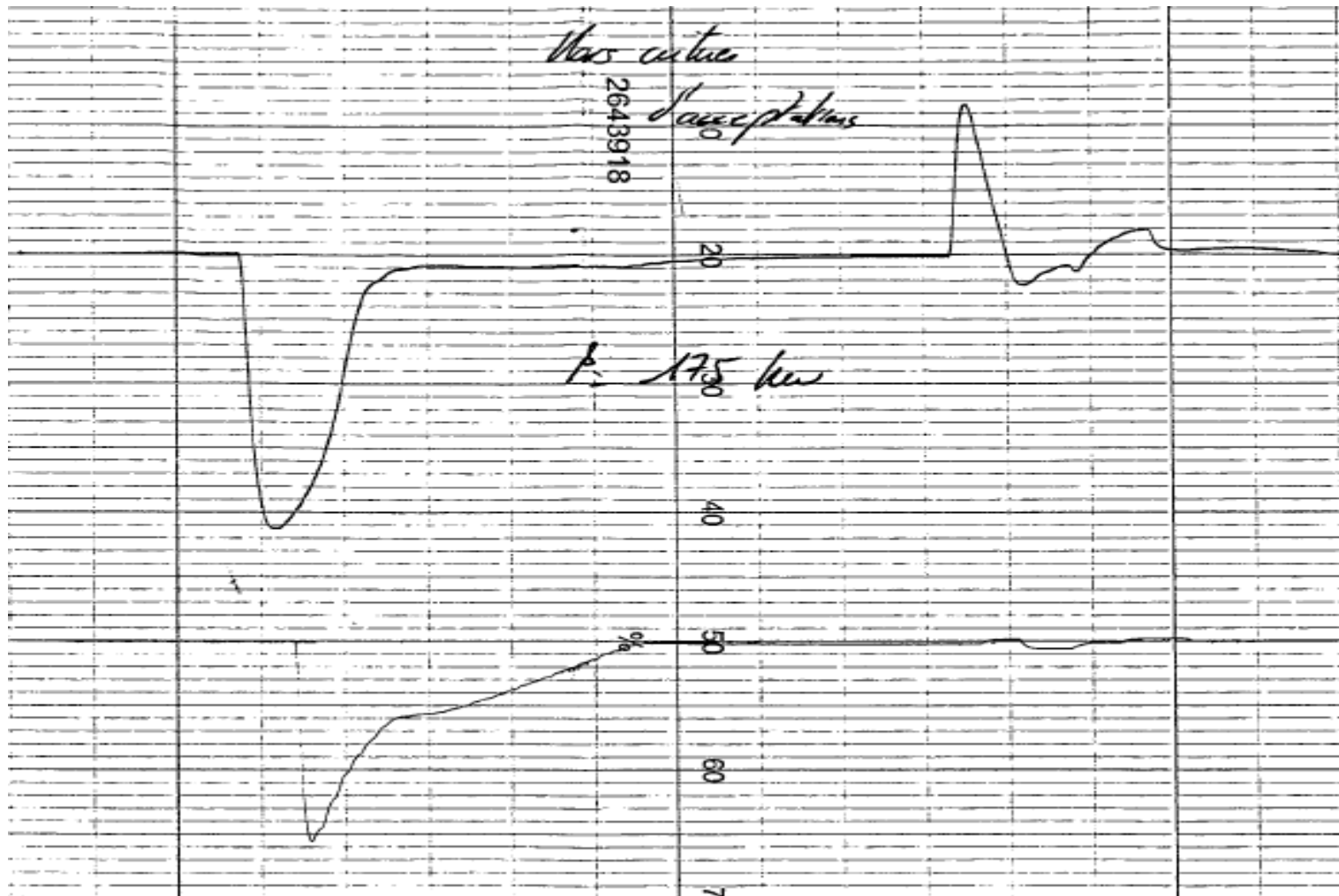
# Test Sheet - Max Load impact within G2 Class



# Test Sheet - Max Load impact out of G2 criteria



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# Factory Test sheet.



Caractéristiques du groupe / Genset characteristics			
Puissance: <u>100</u> ... KVA Power	Cos phi / Power factor : 0,8	Vitesse / engine speed	[ Elect Gov ] 49.5 – 50.5 HZ (full load): <u>50</u> ... Hz
Puissance : <u>80</u> ... KW Power	Service/ Duty: PRP <input checked="" type="checkbox"/>	1500 tr/mn (rpm) <input checked="" type="checkbox"/>	[ Mech Gov only ] 50.9 – 52 HZ (no load): <u>NA</u> ... Hz
Tension : <u>400/230</u> V Voltage	STBY <input type="checkbox"/>	3 000 tr/mn (rpm) <input type="checkbox"/>	[ Mech Gov only ] 49.5 or greater (full load): <u>NA</u> ... Hz
Intensité : <u>14.4</u> ... A Intensity			[ R16 ] 49.5hz or greater (full load): <u>NA</u> ... Hz
			53.5hz or less (no load): <u>NA</u> ... Hz

Paliers Stages	F Hertz	U Volts			I Ampères			P Kilowatts	Présent Present	Indicateurs moteur Engine indicators	Résultats/ Results 100 % Pn
		L1	L2	L3	I1	I2	I3				
0 %	<u>50</u>	<u>400</u>	<u>400</u>	<u>400</u>	0	0	0	0	<input checked="" type="checkbox"/>	Voltmètre batterie Battery voltmetre	<u>13.9</u> ... V
25 %	<u>50</u>	<u>400</u>	<u>400</u>	<u>400</u>	<u>33</u>	<u>32</u>	<u>32</u>	<u>20</u>	<input type="checkbox"/>	Ampèremètre batterie Battery amperemetre	<u>NA</u> ... A
50 %	<u>50</u>	<u>400</u>	<u>400</u>	<u>400</u>	<u>60</u>	<u>56</u>	<u>59</u>	<u>40</u>	<input checked="" type="checkbox"/>	Indicateur température eau Water temp. indicator	<u>86</u> ... °C
75 %	<u>50</u>	<u>400</u>	<u>400</u>	<u>400</u>	<u>86</u>	<u>84</u>	<u>86</u>	<u>60</u>	<input type="checkbox"/>	Indicateur temp. huile Oil temperature indicator	<u>NA</u> ... °C
100 %	<u>50</u>	<u>400</u>	<u>400</u>	<u>400</u>	<u>118</u>	<u>117</u>	<u>119</u>	<u>80</u>	<input checked="" type="checkbox"/>	Indicateur pression huile Oil pressure indicator	<u>3</u> ... .b
110 %	<u>50</u>	<u>400</u>	<u>400</u>	<u>400</u>	<u>127</u>	<u>127</u>	<u>127</u>	<u>88</u>	<input checked="" type="checkbox"/>	Lecture fuel présente Fuel gauge	<input checked="" type="checkbox"/>

IMPACT DE CHARGE MAXIMUM ( pour GE >44 KVA ) / Maximum step load ( only for > 44KVA)			
Dans les critères ISO 8528 CLASSE G2 within ISO 8528 CLASS G2 limits		Hors critères ISO8528 CLASSE G2 Out of ISO 8528CLASS G2 limits	
Impact de charge maximum Maximum impact of load	<u>60</u> ...KW	Echelon maxi (pour information) maxi step (for information only)	Max KW: <u>70</u> ...KW

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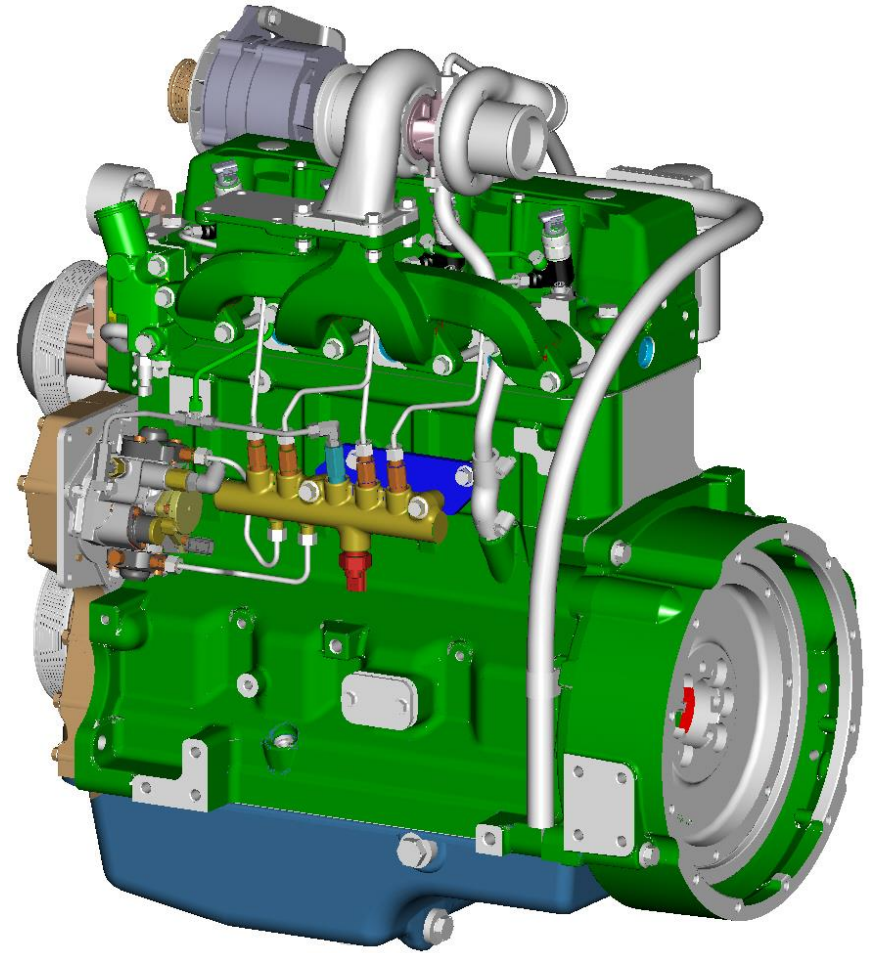
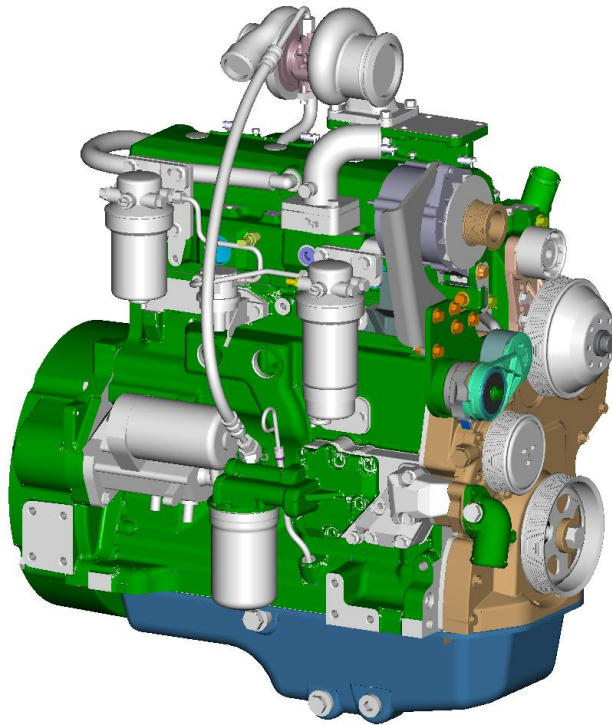
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# ENGINE

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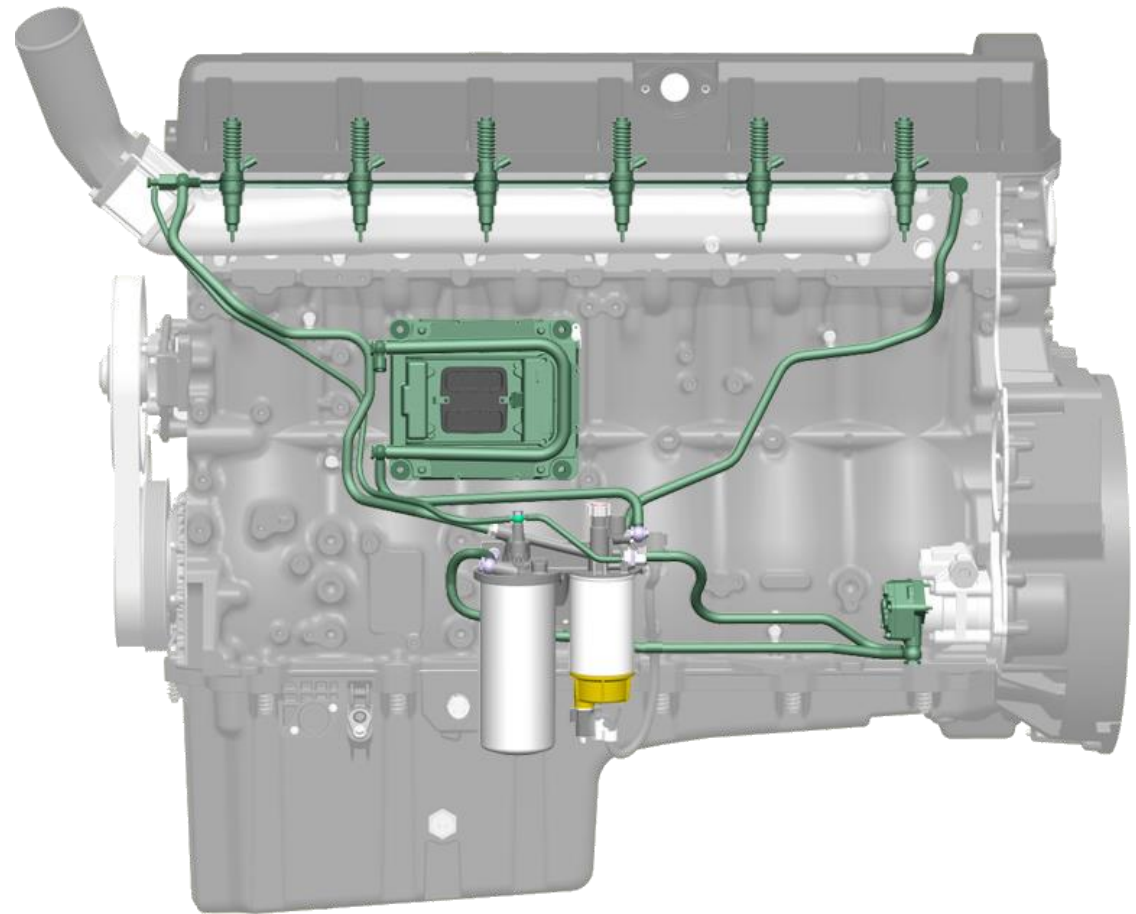
# John Deere 4045HFS86

- John Deere Engine 4045HFS86.
  - 4 Cylindres – 4,5 litres.
  - ECU engine
  - Common Rail Technology



# Volvo D1651.

16 litres Engine  
6 Cylindres  
Injector pump Technology  
Equipped with ECU





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# Maintenance

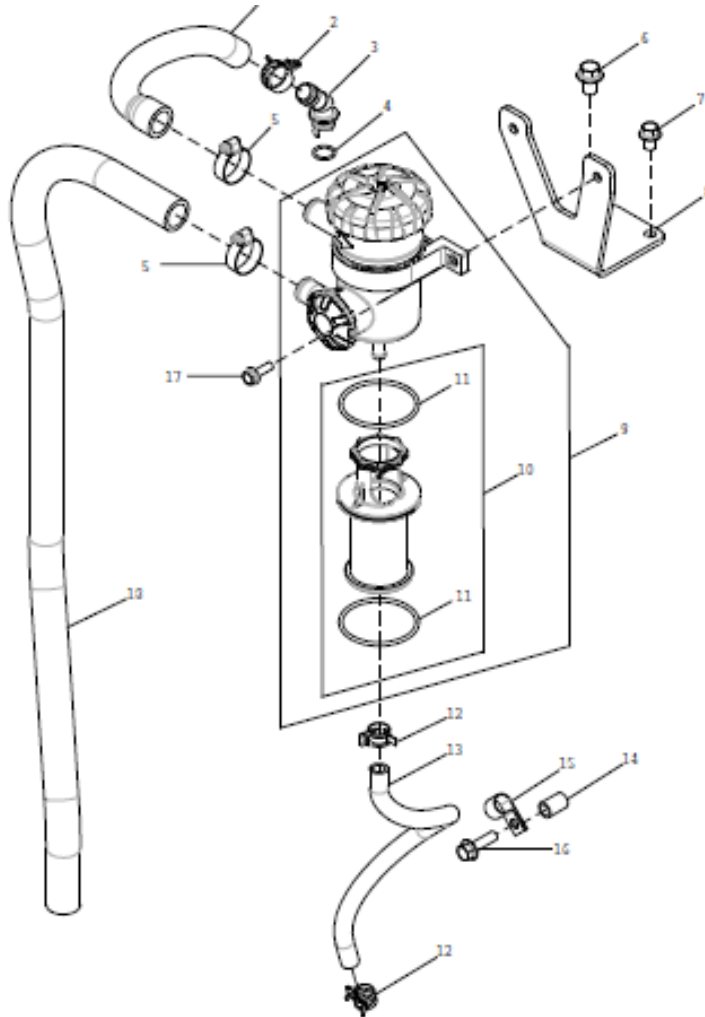
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# Maintenance history

OPERATIONS	Visa	Remarks
<p><b>Generator set</b></p> <ul style="list-style-type: none"><li>• Check the absence of leaks</li><li>• Check the condition of battery charge</li><li>• Clean the battery terminals</li><li>• Check condition and connections of electrical equipment</li><li>• Clean with compressed air the relays and contactors</li></ul> <p><b>Engine</b></p> <ul style="list-style-type: none"><li>• Change engine oil and filter</li><li>• Replace fuel filter element(s)</li><li>• Check crankcase vent system</li><li>• Check engine mounts</li><li>• Check engine ground connection</li></ul>		

# Maintenance tips .



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# Maintenance tips

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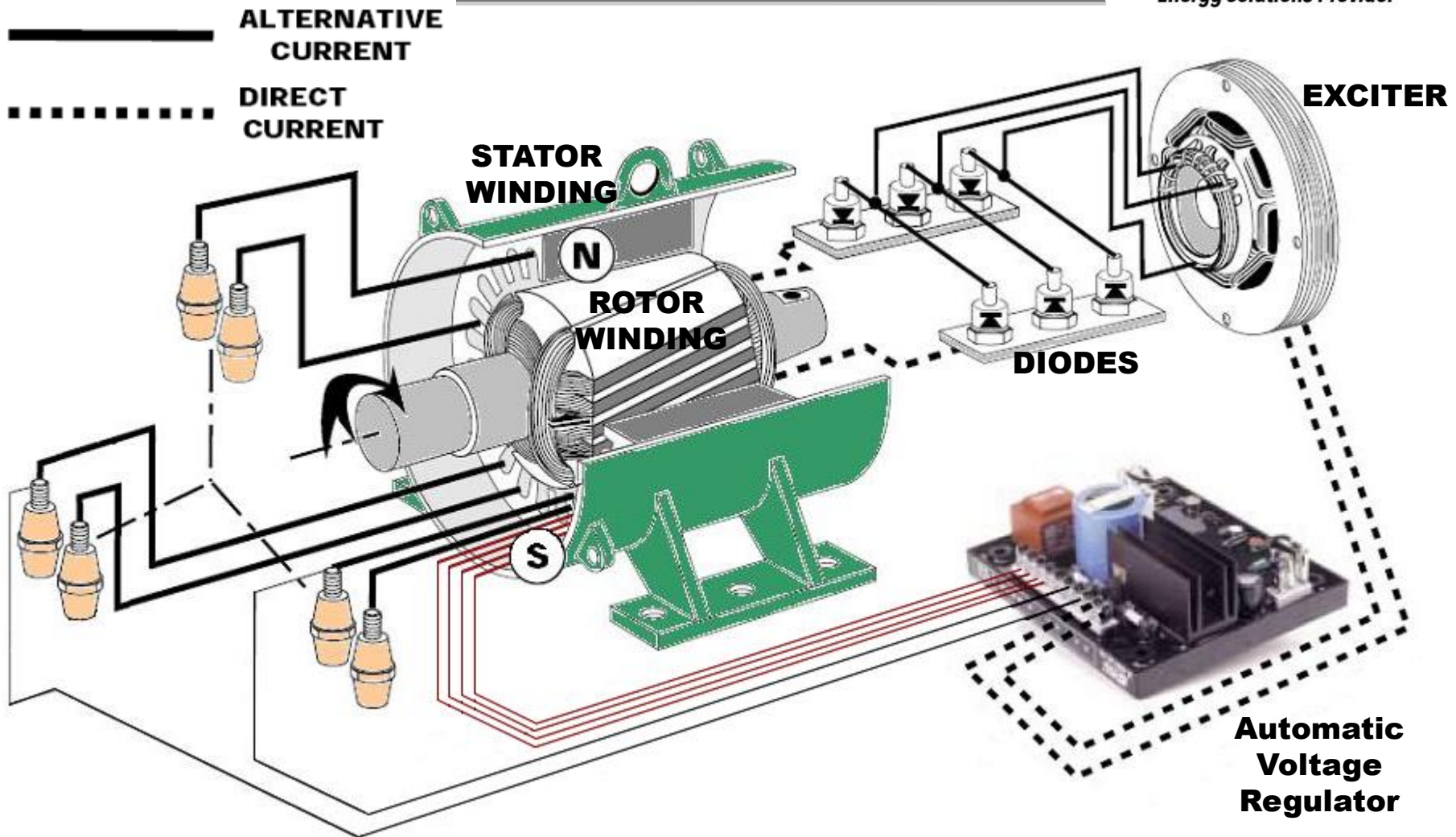
- John Deere Engine are delivered with a breaking oil
  - Oil change after first 100 hrs.
  
