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SMM ePlus

Prepayment support

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1. Scope

This document describes prepayment feature in SMMePlus.

2. Reference

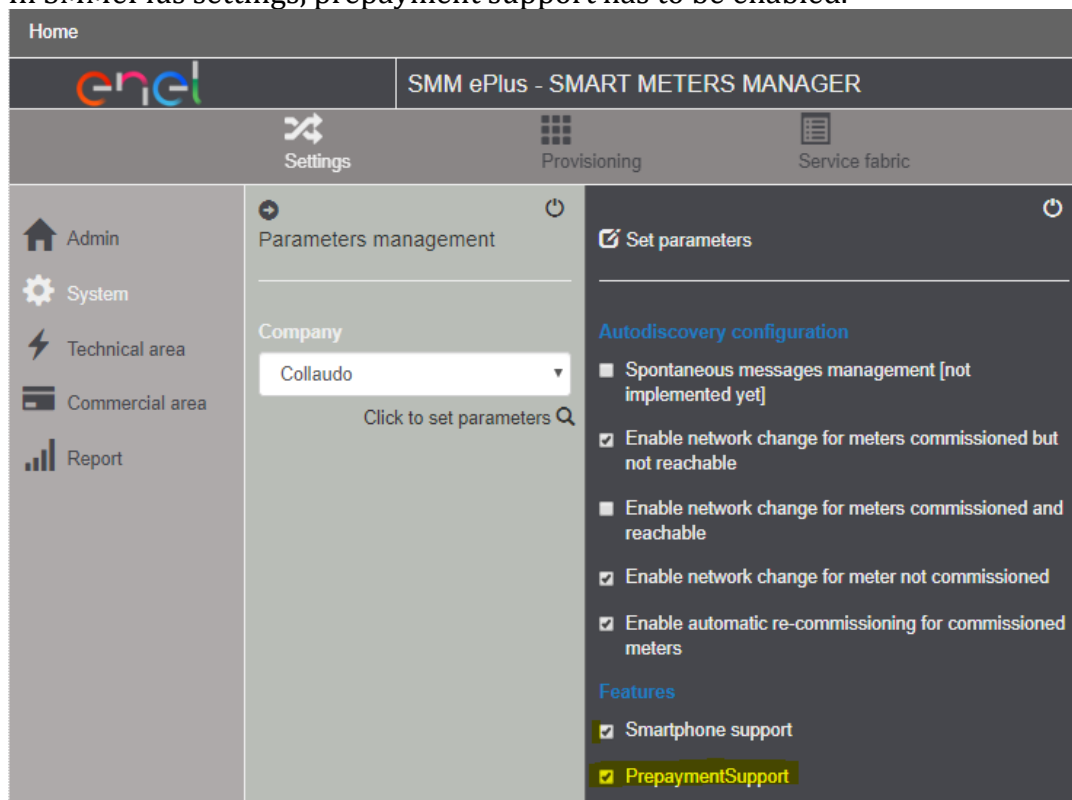
Document Reference:

Ref 1. SMM ePlus - Requirements - Integration v.2.0

3. System configuration

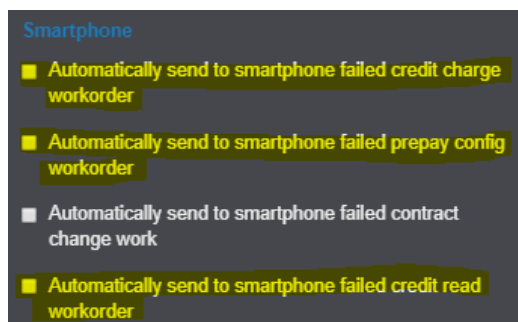
3.1. Prepayment support

In SMM ePlus settings, prepayment support has to be enabled.



3.2. Automatic local activities

In SMM ePlus settings, it is possible to enable/disable specific flags related to failed workorders. If a workorder fails for reachability reasons, it can automatically be sent to smartphone for local execution.



3.3. Prepayment disable

In SMMePlus settings, it is possible to enable/disable a specific flag related to the prepayment disable process.