- Engine filled up with coolant ( - 26 °deg)



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## Alternateurs - AVR

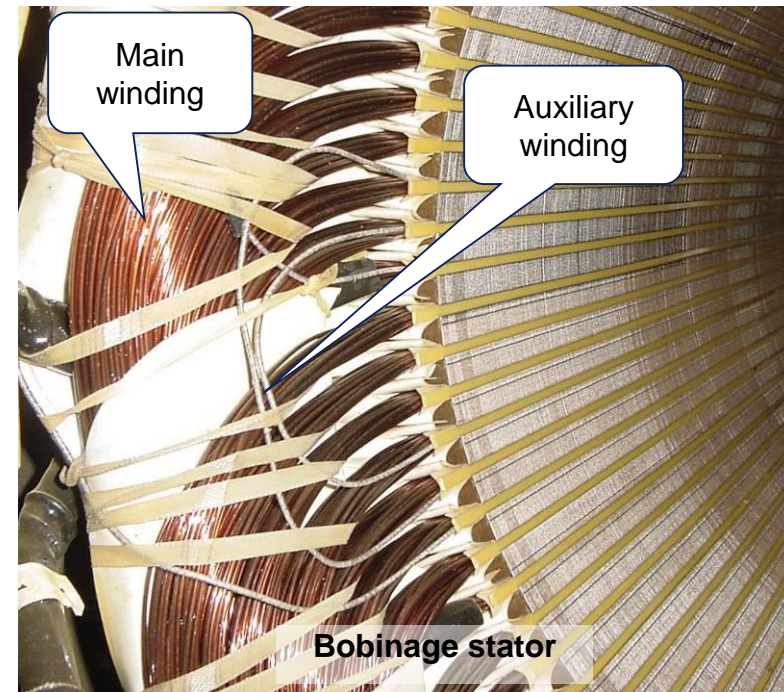
# AREP description



# AREP Description

## Leroy-Somer Patent

The 2 auxiliaries windings are inserted during the windings operating of the stator. They have a special protection to achieve a total insulation from the main windings.

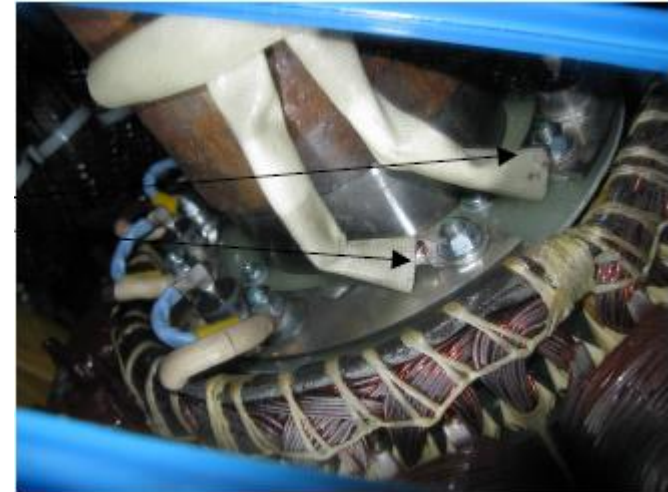


### *Principle of the auxiliaries:*

The first auxiliary winding (e H1) provide a power to the exciter, which is proportional to the output voltage from the stator.

The second auxiliary winding (ie H3) provide a power to the exciter, which is proportional to the output current from the stator.

# Rotating diodes



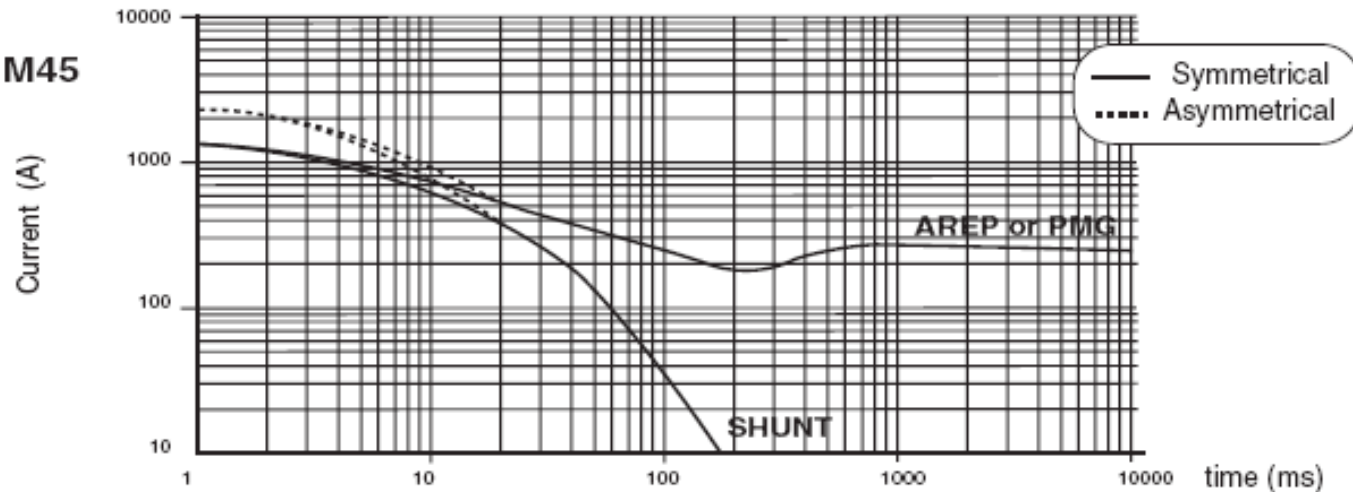
Diode cressent for LSA  
47.2. (500 Kva)



# Voltage response on Short circuit

## 3 phase short-circuit curves at no load and rated speed (star connection Y)

LSA 43.2 M45



300 % of  $I_n$  during 10 seconds is sustained with AREP or PMG regulation.



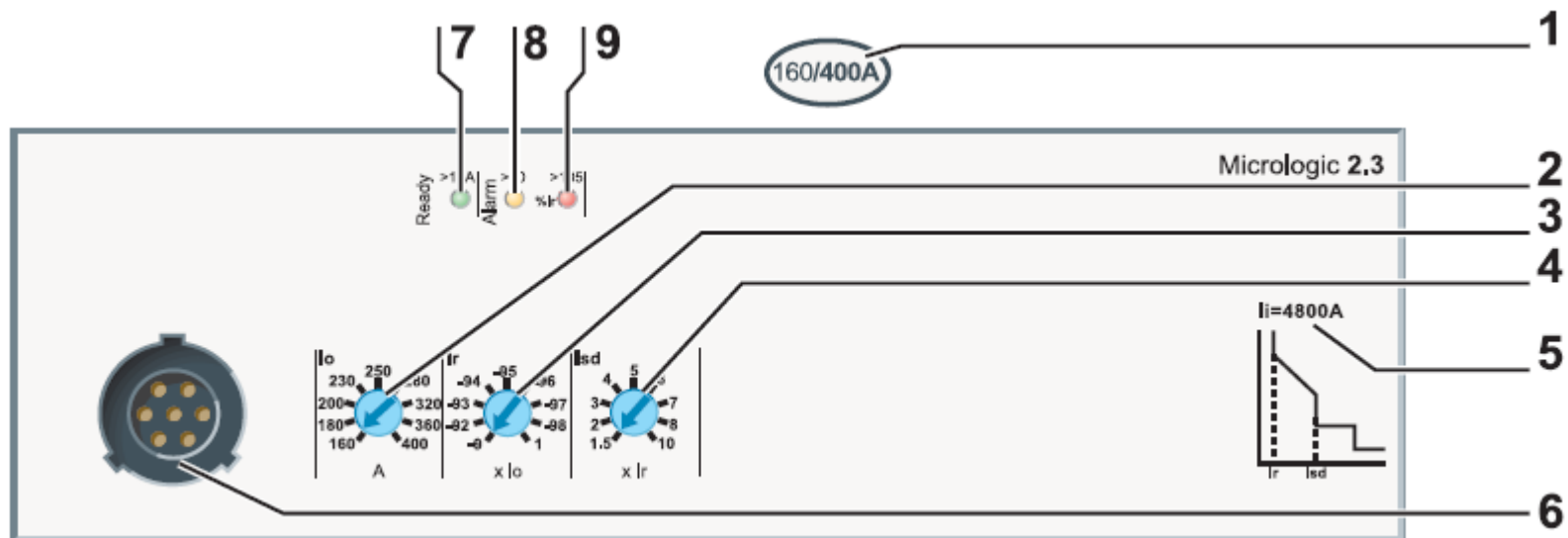
# Short circuit and overload

Protection against short circuit downstream to the machine.  
The manufacturer value is 300 % of  $I_n$  during 10 seconds  
Protection realized by:

## - Circuit breaker

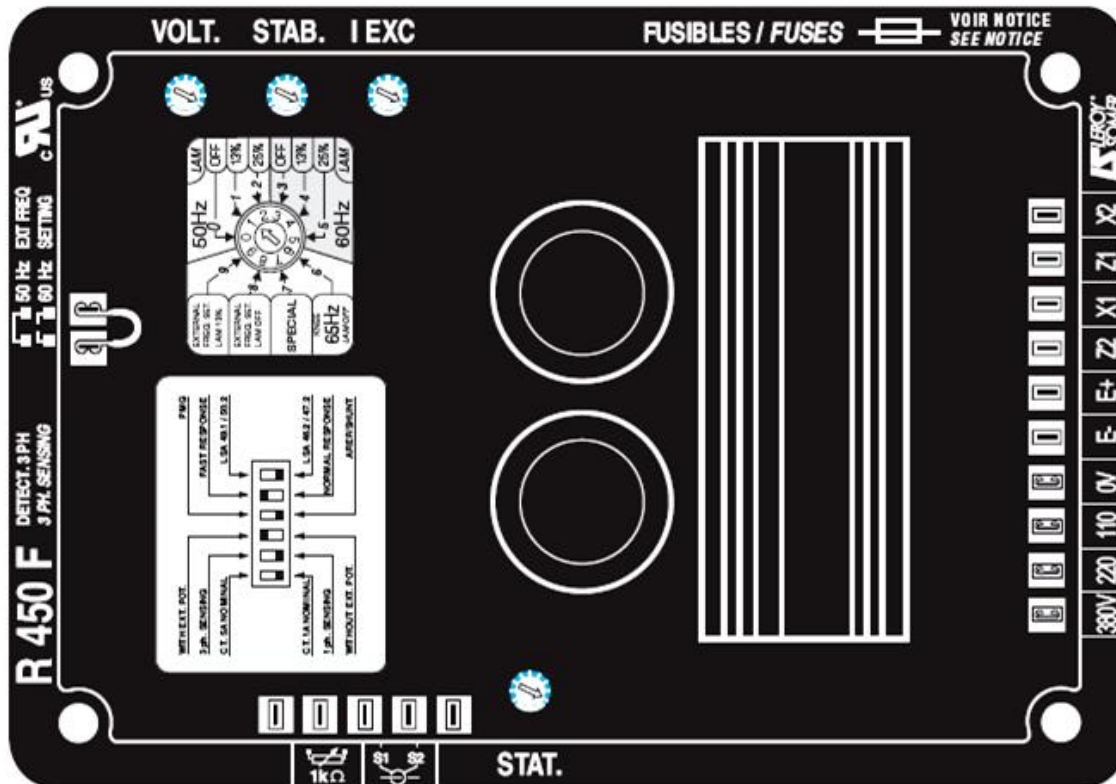
Integration of the unity(unit) of control in the circuit breaker.

This unity(unit) of control must be adapted to needs



# AVR R450

LSA46.2 to  
LSA50.2





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## Electric notion

# Active / Apparent Power

□ Active power = Apparent power x Cos  $\varphi$

$$P = U \times I \times \cos \varphi$$

$$Kwe = kVA \times \cos \varphi$$



Produced by the engine

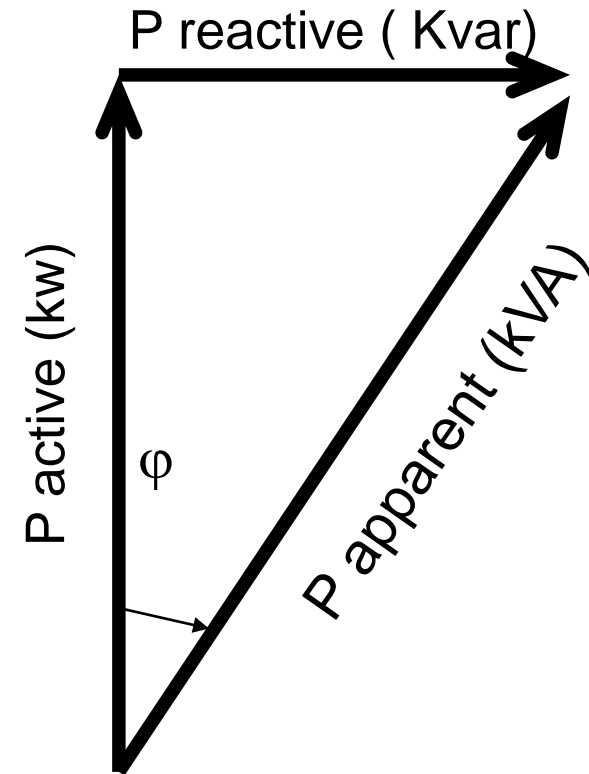
□ Reactive power = Apparent power x sin  $\varphi$