If the flag “Reset credit to 0 when disabling prepayment” is enabled, when the prepayment mode is disabled on a meter, the credit is reset to 0. This is the suggested behaviour.

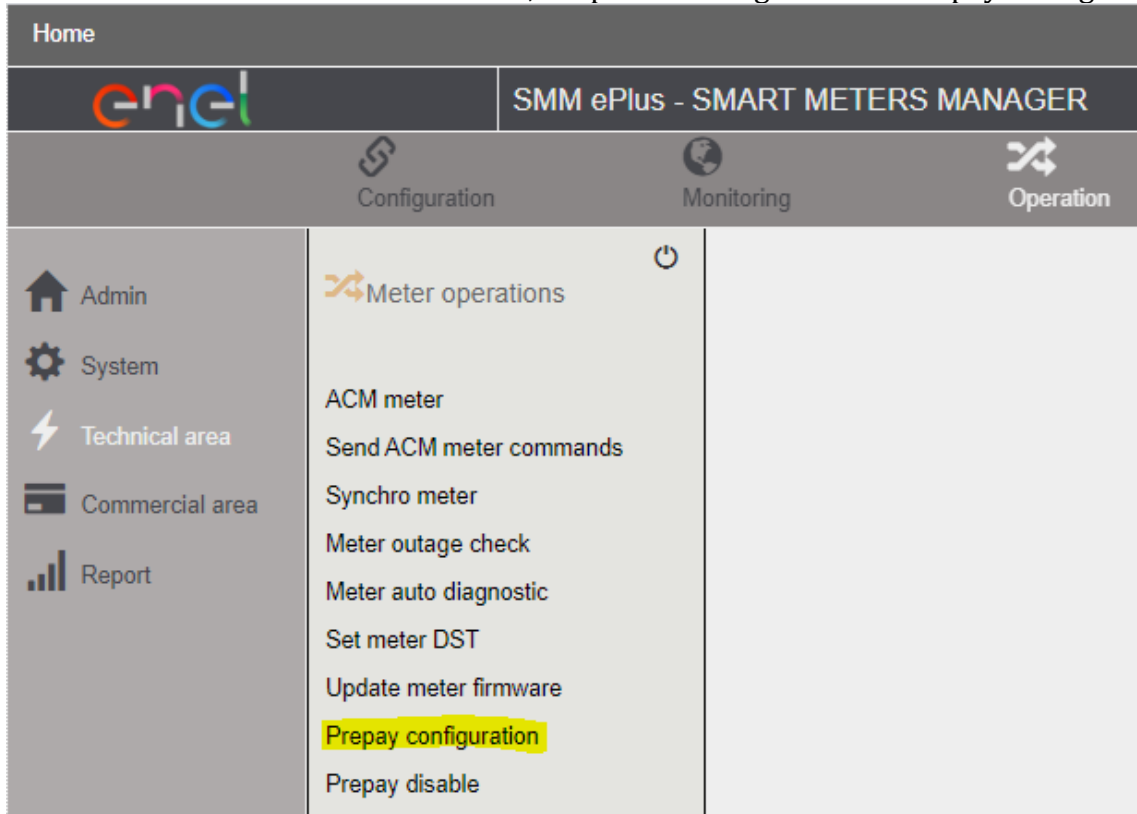
Prepayment

☐ Reset credit to 0 when disabling prepayment

4. Activities

4.1. Prepayment configuration on meter

In technical area of SMM ePlus website, it's possible to generate a Prepay Configuration activity.



Prepay configuration

Company

Collaudo

concentrator

VIOLAT01

Serial number

Find meters

Selected concentrator: VIOLAT01

For selected meters the system will create a technical workorder that will configure prepayment parameters on meters. Selecting "Generate mobile activity" button, the activity will be available for execution from ePlus mobile application

✓	Concentrator Name ..	Serial number	Reachable	Meter type	Versionapp1	Details ..	Is prepayed configured
✓	VIOLAT01	UAAEEDN101000275...	true	CERM1	3131		false

Total items: 1 (Selected items: 1)

Generate remote activity

Generate mobile activity

4.1.1. Configuration

Through this activity, the system configures on meters the following values.
They can be changed as needed.