$$Q = U \times I \times \sin \varphi$$

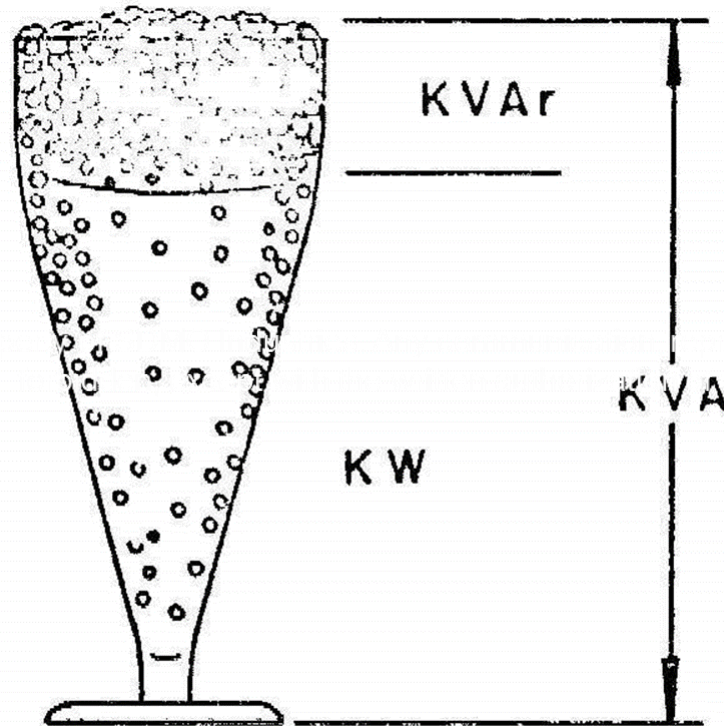
$$Q = kVA \times \sin \varphi$$



Produced by the alternator

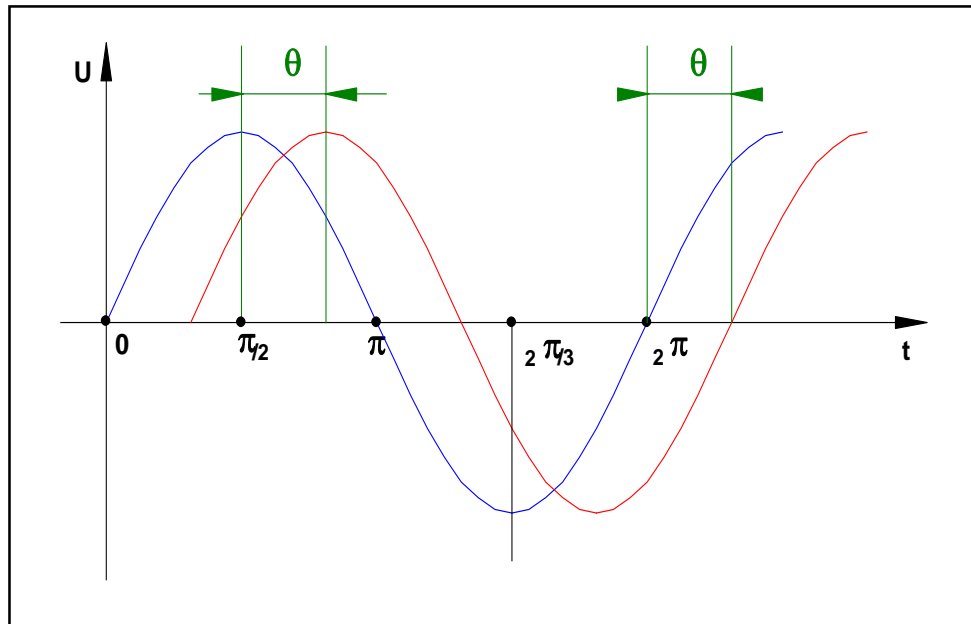


# Representation KW, Kvar, Kva.



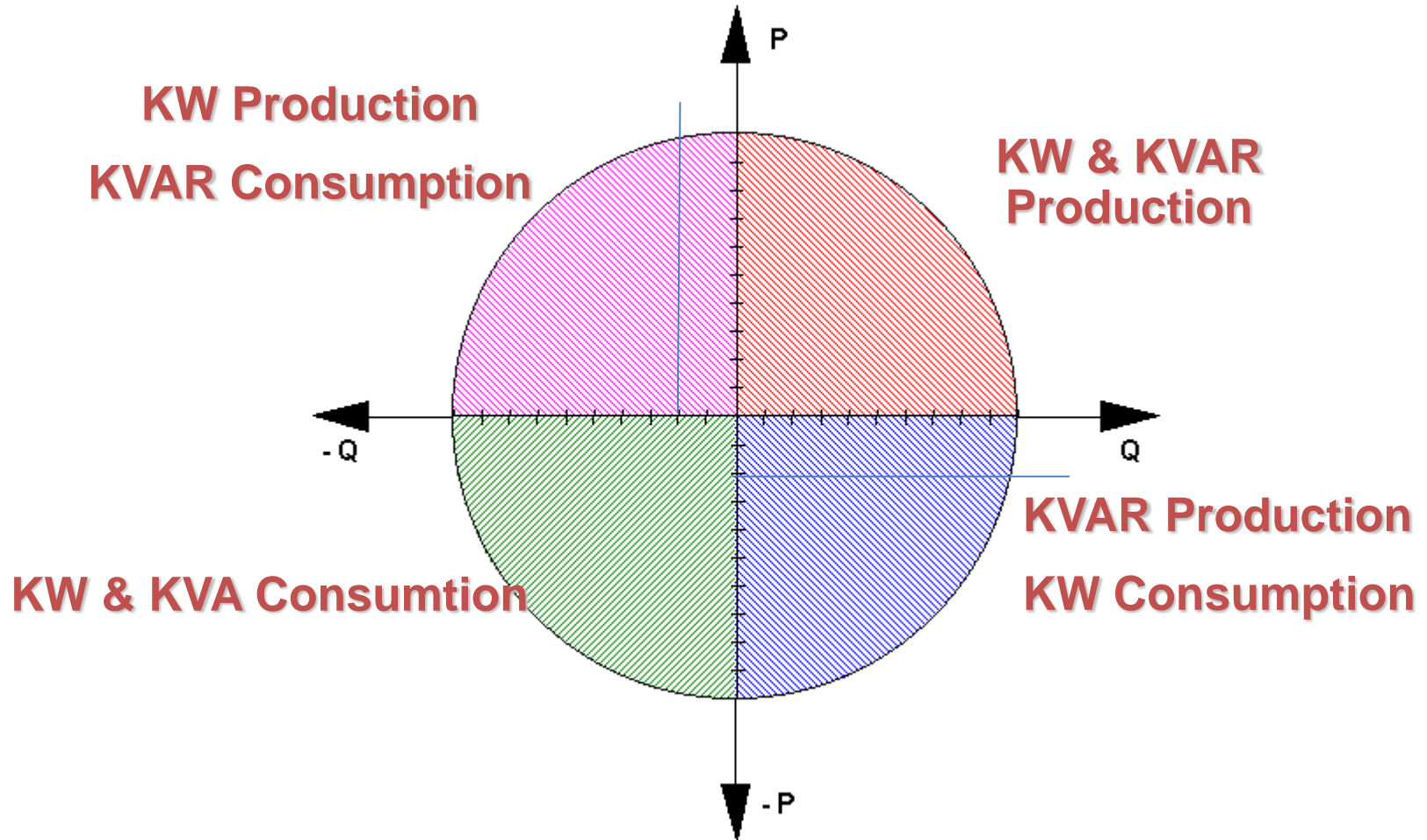
# Power factor.

- In some cases of utilization (supply of electric engines), the current is « late » compared to the voltage. This « delay » is called the power factor «  $\cos \varphi$  » and its value is very important for the gensets dimensions.
- The power factor  $\cos \varphi$  of one electric engine is very different between the starting phase and the nominal phase.



$\cos \varphi d = \text{can reach } 0,2$   
 $\cos \varphi n = 0,8 \text{ up to } 0,9$

# Kw & Kvar relation Main / Gen Set



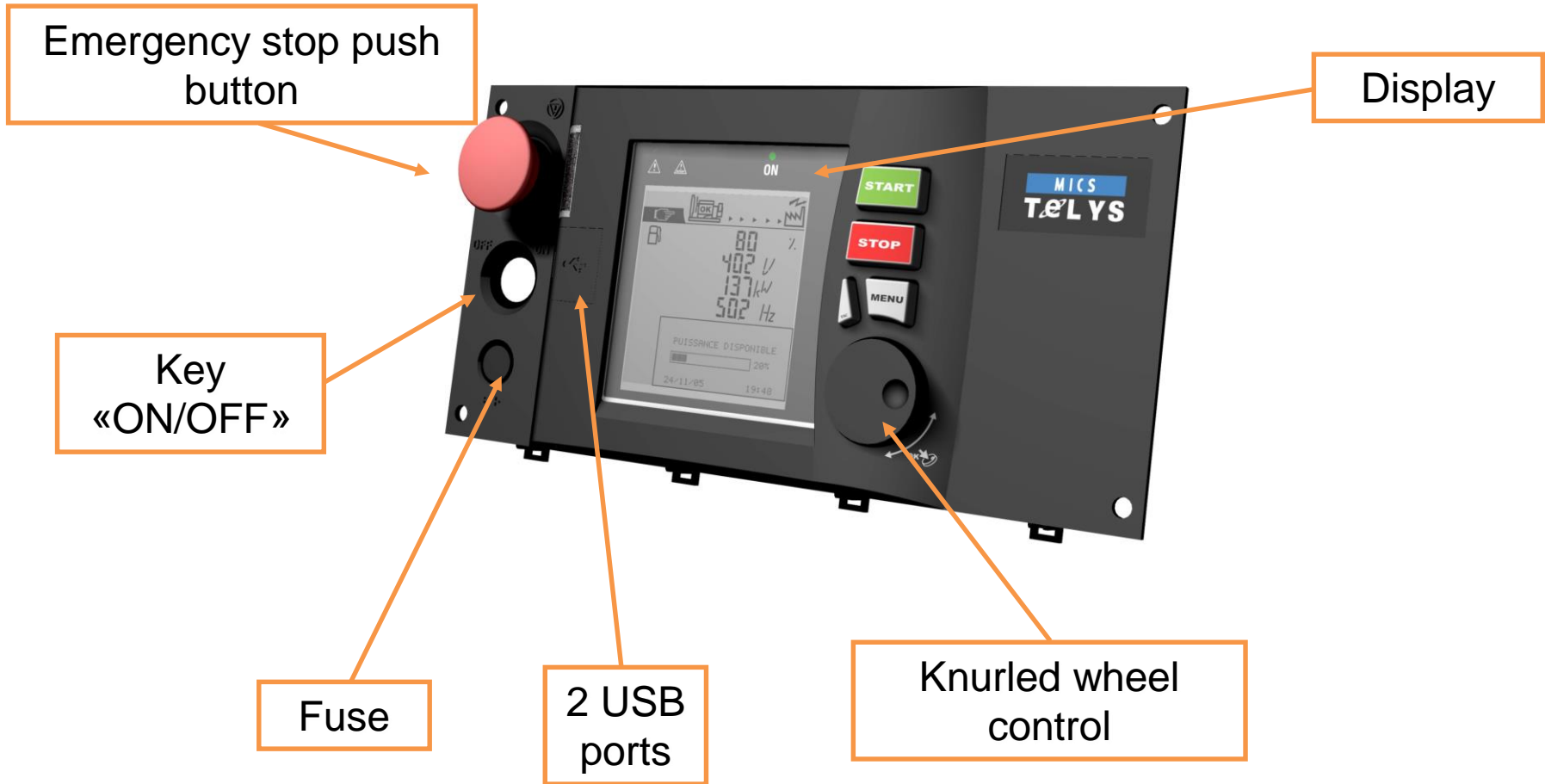


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## Telys 2 controller



# Telys 2 Controller



# Functions and general features

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## Measurements:

### Electrical :

- ✓ Phase to ground voltages
- ✓ Phase to phase voltages
- ✓ Currents
- ✓ Frequency
- ✓ Active/reactive effective power
- ✓ Power factor
- ✓ Total and partial active/reactive energy meter.

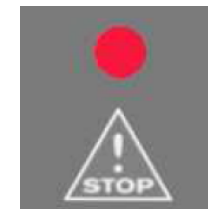
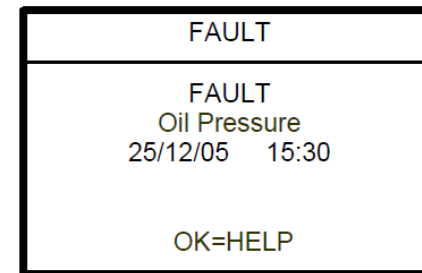
### Engine:

- ✓ Fuel level (%)
- ✓ Oil pressure (Bar/PSI)
- ✓ Coolant temperature (° C/° F)
- ✓ Oil temperature (° C/° F)
- ✓ Battery voltage
- ✓ Charging alternator current
- ✓ Engine speed.

# Functions and general features

## Safety features for:

- ✓ Alternator Min/Max Voltage
- ✓ Alternator Min/Max Frequency
- ✓ Battery Min/Max Voltage
- ✓ Overload
- ✓ Oil pressure
- ✓ Coolant temperature
- ✓ Overspeed / Underspeed
- ✓ Max active / reactive power
- ✓ Reverse active / reactive power

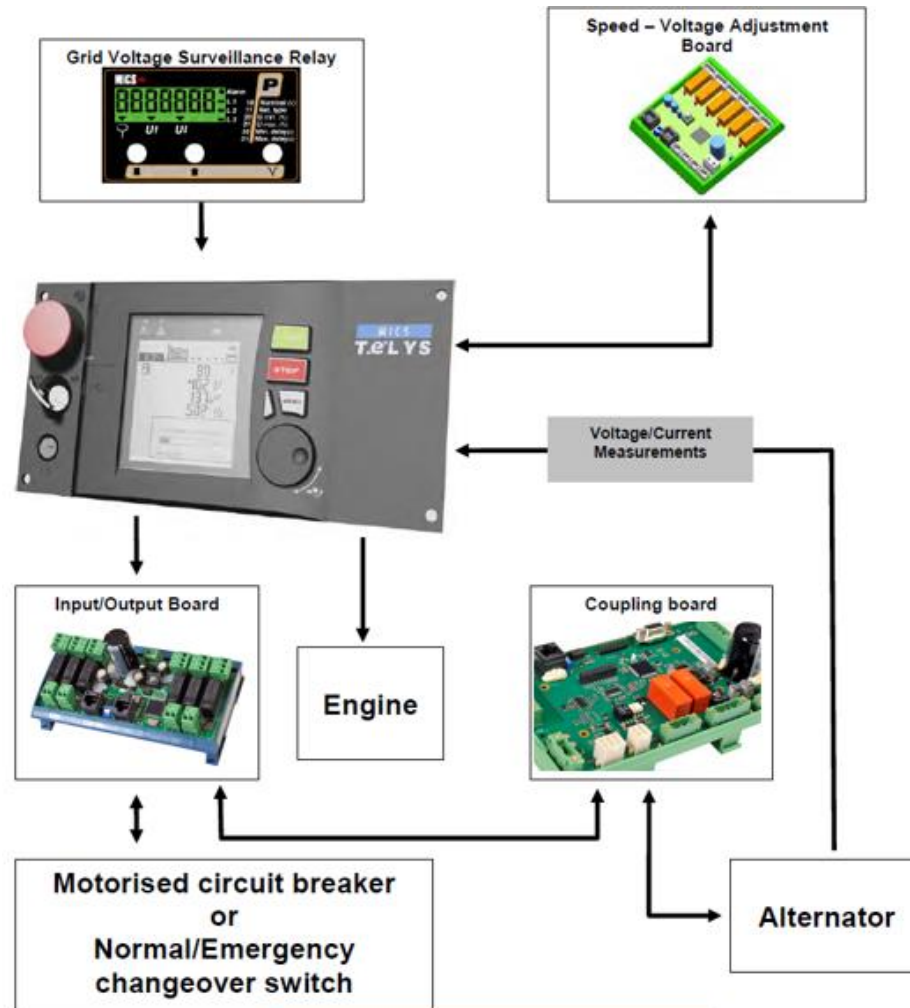


# Additional alarms and Functions

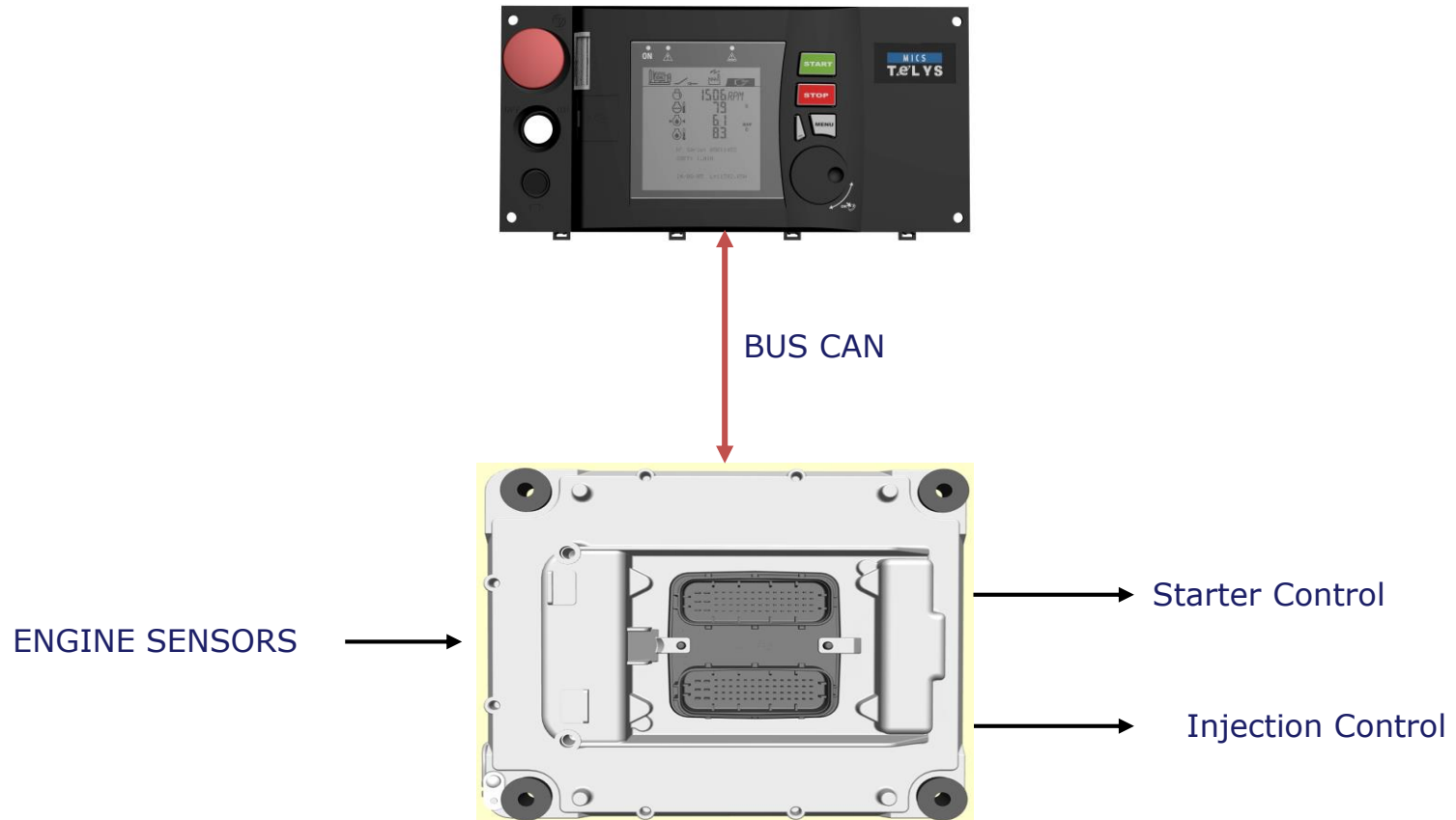
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- Daily service tank low level Fault. (10% approx)
- Alarm Bulk Tank ( Retention bund)
- Earth fault triggered
- Low Coolant level Fault (on Volvo only)
- Air preheating.
- Engine coolant preheating

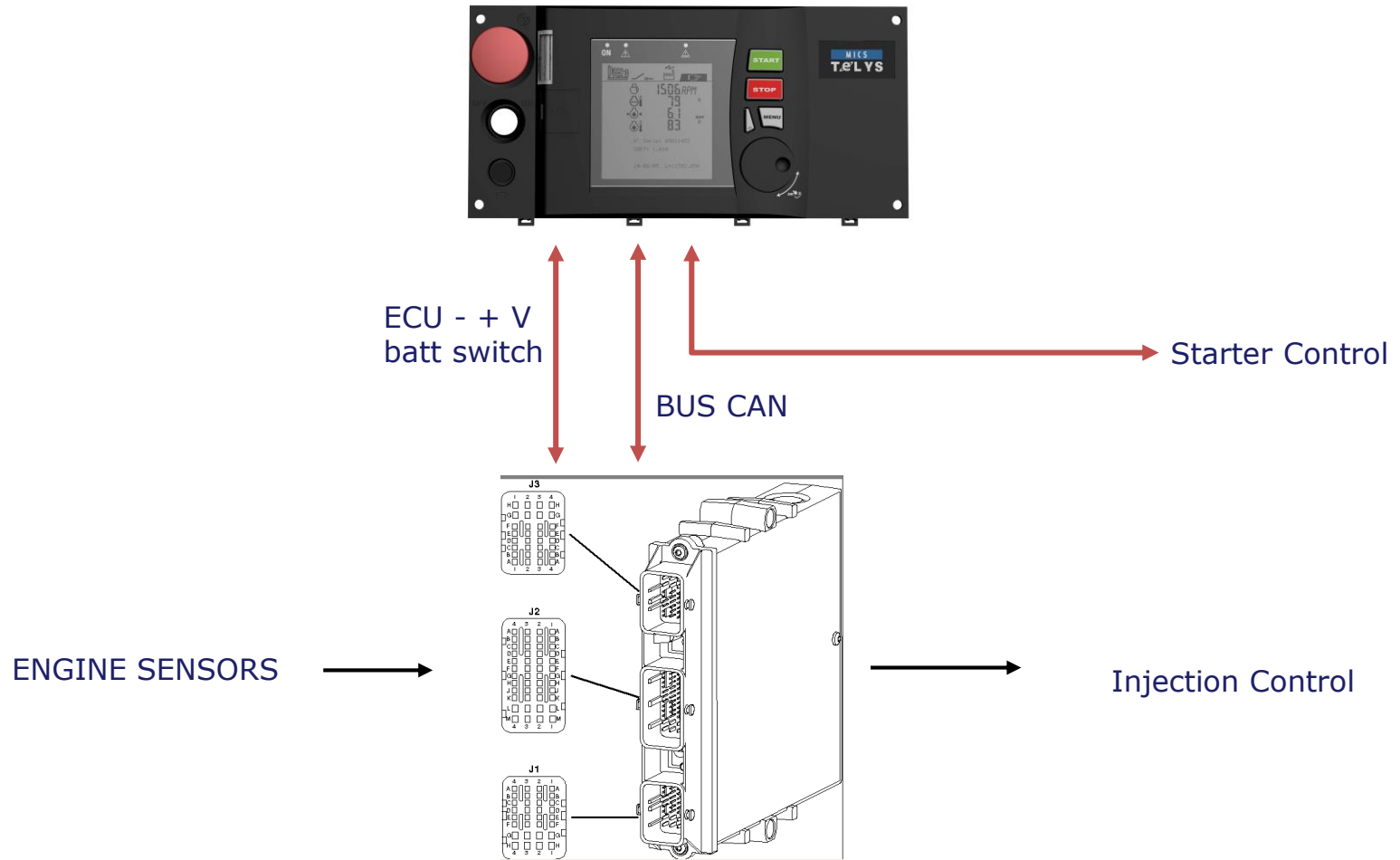
# Description of component



# ECU Volvo TELYS 2



# ECU JDEC Telys



# Communication

## ✓ USB Connection



Telys → clé USB :