Field	Value	Description
Limit credit	0	Limit of credit before the meter detaches the circuit breaker.
Warning threshold credit	30	Limit of credit that, if reached, generated a warning used to identify when the credit is running out.
Power reduction threshold	30	Limit of credit that, if reached, causes the power reduction.
Power reduction functionality	100%	Percentage of contractual power available when credit goes below "Power reduction threshold". (for this feature, DISI should be enabled in table 13).
Days for relay opening	Everyday	Days of week in which the meter can open the relay.
Start time opening	00:00	Start time of the day in which the meter can open the relay.
End time opening	23:59	End time of the day in which the meter can open the relay.
Relation Wh - credit.	1	Relation between consumed Wh and credit. Now, 1 credit = 1 Wh

To know which meters have been configured, it is possible to see “Meters in field” report.

Home

SMM ePlus - SMART METERS MANAGER

Manufacturing
Field
Monitoring
System

Admin
System
Technical area
Commercial area
Report

Devices

Company

Collaudo

Concentrators in field
Meters in field
Count meters by concentrator
Concentrator autodiscovery conflicts
Count meters
Wake up
Concentrator autodiscovery repeater
Wake up per day

filter by: concentrator.n value: GIALLOT01

of 1
Find | Next

Meters in field

concentrator	usagepoint	maoaddress	serialnumber	type	state	process state	nm	is reachable	breakerstate	error instantclosure	row	phase	version app1	version sw fx	r
GIALLOT01	GIALLO02	860214006A64	UAAEEDN10100027236	CERM1	Commissioned			1 True	100	False	2	Phase R	3146	3052	8
GIALLOT01	VERDE0013	860416018178	UAAEEDN11200110971	CERM1	Commissioned			1 True	100	False	3	Phase R	3131	3052	8
GIALLOT01	GIALLO05	860616000287	UAAEEDN11300000743	CERM1	Commissioned			1 True	40	False	4	Phase R invert	3057	3052	8
GIALLOT01	GIALLO06	86041601FA98	UAAEEDN11200129688	CERM1	Commissioned			1 True	100	False	5	Phase R	3131	3052	8
GIALLOT01	VIOLA0007	860214006A54	UAAEEDN10100027220	CERM1	Commissioned			0 True	100	False	10	Phase R	3131	3052	8
GIALLOT01	verdeinverto	860214001150	UAAEEDN10100005616	CERM1	Commissioned			1 True	100	False	7	Phase R	3131	3052	8

View Results

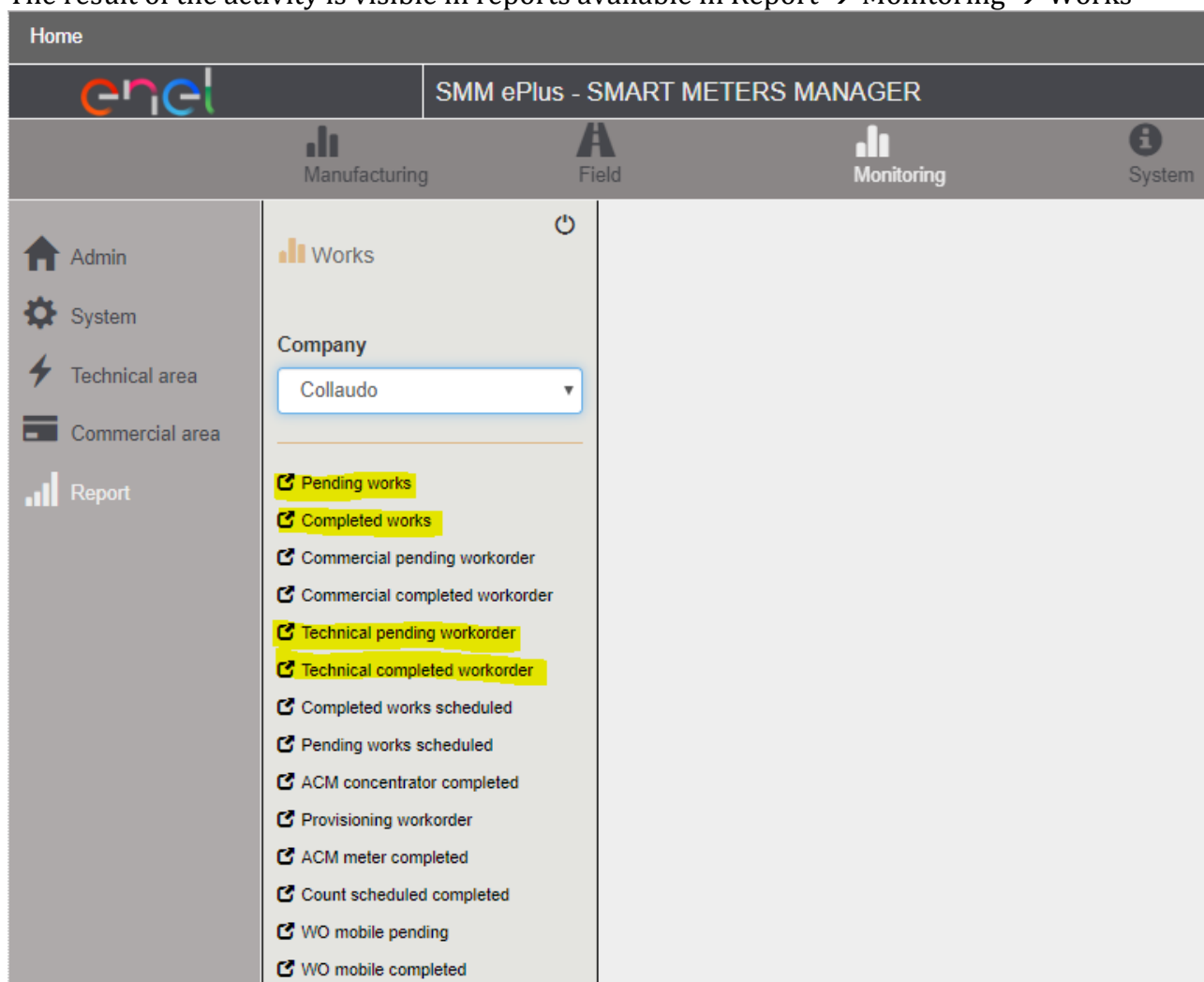
nsw1	nsw2	esw1	esw2	last sw update uto	pload	dailyclosure	energy do profile	energy lp profile	oedata profile	tip	prepayed configured
80D0	809C	0000	0040	10/28/2019 8:07:13 PM	True	False	DailyC_RosFab	FastPload Energy Profile	CEDATA_Prepayed_Light	15	False
80C0	809C	0000	0040	10/30/2019 6:52:12 PM	True	True	DailyClosure Energy Profile 3	FastPload Energy Profile	CEDATA_Prepayed_Light	60	True
80C8	809C	0000	0000	10/28/2019 8:07:13 PM	True	False	DailyClosure Energy Profile 3	FastPload Energy Profile	CEDATA_MaxPow_VoltVar	60	True
A0C0	809C	0000	0000	10/30/2019 6:52:12 PM	True	True	DailyClosure Energy Profile 3	FastPload Energy Profile	CEDATA_Prepayed_Light	60	True
80C8	809C	0000	0000	10/30/2019 3:52:50 PM	True	True	DailyClosure Energy Profile	PROFILO FP 2	CEDATA_MaxPow_VoltVar	15	True
80C8	809C	0000	0040	10/17/2019 10:39:24 AM	True	True	DailyC_RosFab	FastPload Energy Profile	CEDATA_MaxPow_VoltVar	60	False

4.1.2. Remote execution

Pressing the “Generate remote activity” button, the system generates a commercial Workorder that will be sent to technical area for remote execution.