➤ Download configuration and events  
**(Download all)**

Clé USB → Telys :

➤ Upload configuration  
**(Upload configuration)**



Rental compact



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# Control Panel



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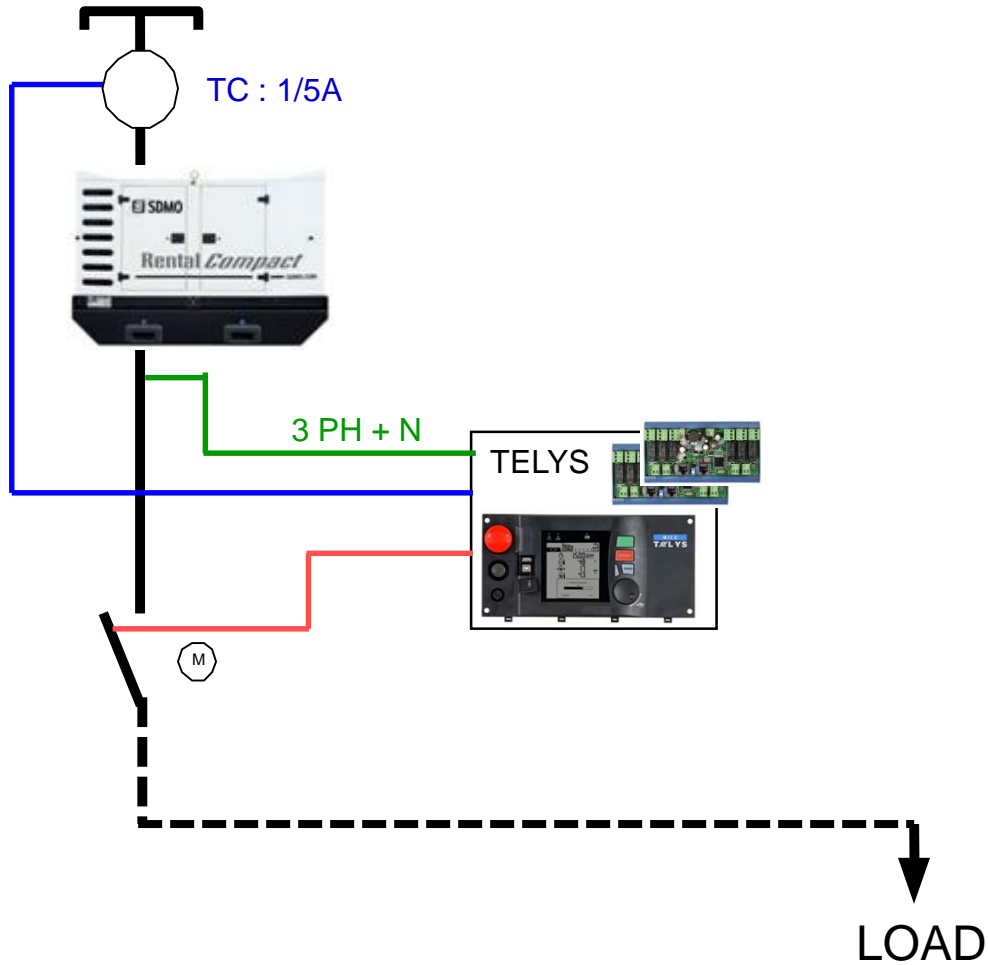


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## Single mode

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# Single mode



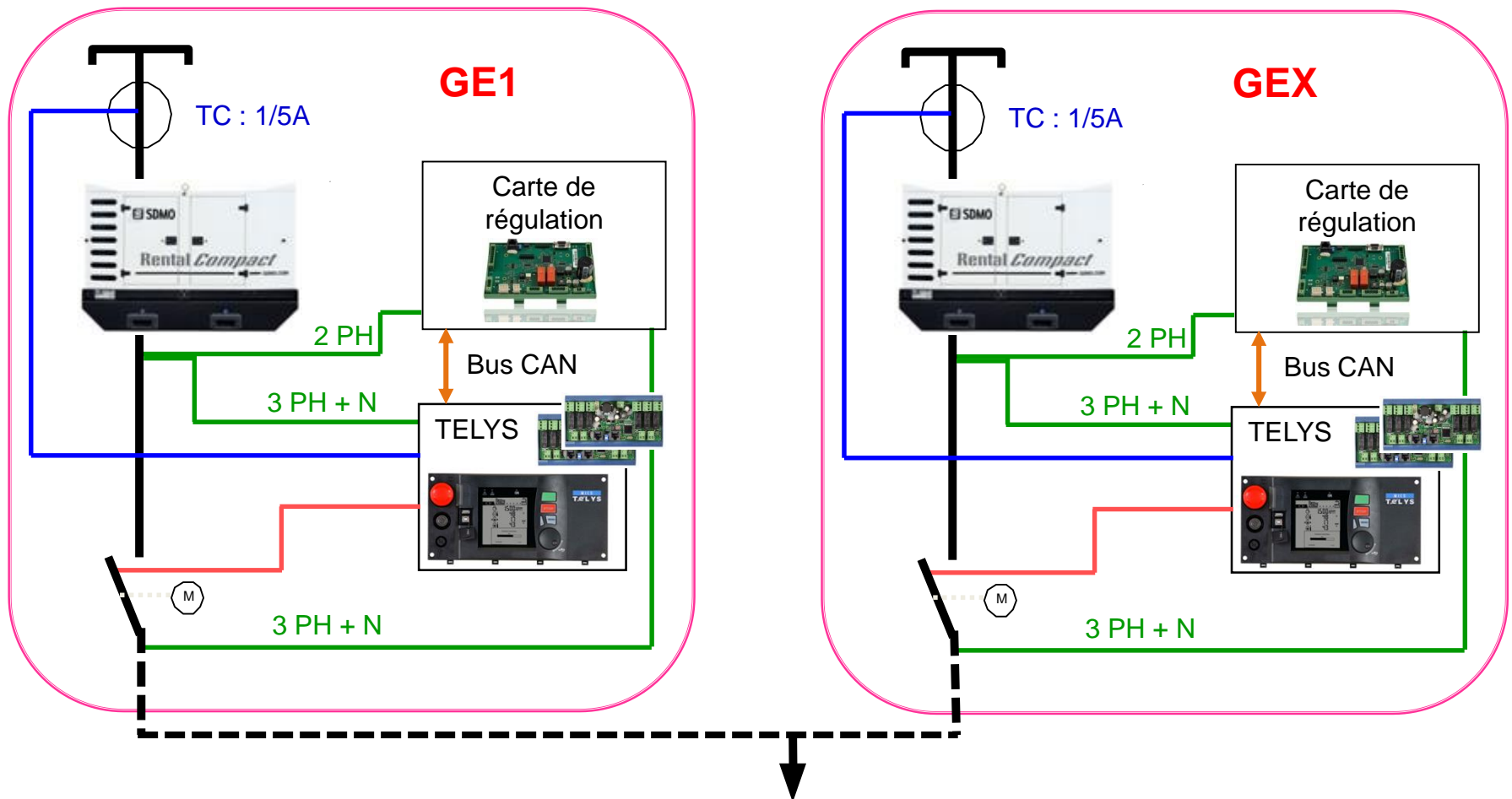


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## Parallel mode

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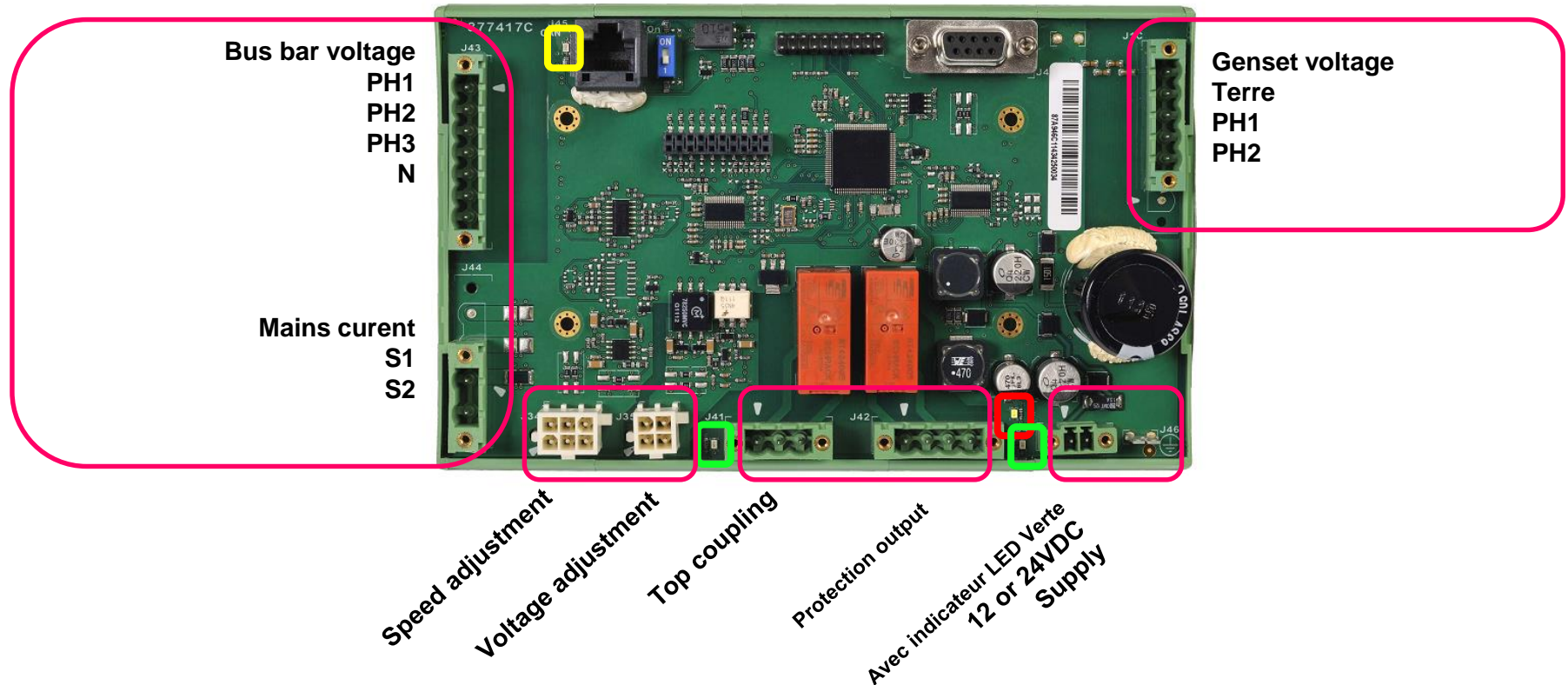
# Principle



Max 3 groupes, pas de gestion wattmétrique

Répartition de la puissance par statisme sans communication

# Coupling board





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## Parallel mode

# Step 1 Synchronisation

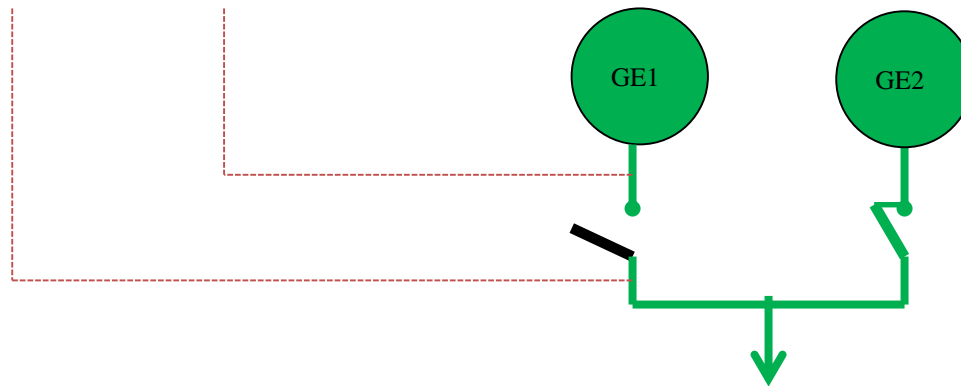
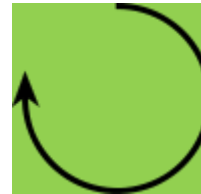


# Required conditions for Synchronisation

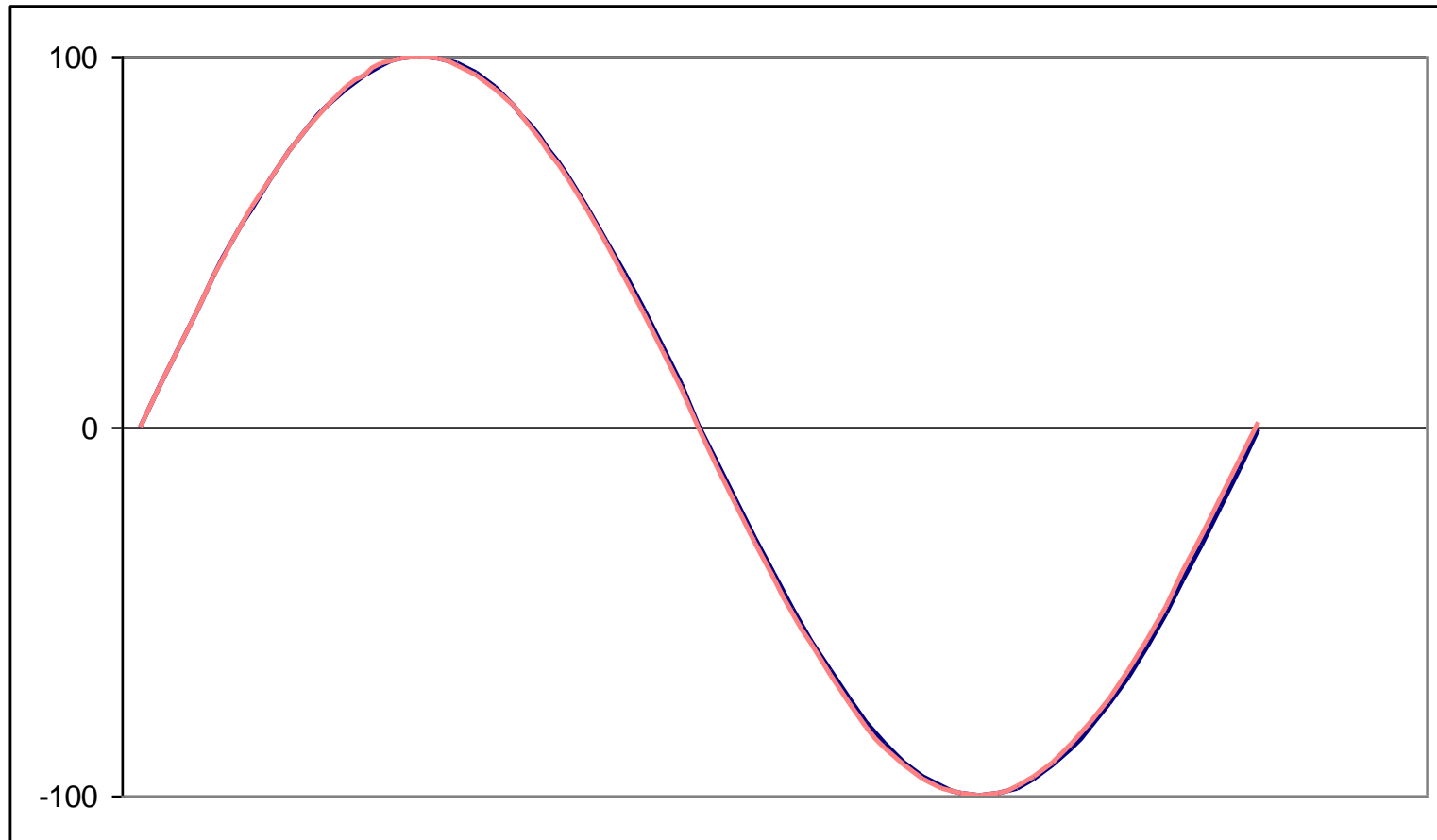
---

- ✓ *Phase rotation identical* → To be checked on site
- ✓ *Frequency equal (+/- 0,1HZ)* → Action on Engine speed governor or ECU
- ✓ *Voltage equal (+/- 10V)* → Action sur alternateur
- ✓ *Phase Drift ( +/- 3° )* → Action sur moteur