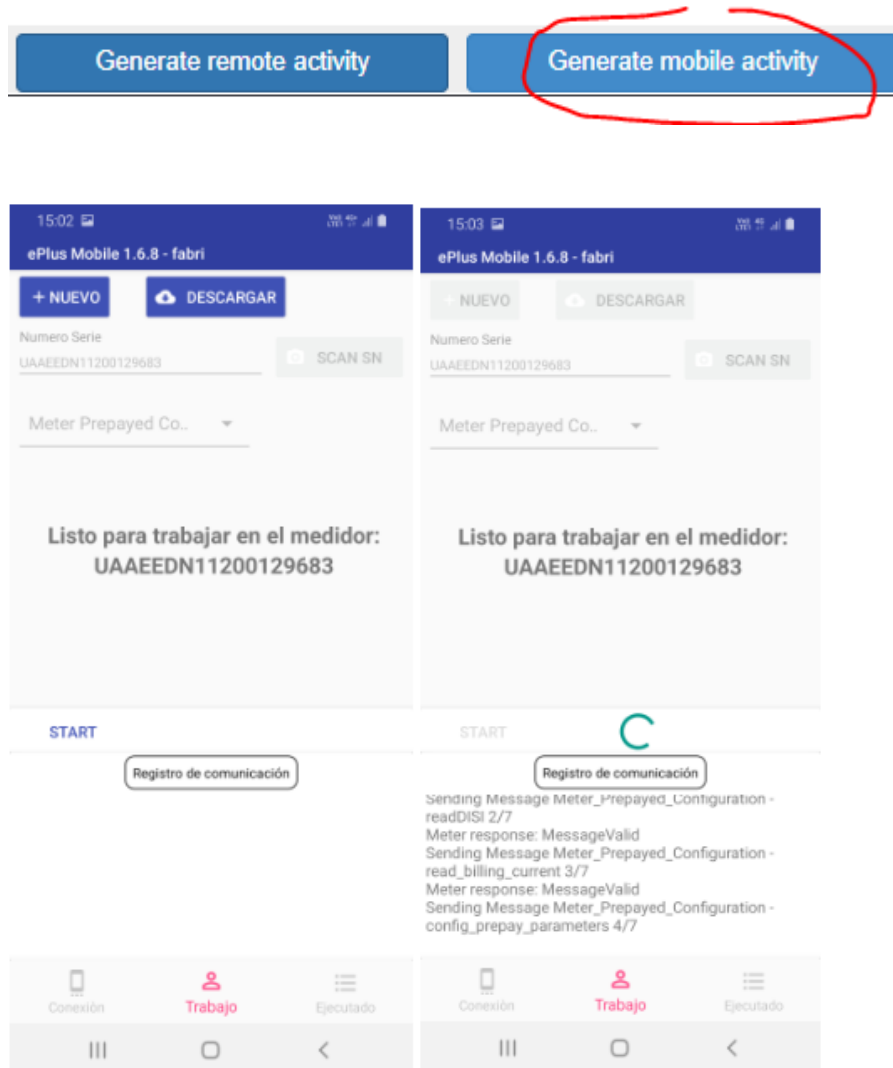


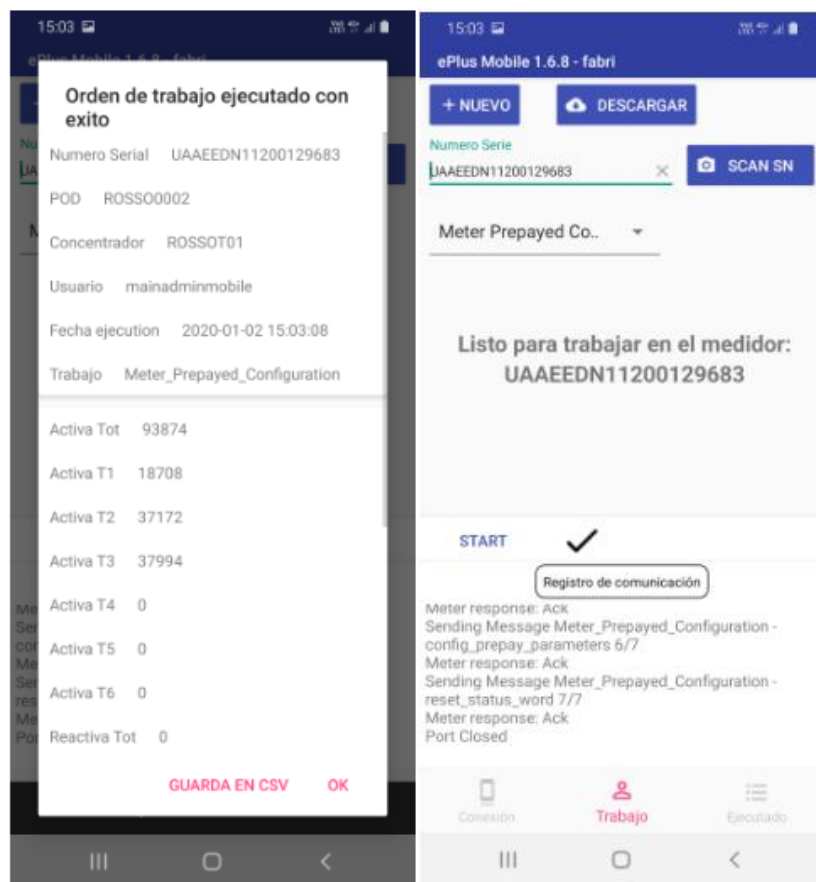
The result of the activity is visible in reports available in Report → Monitoring → Works



4.1.3. Local execution

Pressing the “Generate mobile activity” button, the system generates a WorkOrderMobile that will be downloadable from ePlusMobile application