# Synchronisation : Phase sequence

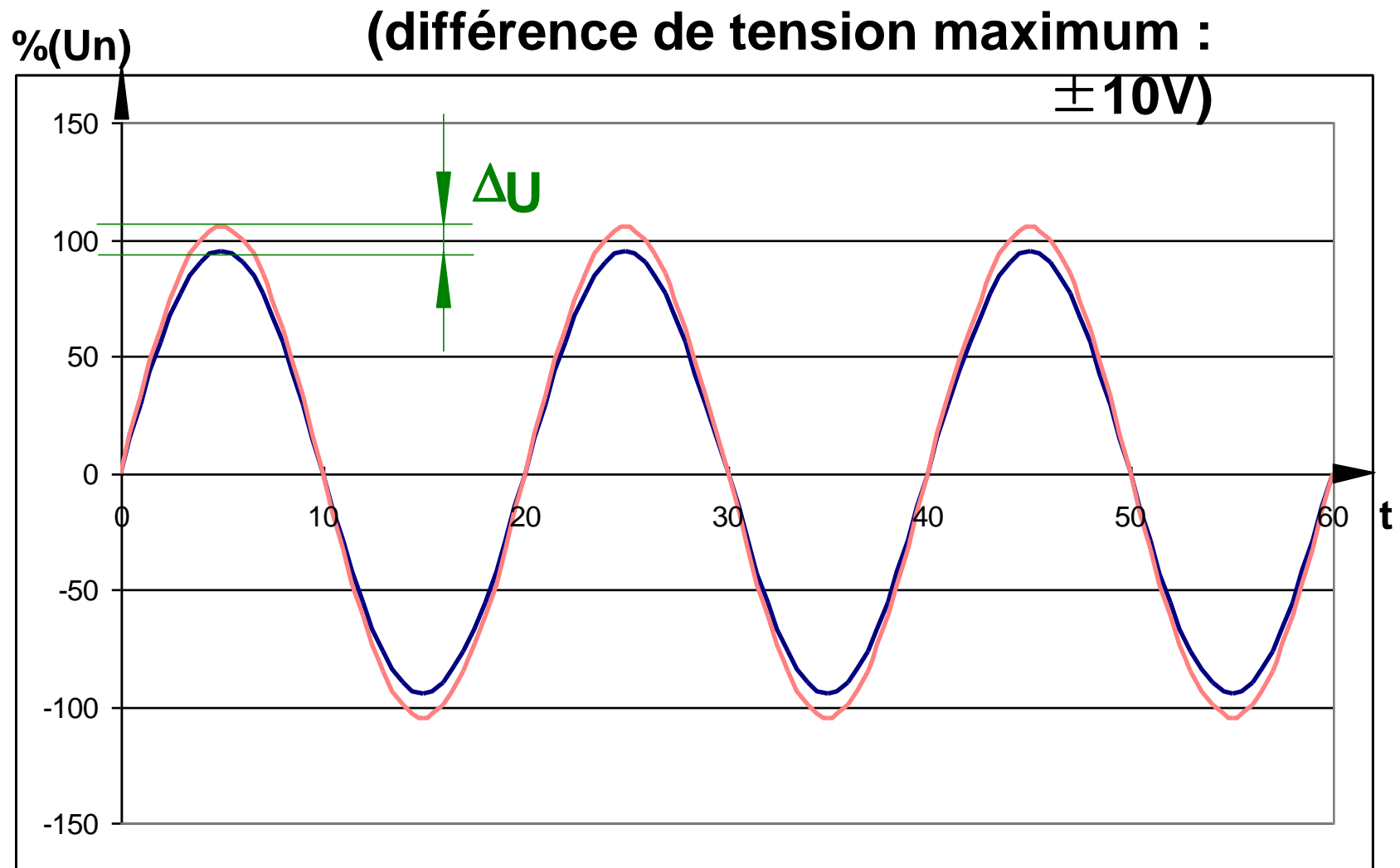


# Synchronisation : Frequency

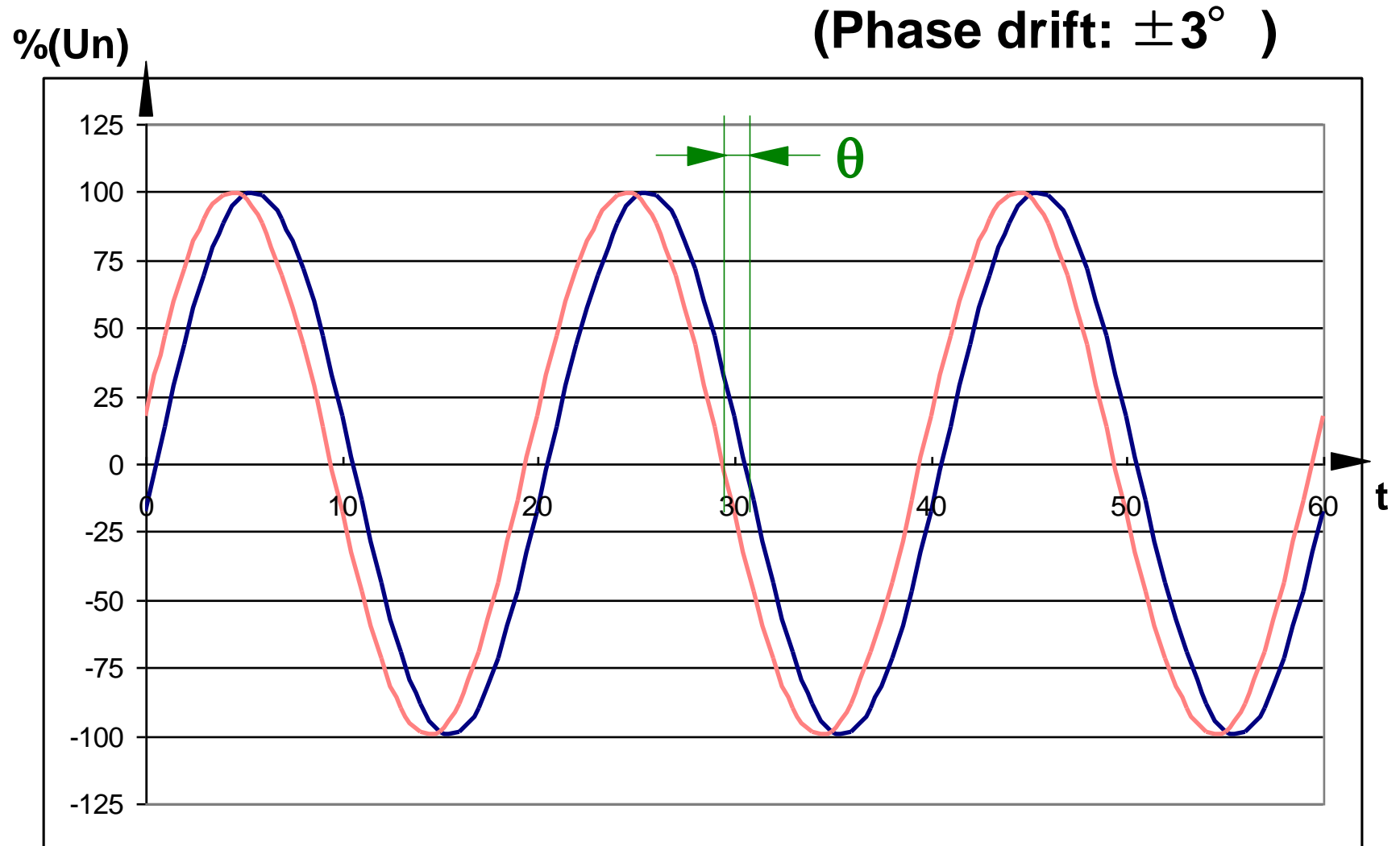


**(décalage maximum en fréquence :  $\pm 0,1$  Hz)**

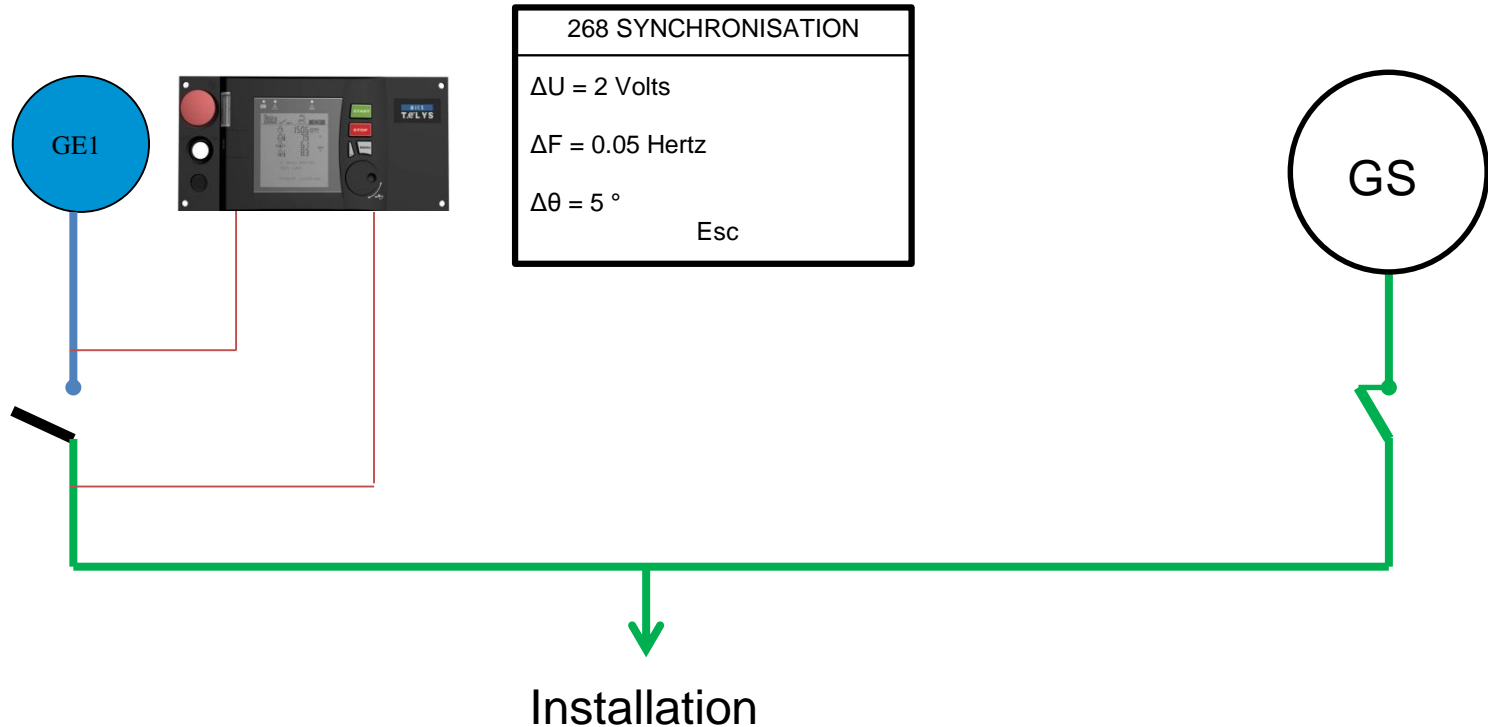
# Synchronisation : Voltage



# Synchronisation : Phase drift



# Synchronisation genset to bus bar



Référence of synchronisation : Bus bar  
Genset to synchronize : Bleue



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## Parallel mode

### *Step 2* Load sharing

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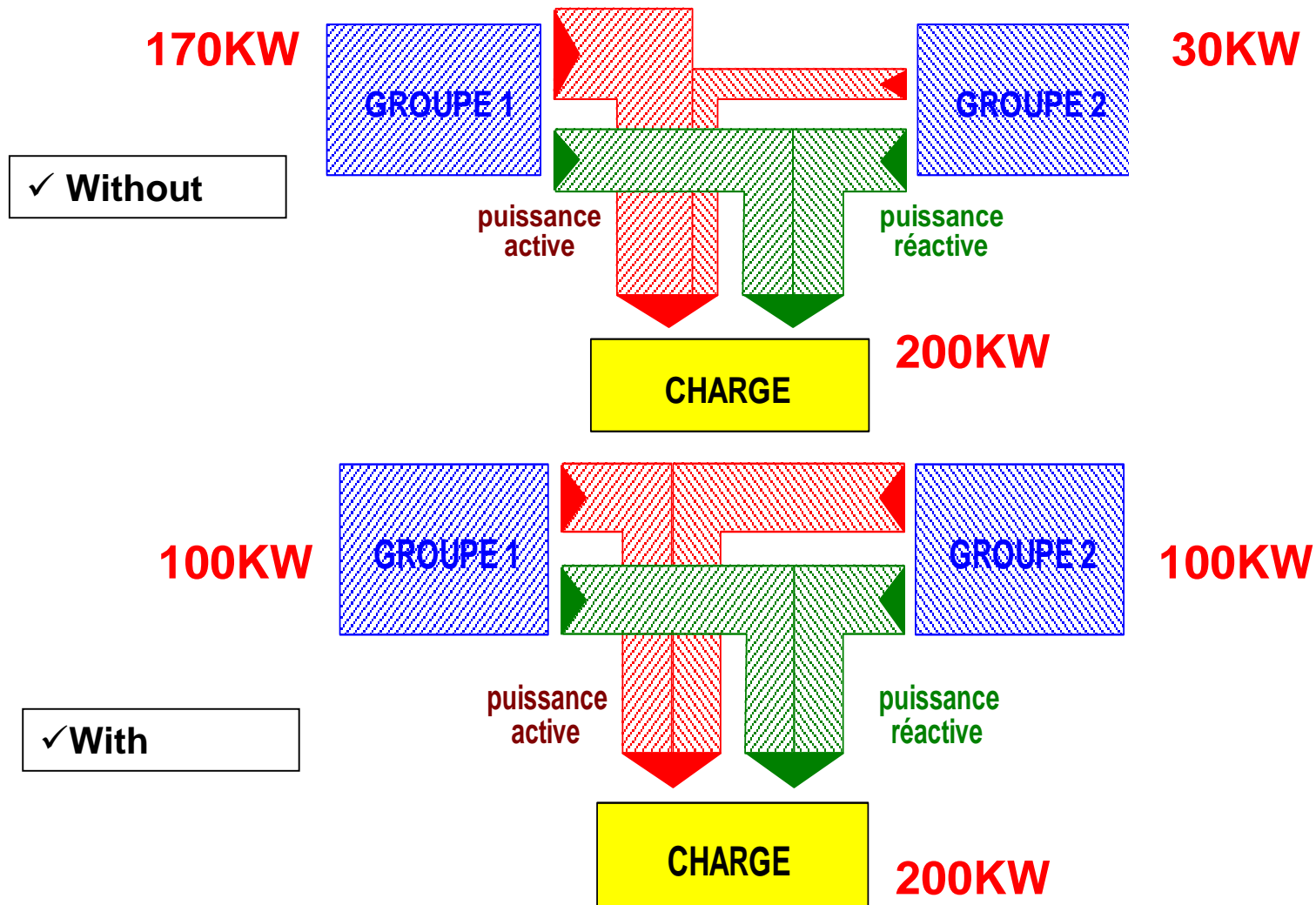
# Load Sharing

---

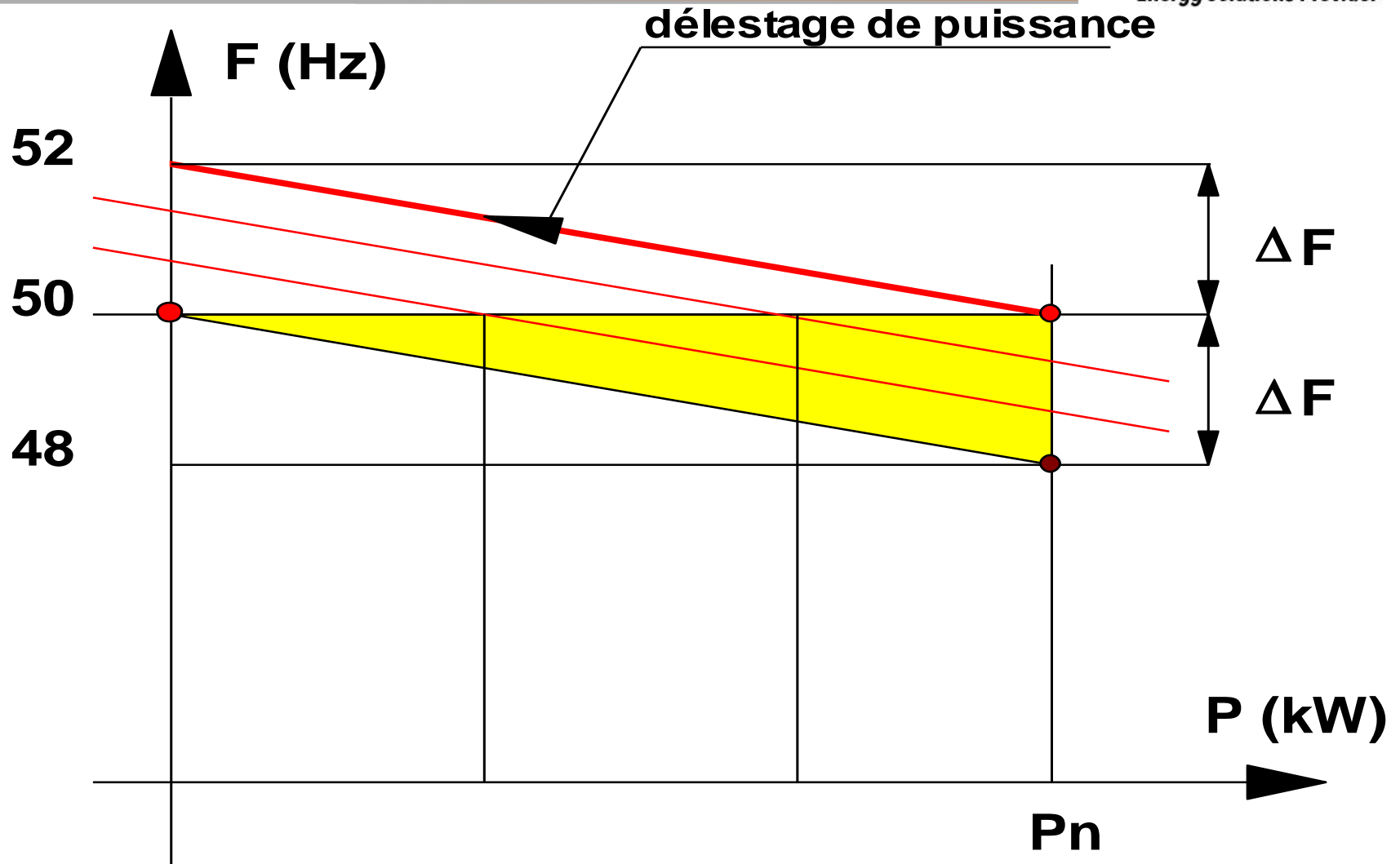
- **For a single Genset:**
  - ✓ *Active and reactive power depend of the Load and its power factor.*
  - ✓ *An action on the speed regulator will affect the frequency of the supply.*
  - ✓ *An action on the voltage regulator will affect the voltage of the supply.*
- **For a genset synchronized to another genset:**
  - ✓ *Active and reactive power depends from :*
    - *the load*
    - *The behavior of the 2 gensets towards each other.*
  - ✓ *Action on the speed regulator will affect the active load sharing (KW) and the bus frequency.*
  - ✓ *Action on the voltage regulator will affect the reactive load sharing (KVAR ) and the bus voltage .*