4.1.4. SMMePlus integration (external commercial system)

To send a prepayment configuration request via integration, it's necessary to send an EndDeviceControl request, specifying following code.

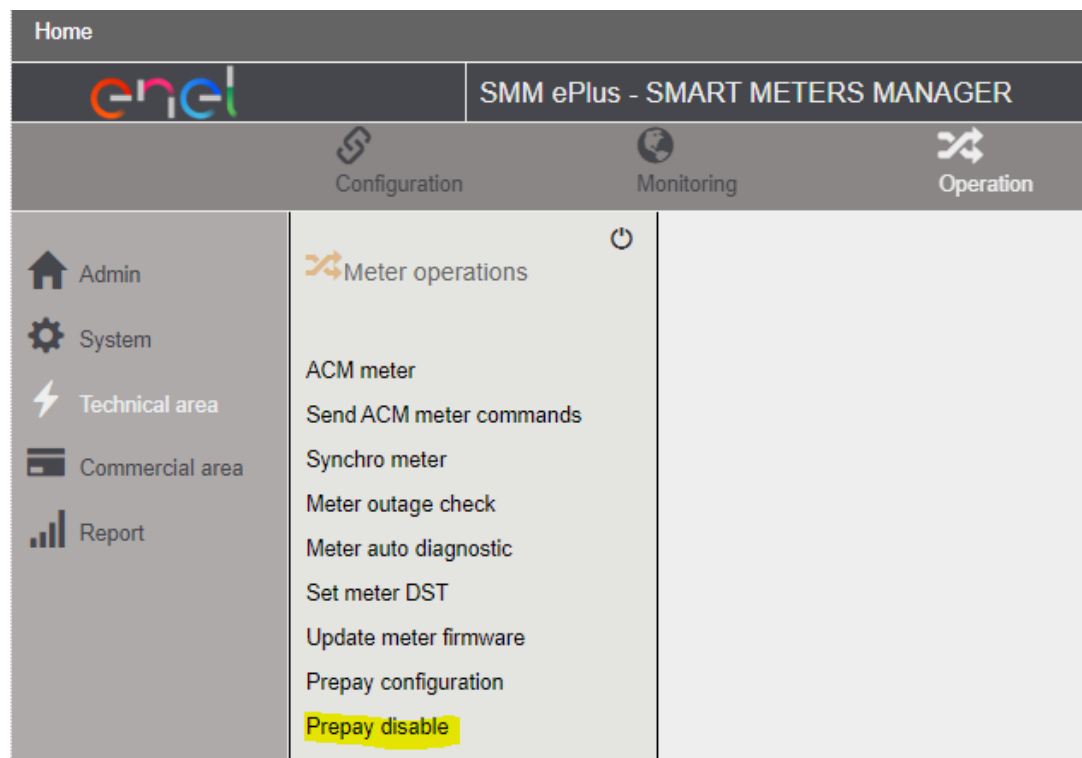
Code	Comments
3.20.81.26	Meter Prepay Configuration

The result of the operation uses following codes.

End Device Event Type	End Device Domain	End Device Sub-domain	End Device Event or Action	Description
3.20.81.76	Billing	Prepayment Credit	Enabled	Response Meter Prepay Configuration OK
3.20.81.221	Billing	Prepayment Credit	EnableFailed	Response Meter Prepay Configuration KO

4.2. Prepayment disabling on meter

In technical area of SMMePlus website, it's possible to generate a Prepay Disable activity.



4.2.1. Configuration

In relation with this process, the system:

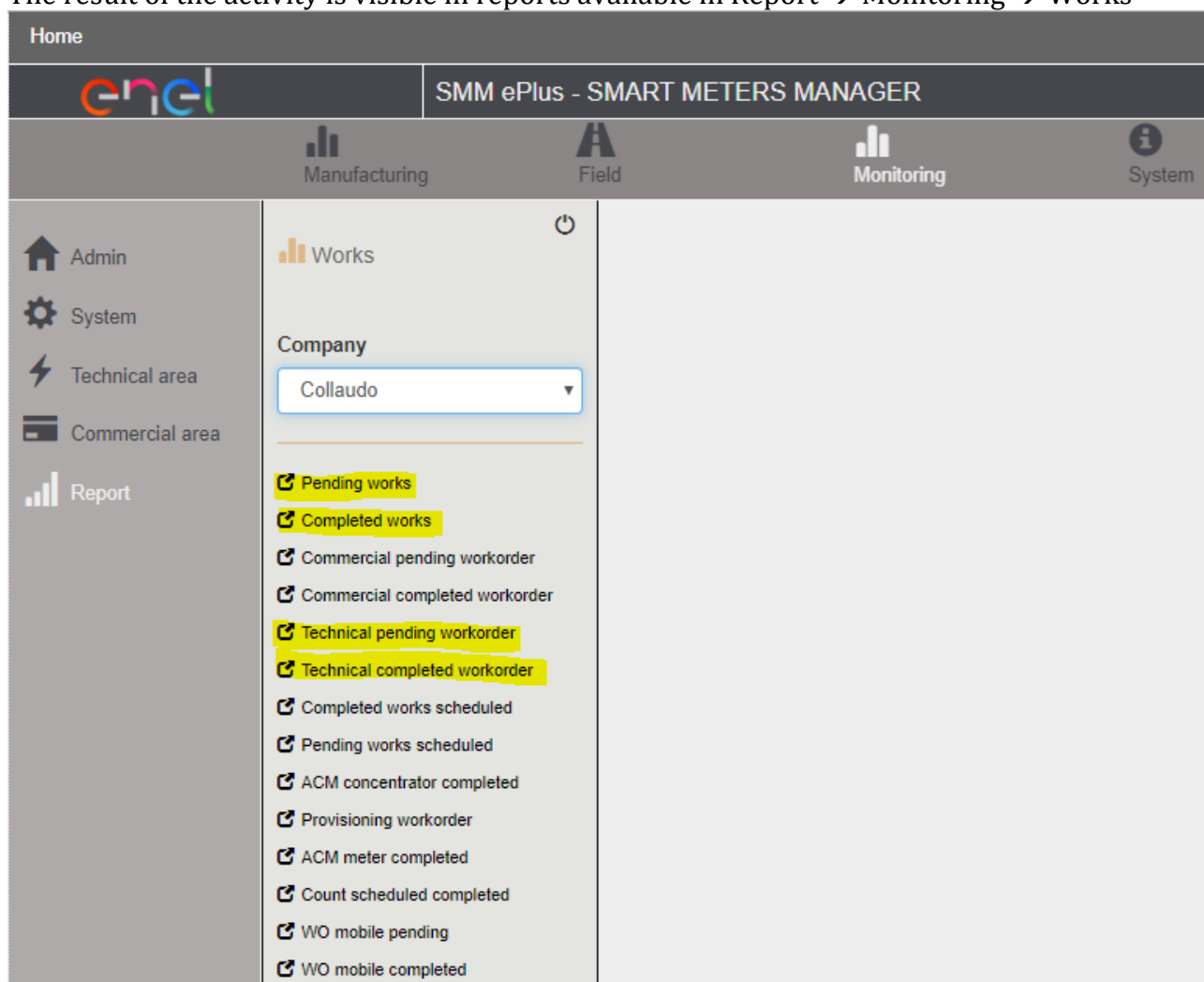
- 1- Disable prepayment mode
- 2- Read credit value
 - a. If the credit is equal to 0 the breaker is detached, so the instant closure command is sent in order to connect the customer again
 - b. If the credit is not equal to 0
 - i. If the related setting (see paragraph 3.3) is enabled, the credit is reset to 0