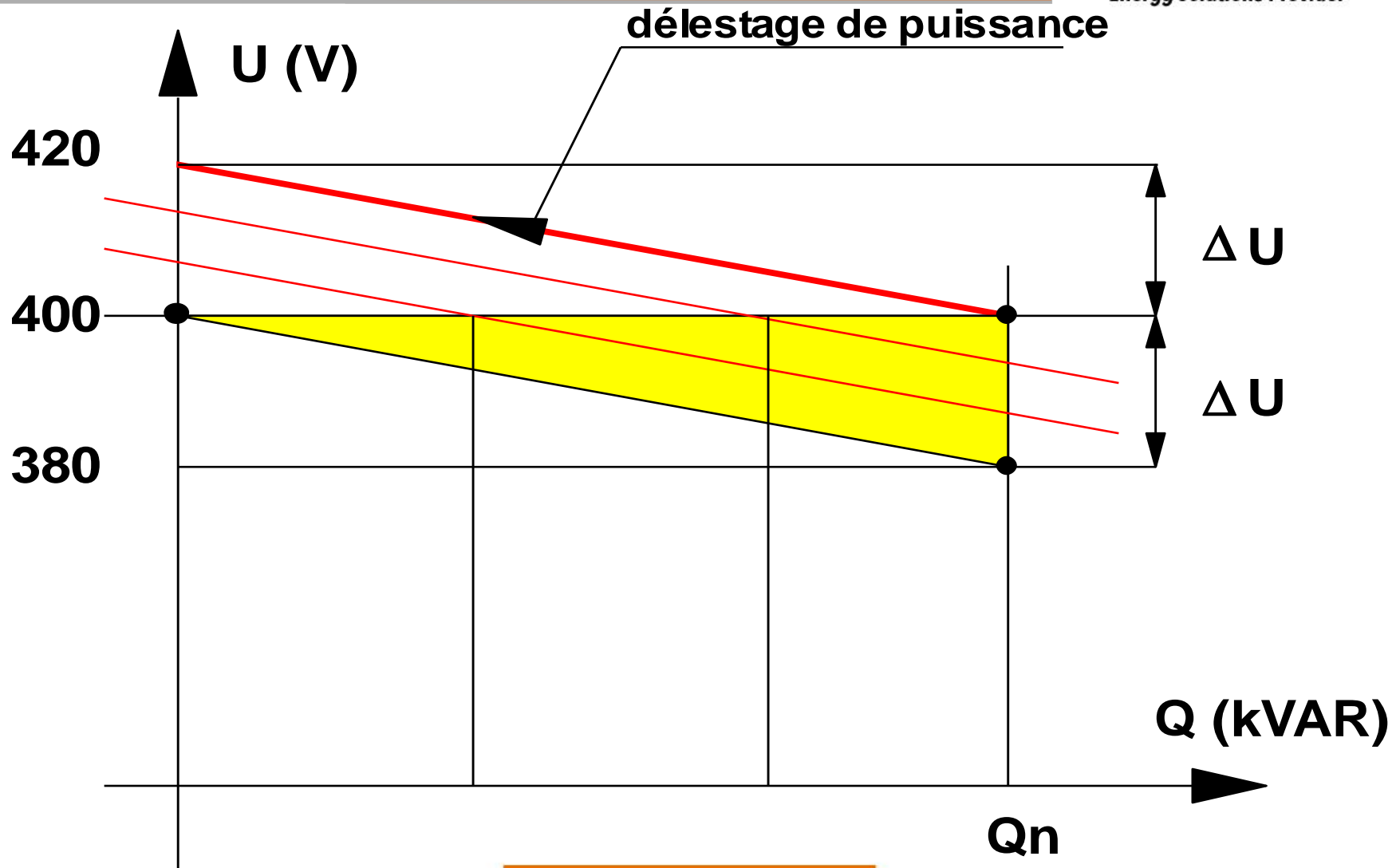
# Load sharing



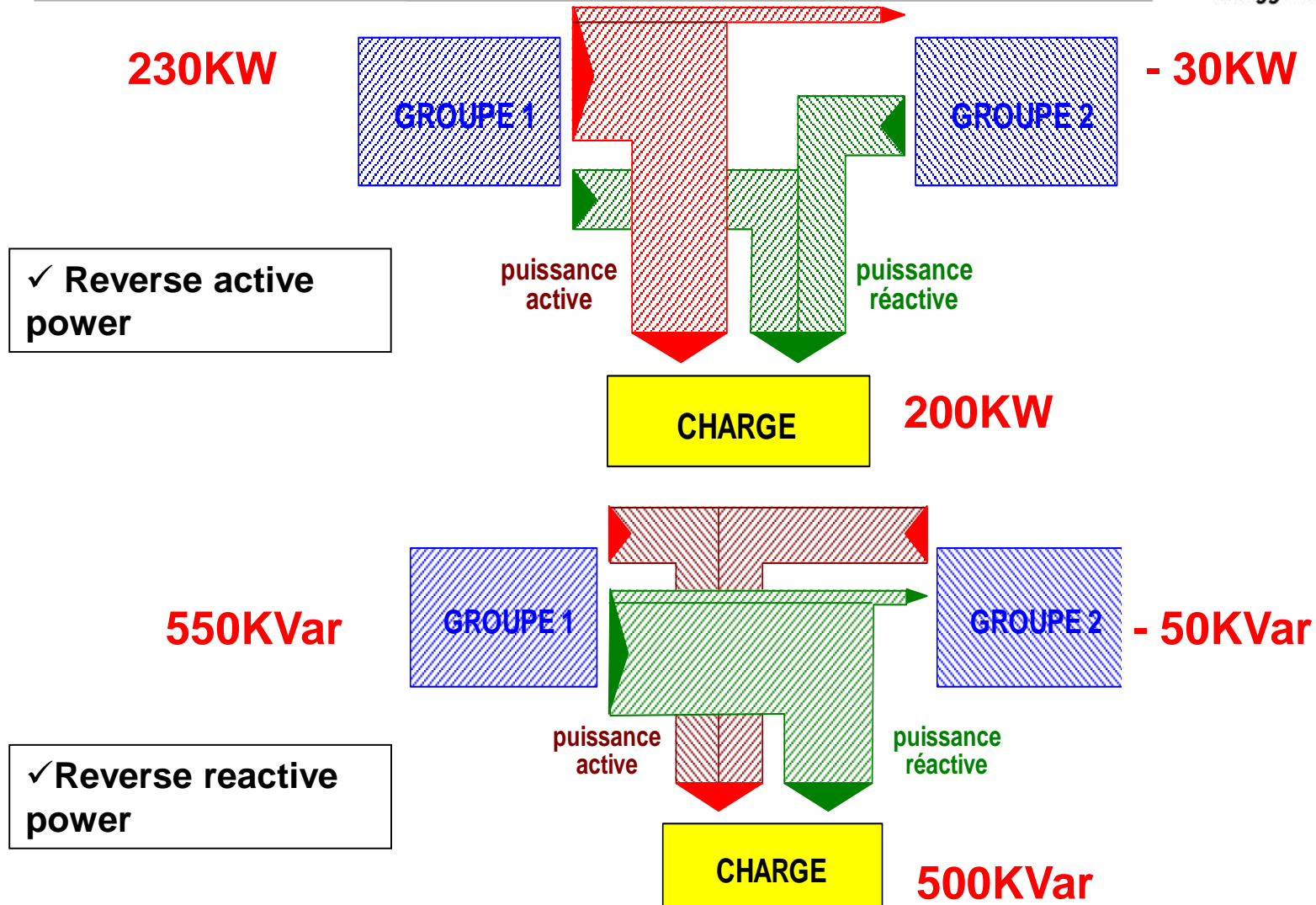
# Speed droop



# Voltage Droop



# Load sharing Protection





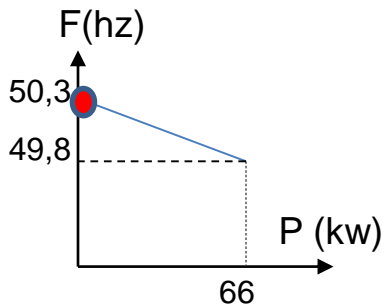
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## Parallel mode

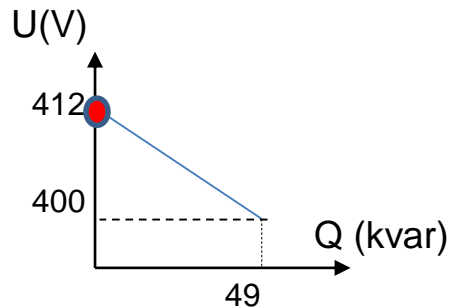
# *Simulation of load sharing*

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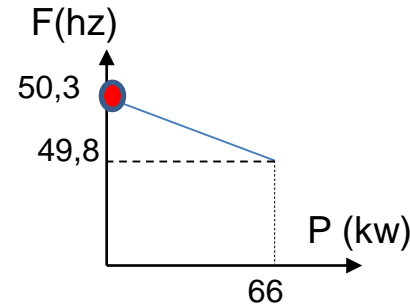
# Example of load sharing



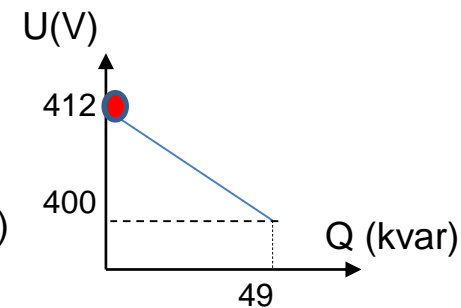
0 kw



0 kvar

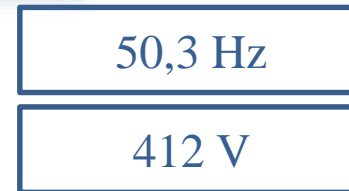
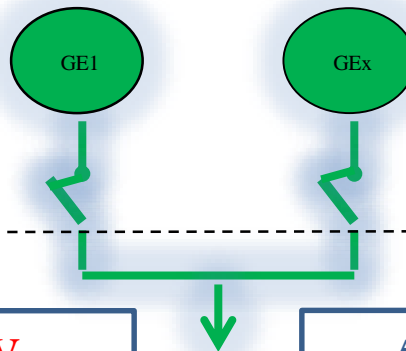


0 kw

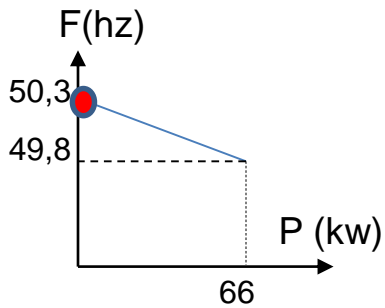


0 kvar

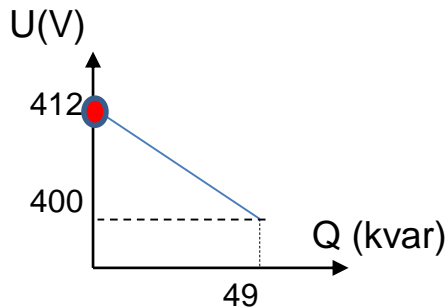
Bus  
bar



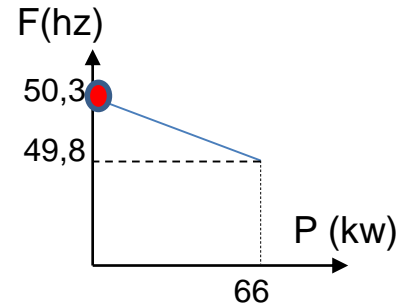
# Example of load sharing



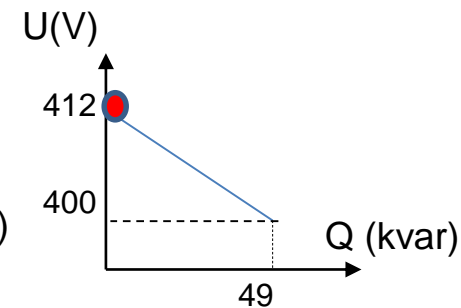
0 kw



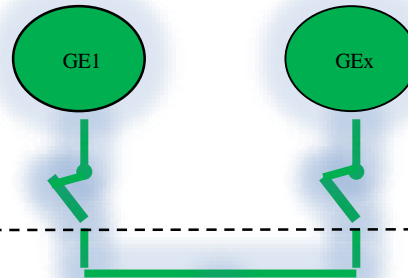
0 kvar



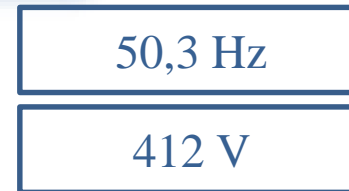
0 kw



0 kvar



Bus  
bar

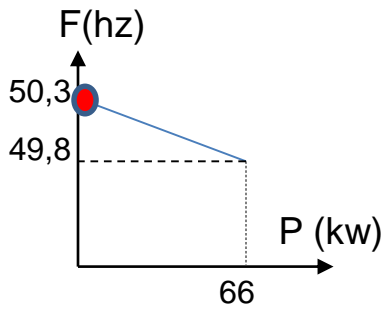


+

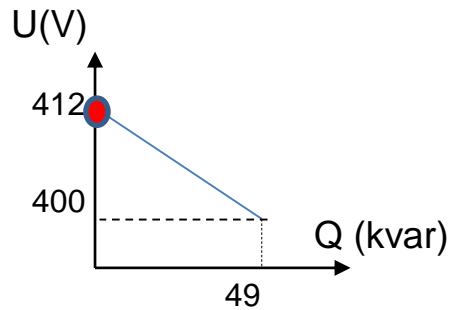


3 HEATING OF 18KW  
= **54kW**

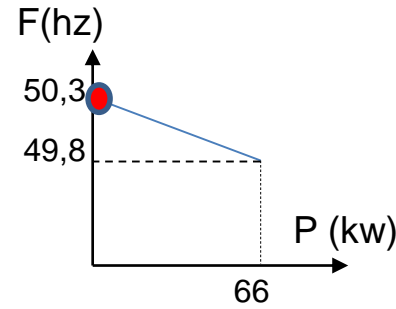
# Example of load sharing



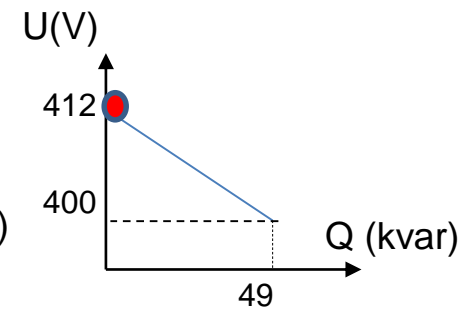
**27** kW



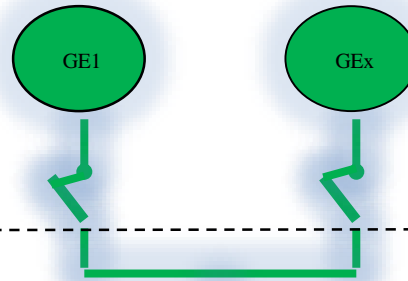
**0** kvar



**27** kW



**0** kvar



**Bus  
bar**

<b>54 KW</b>
<b>0 Kvar</b>

<b>50,1 Hz</b>
<b>412 V</b>

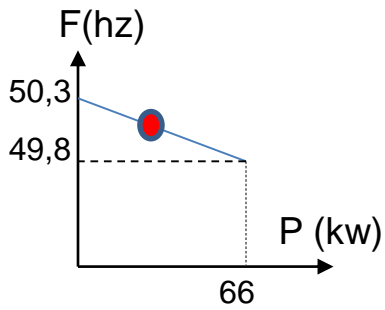
**+**



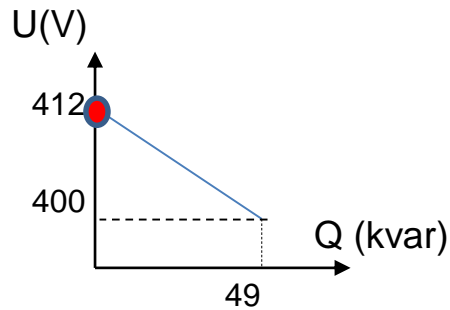
**3 HEATING OF 18KW  
= 54kW**



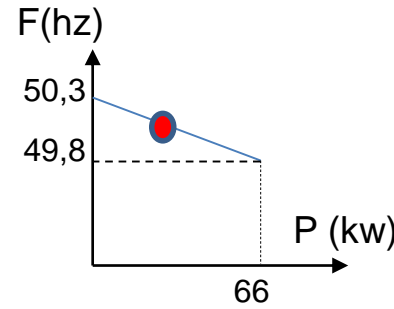
# Example of load sharing



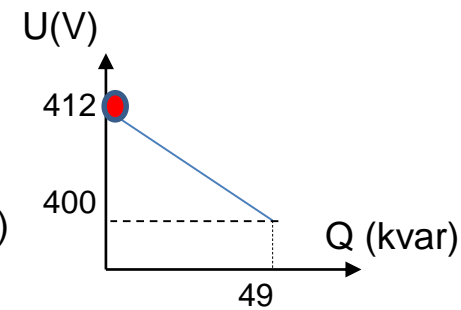
**27 kw**



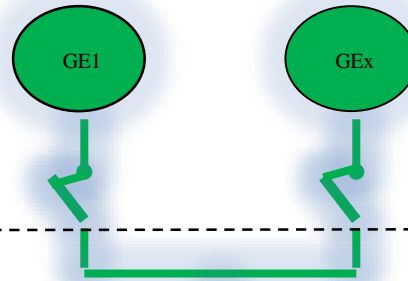
**0 kvar**



**27 kw**



**0 kvar**



**Bus bar**

<b>54KW</b>
<b>0 Kvar</b>

<b>50,1 Hz</b>
<b>412 V</b>



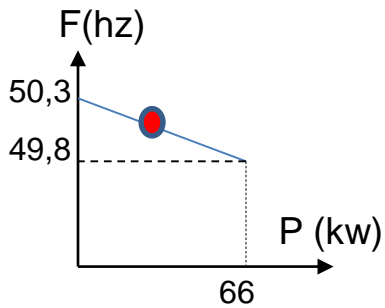
**54kW**

**+**

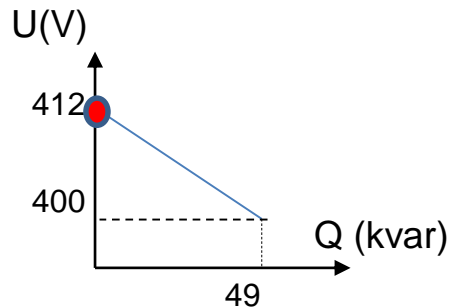


**2 Engines 18KW , 14kVAR**  
**38KW AND 28KVAR**

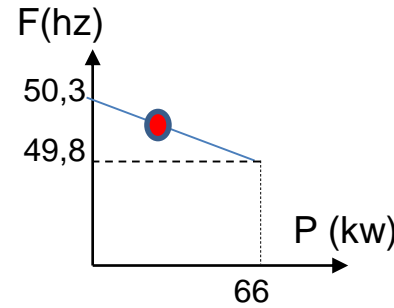
# Example of load sharing



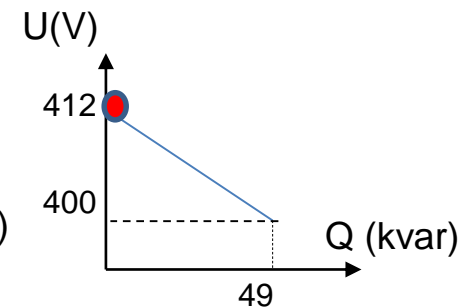
**45 kw**



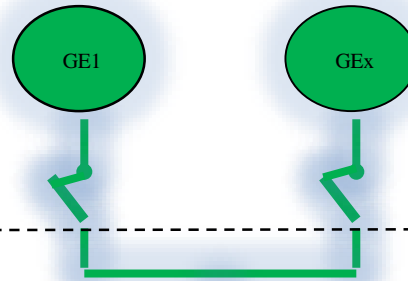
**14 Kvar**



**45 kw**



**14 kvar**



**Bus bar**

**92 KW**

**28 Kvar**

**49,96 Hz**

**408,6 V**



**54kW**

**+**



**2 Engines 18KW ,14kVAR**  
**38KW AND 28KVAR**



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**Parallel mode**

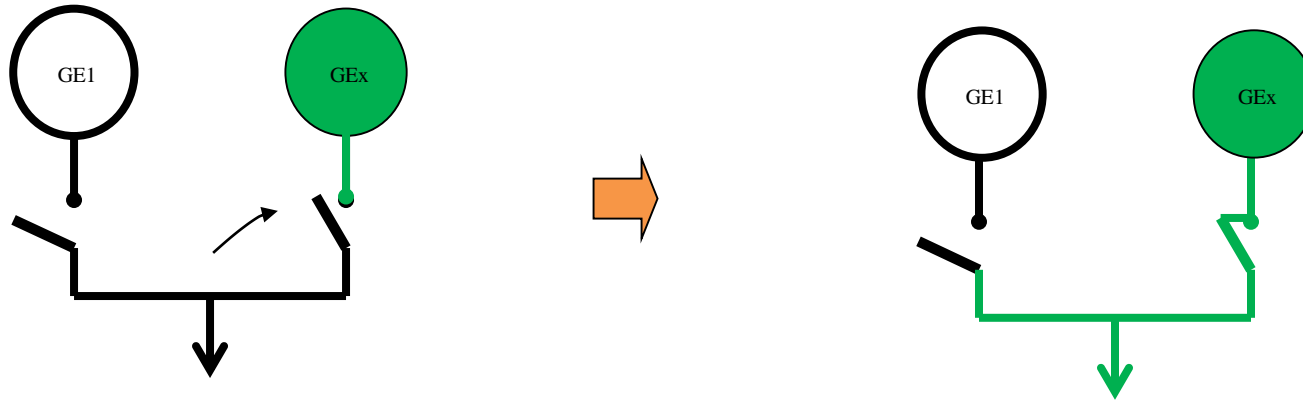
**Step by step**

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# Paralleling steps

# Initial state

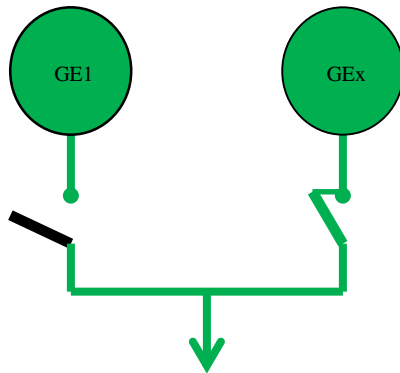
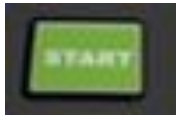
✓ The bus is supplied by a first genset. The second genset will be synchronised automatically to the bus



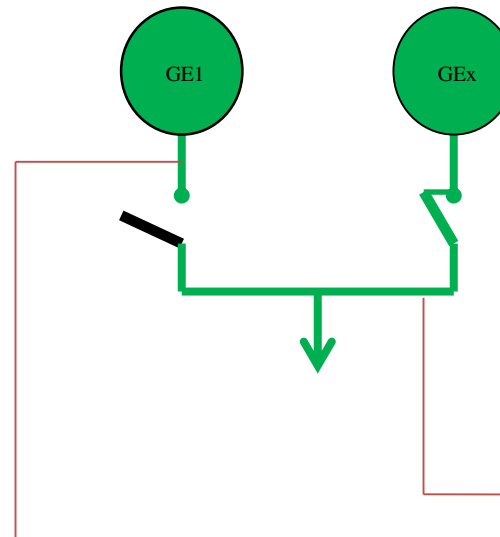
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# Paralleling steps

## STEP2



## STEP3

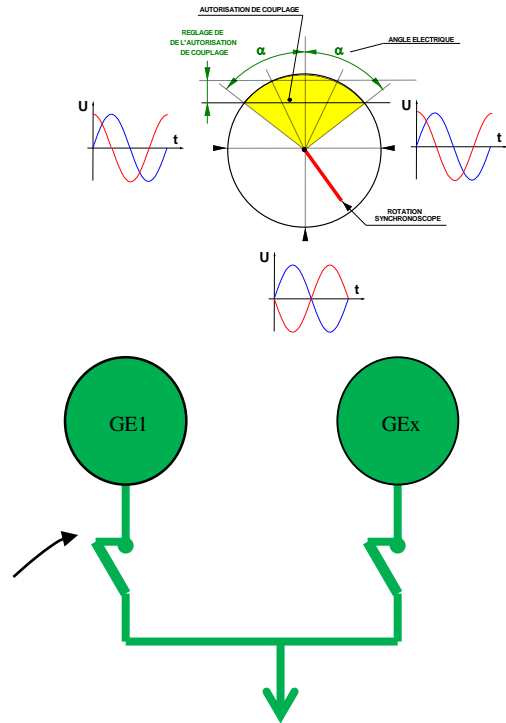


268 SYNCHRONISATION
$\Delta U = 2$ Volts
$\Delta F = 0.05$ Hertz
$\Delta \theta = 5^\circ$
Esc



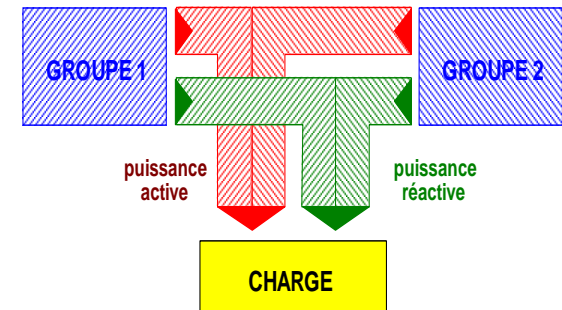
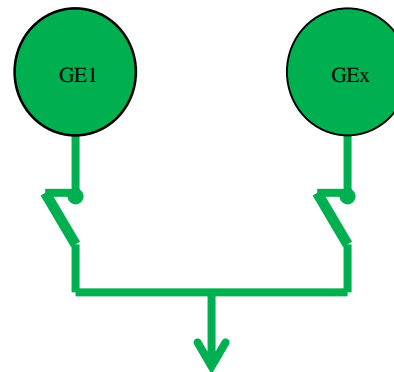
# Paralleling steps

## STEP4



## STEP5

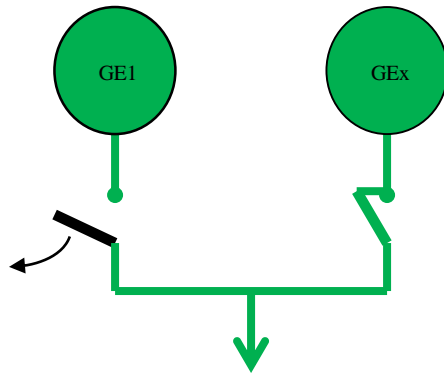
Load sharing



## STEP6



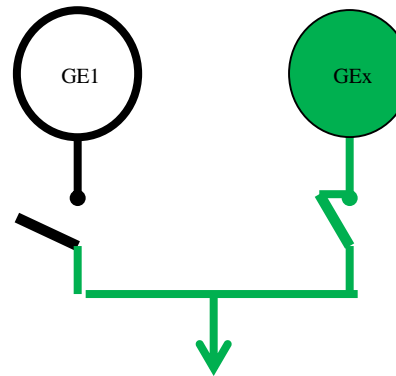
Genset breaker open



## STEP7



Genset stop





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# Neutral Connection

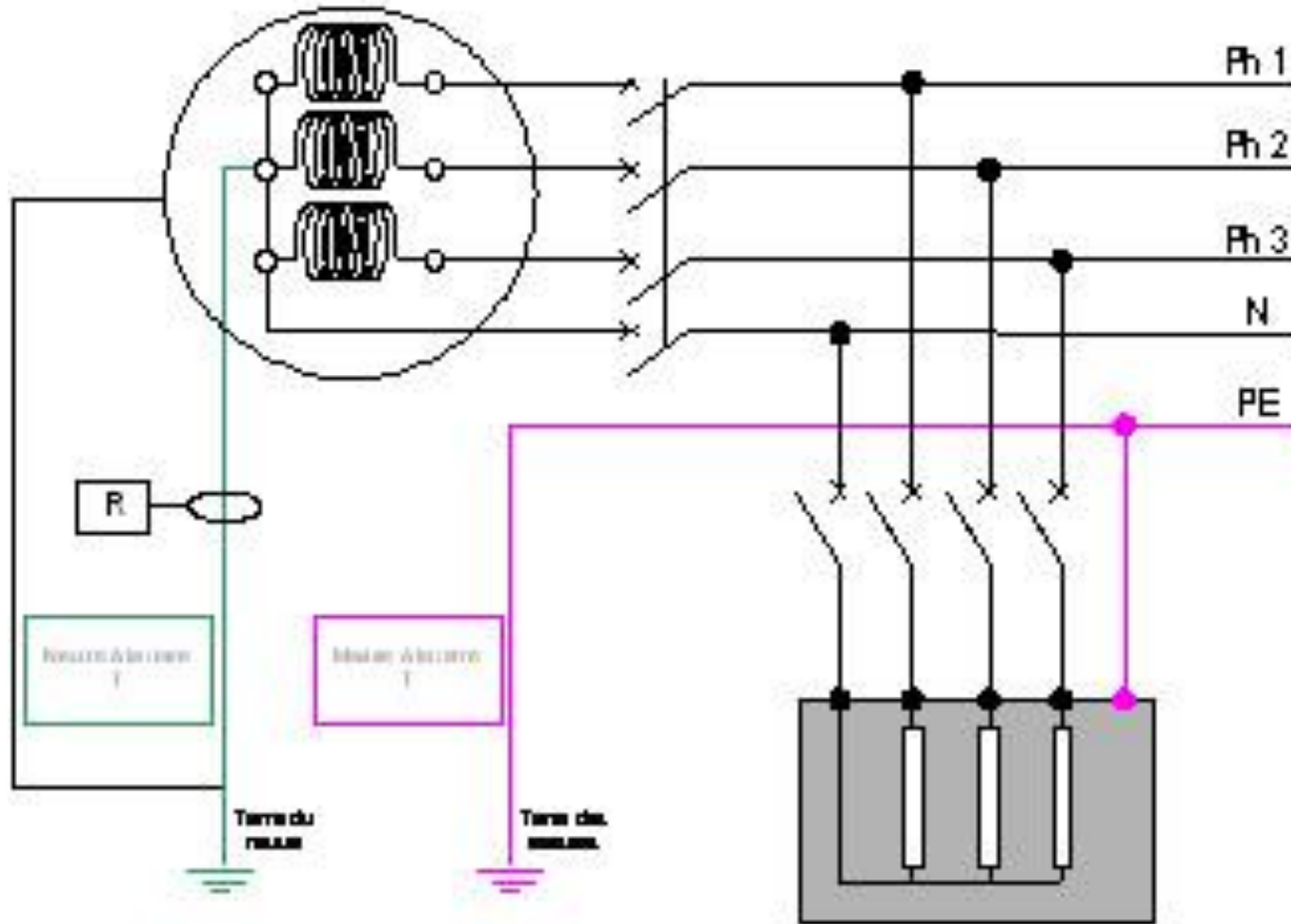
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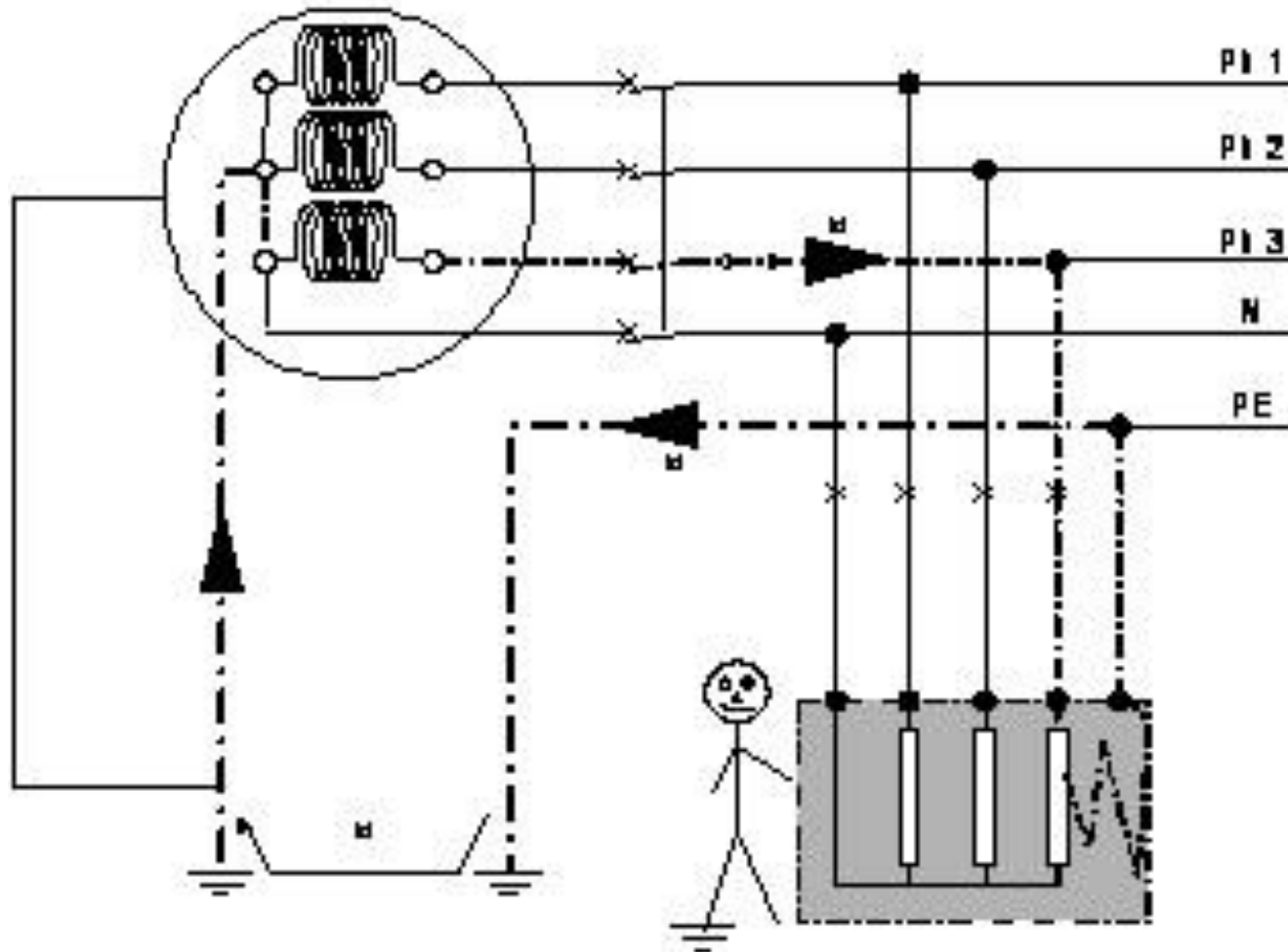
# Neutral connection

Regime		Number of conductors	Detection	Note
<b>TT</b>		4 poles	Measure of residual current	Tripping at the 1 <sup>st</sup> default
<b>TN</b>	<b>C</b>	3 poles	Without (Measure of residual current)	Tripping by the power breaker
	<b>S</b>	4 poles		

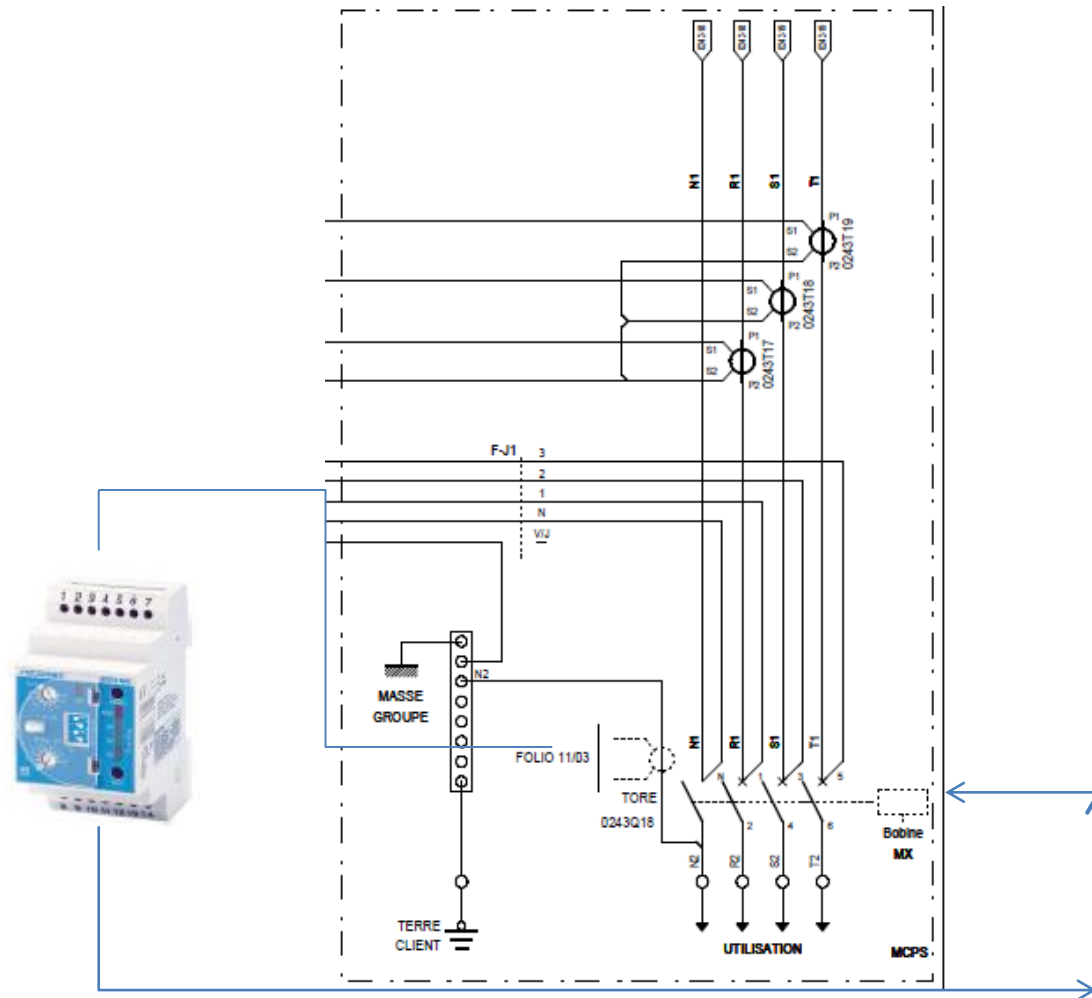
# T.T grounding system

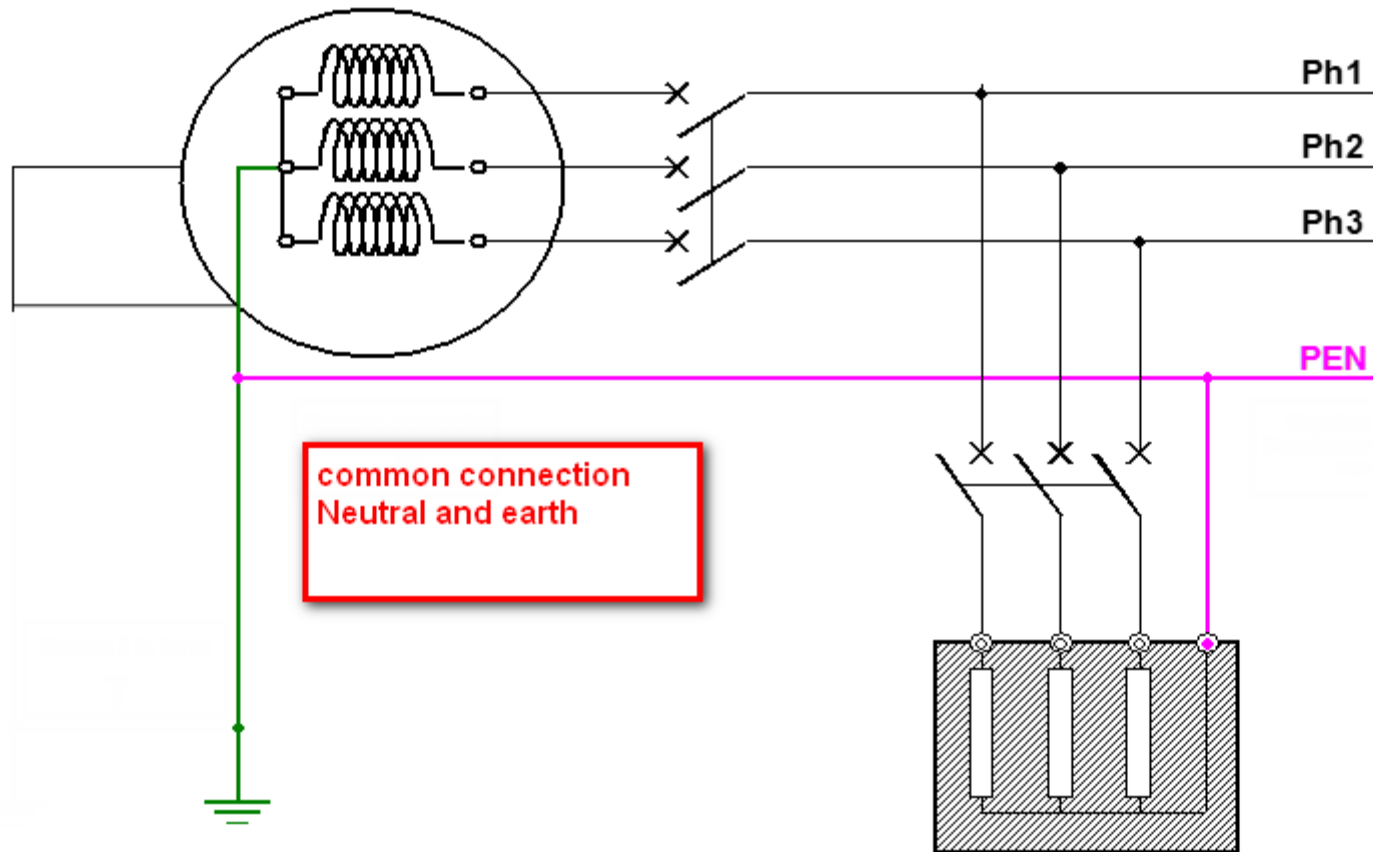


# Fault in TT grounding system

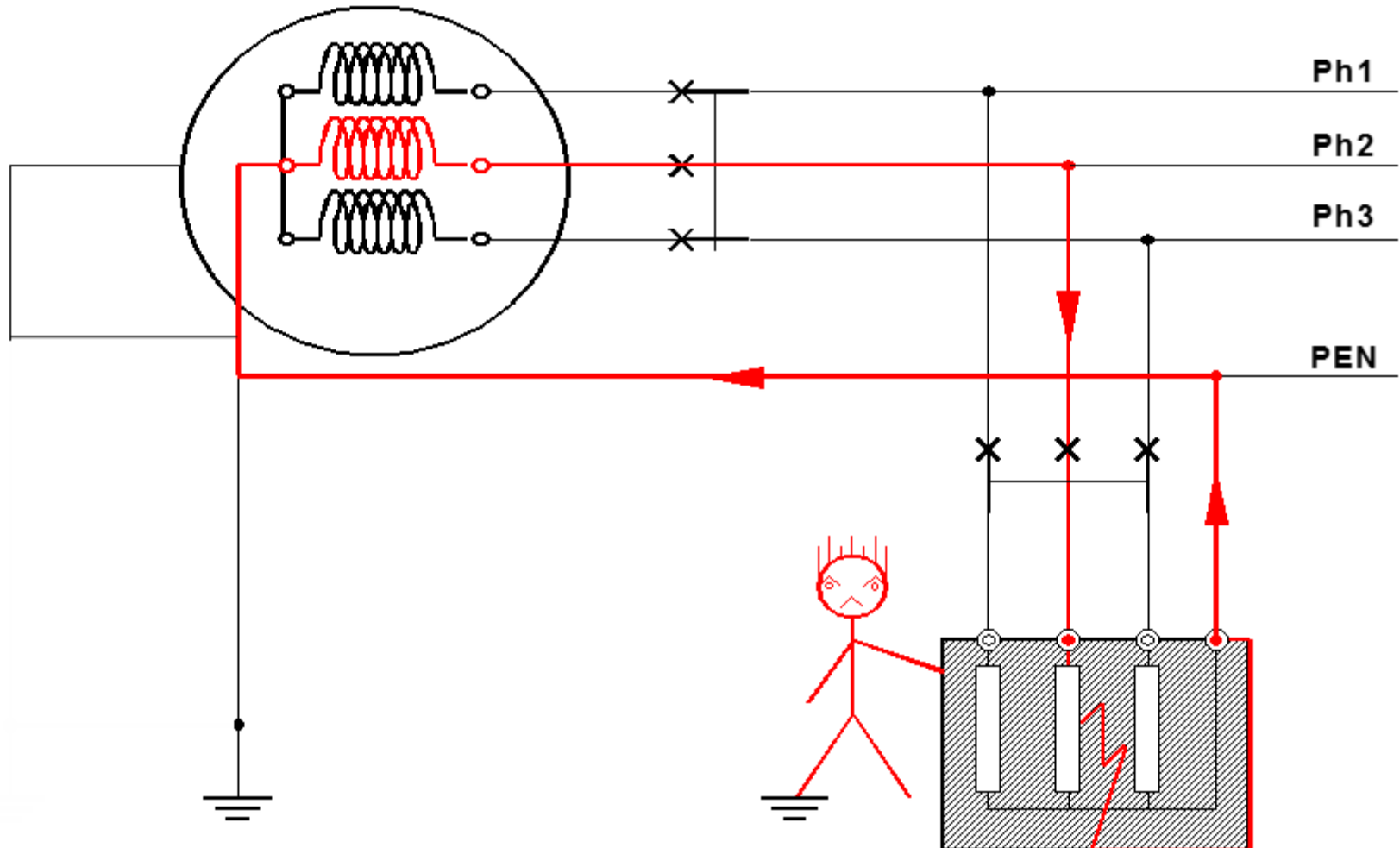


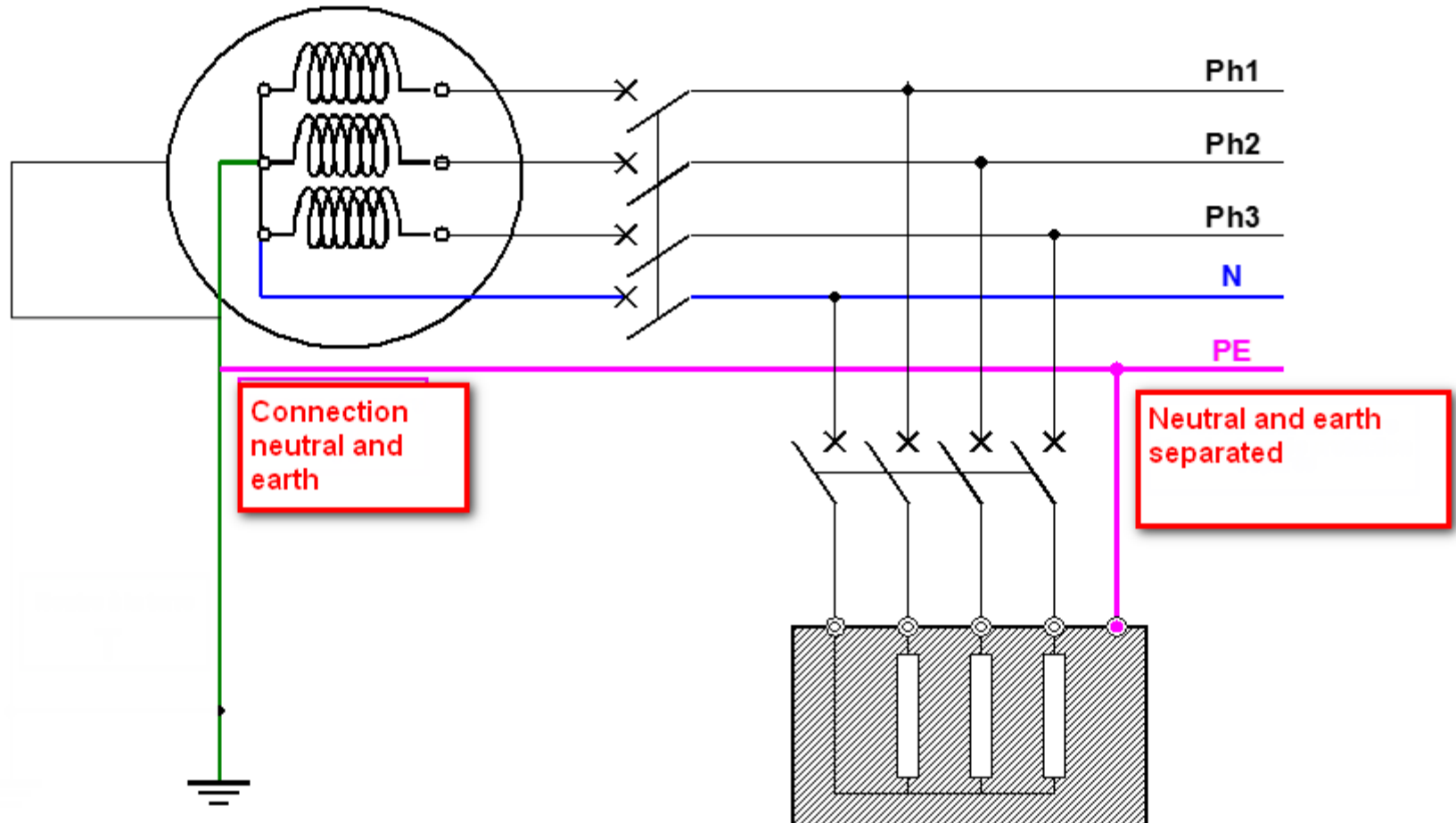
# TT – Single genset



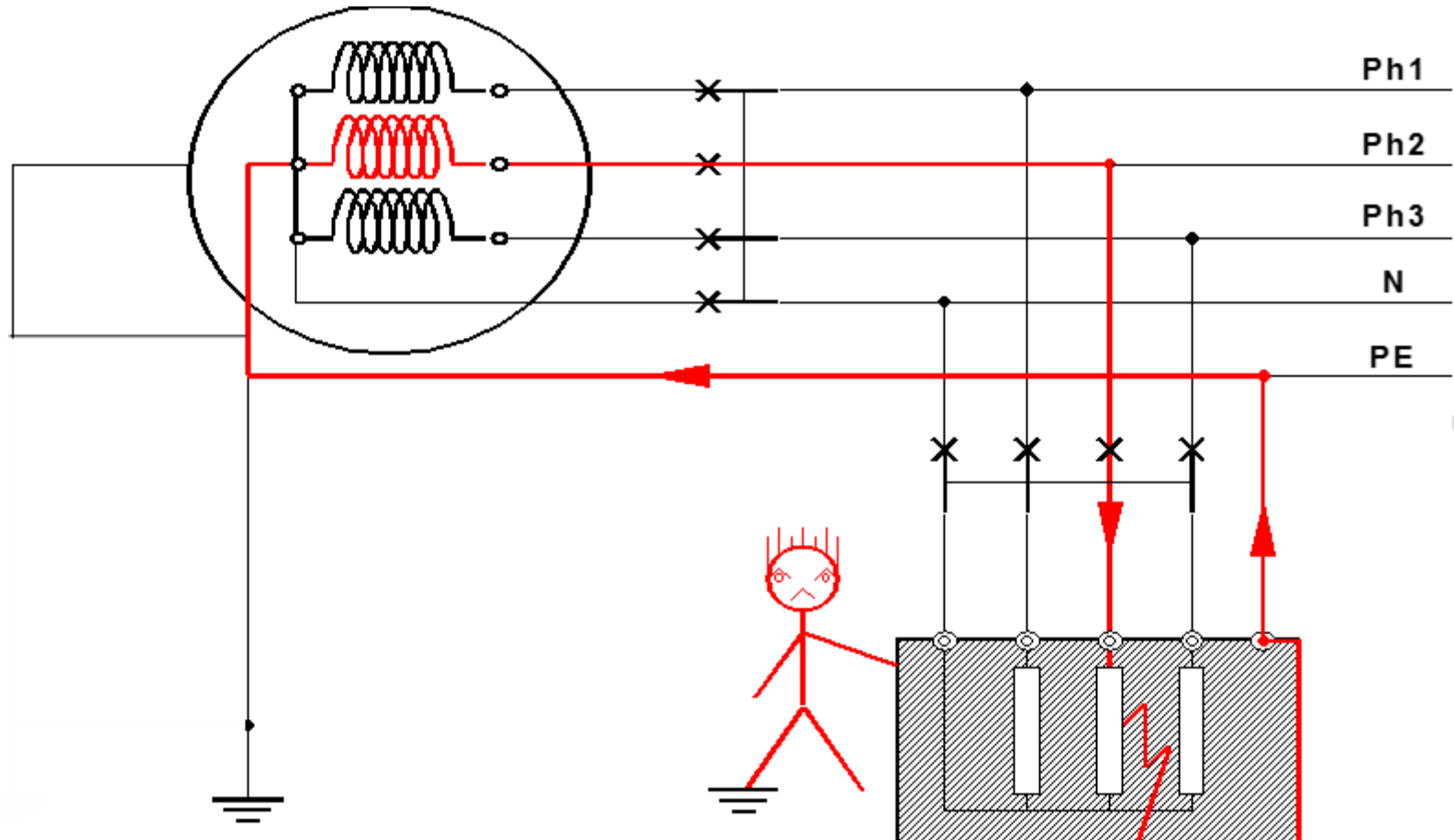


# TNC FAULT





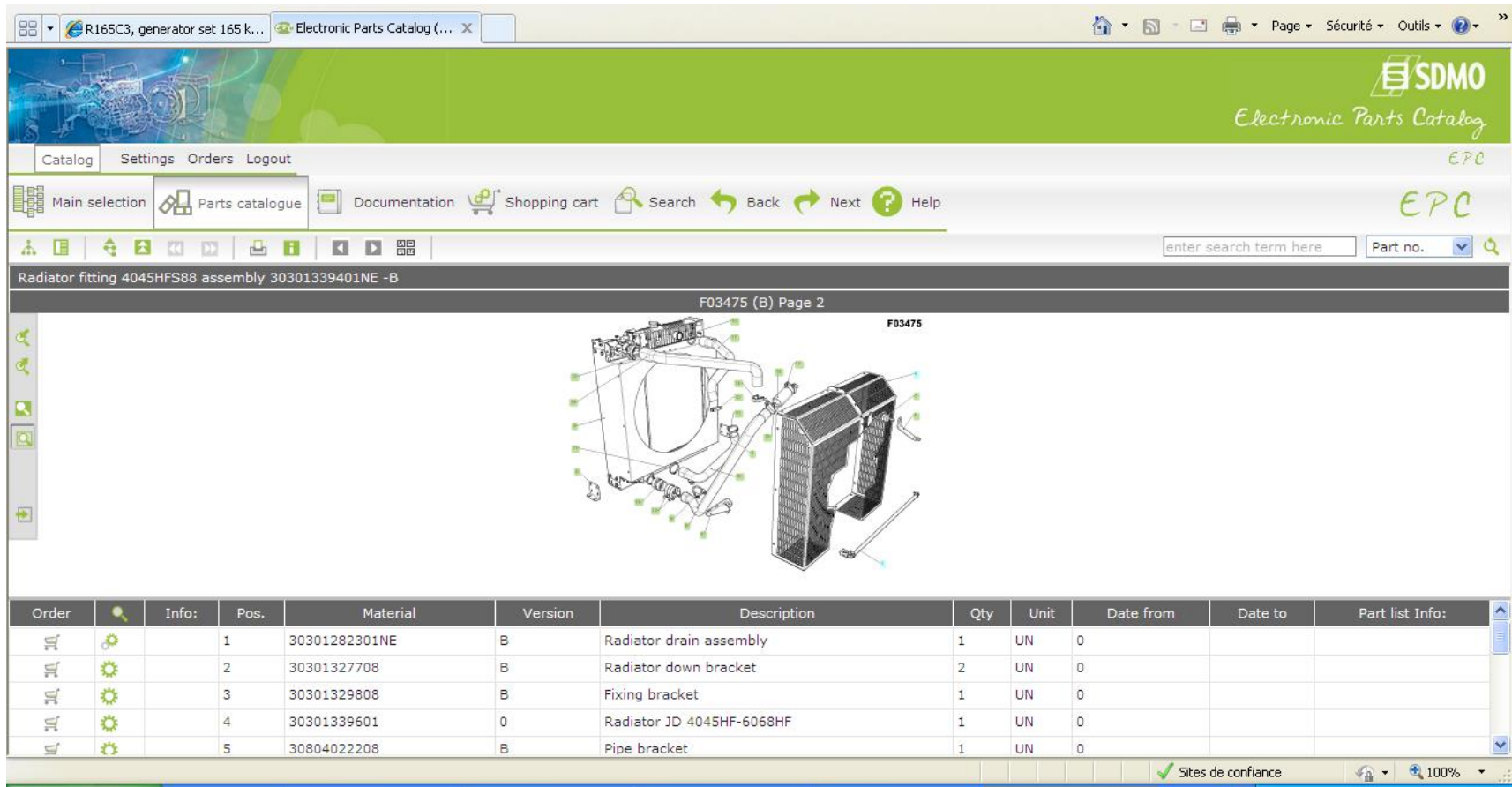
# TNS FAULT





# Parts identification

<https://epc.sdmo.com>



The screenshot displays the SDMO Electronic Parts Catalog (EPC) interface. The top navigation bar includes 'Catalog', 'Settings', 'Orders', and 'Logout'. Below this, there are icons for 'Main selection', 'Parts catalogue', 'Documentation', 'Shopping cart', 'Search', 'Back', 'Next', and 'Help'. A search bar is present with the placeholder text 'enter search term here' and a dropdown menu for 'Part no.'. The main content area shows a technical drawing of a radiator fitting assembly, labeled 'F03475 (B) Page 2'. The drawing includes callouts for various components. Below the drawing is a table listing the parts:

Order	Info:	Pos.	Material	Version	Description	Qty	Unit	Date from	Date to	Part list Info:
		1	30301282301NE	B	Radiator drain assembly	1	UN	0		
		2	30301327708	B	Radiator down bracket	2	UN	0		
		3	30301329808	B	Fixing bracket	1	UN	0		
		4	30301339601	0	Radiator JD 4045HF-6068HF	1	UN	0		
		5	30804022208	B	Pipe bracket	1	UN	0		

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<http://www.sdmo-rentalpower.com>

The screenshot displays the SDMO website interface for the R165C3 generator. On the left, a 'Product search' sidebar contains dropdown menus for 'Area of use' and 'Product type', and an orange 'Find' button. Below this is a navigation menu with links for 'Contact', 'Service', 'Media library', 'Legal notices', 'www.sdmo.com', and 'Sitemap'. The main content area features the product name 'R165C3' at the top, a breadcrumb trail 'Homepage > Products > R165C3', and a 'Back' button. A central image shows the generator unit. To the right of the image is a 'Documents to download' list with checkboxes: 'Data sheet', 'Comparison of control units', 'Checklist', 'User manual' (checked), 'Synthesis sheet', 'Synthesis sheet', 'Drawing', and 'Options sheet'. Below the list are 'Download' and 'Download all' buttons. Further right, a 'Product sheet' section has a search input field with the placeholder 'Reference (e.g.: R110C3)' and an orange 'Find' button. Below that, a 'Video help' section contains two video thumbnails: 'Installing the generating set' and 'Adjusting the differential'. At the bottom of the main content area, there are tabs for 'Generating set reference', 'Equipment', 'Engine', 'Alternator', and 'Control unit', followed by a dropdown arrow and the text 'General characteristics'. The browser's status bar at the bottom indicates 'Terminé, mais il existe des erreurs sur la page.' and 'Internet' with a 100% zoom level.

*Thank you for your attention !*



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