4.2.2. Remote execution

Pressing the “Generate remote activity” button, the system generates a commercial Workorder that will be sent to technical area for remote execution.

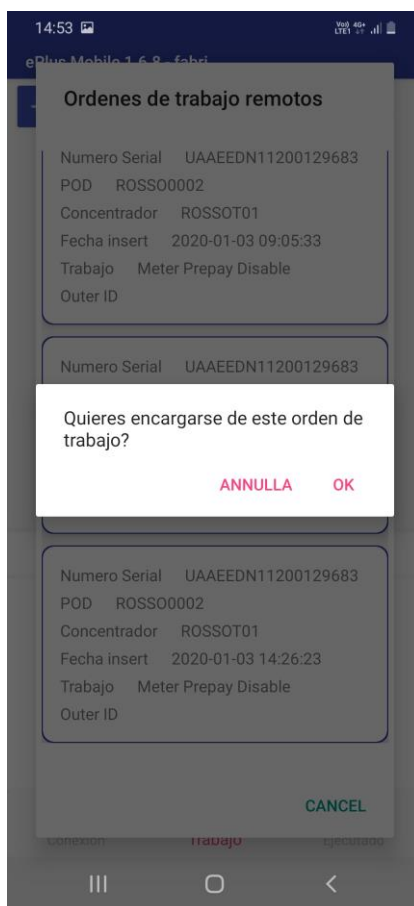
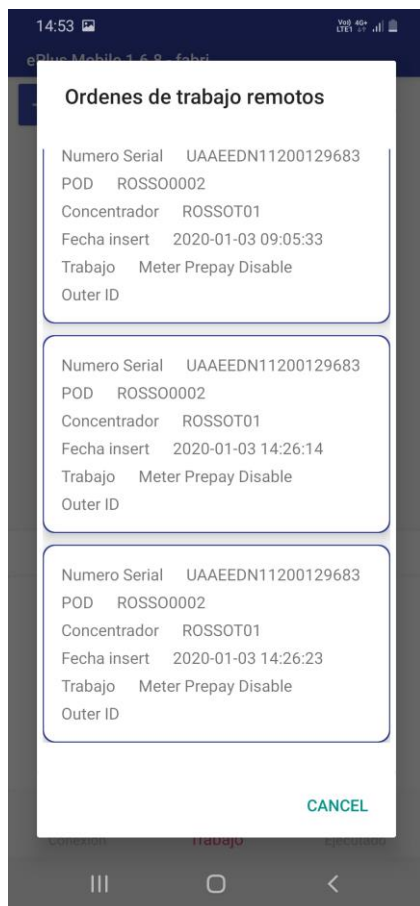


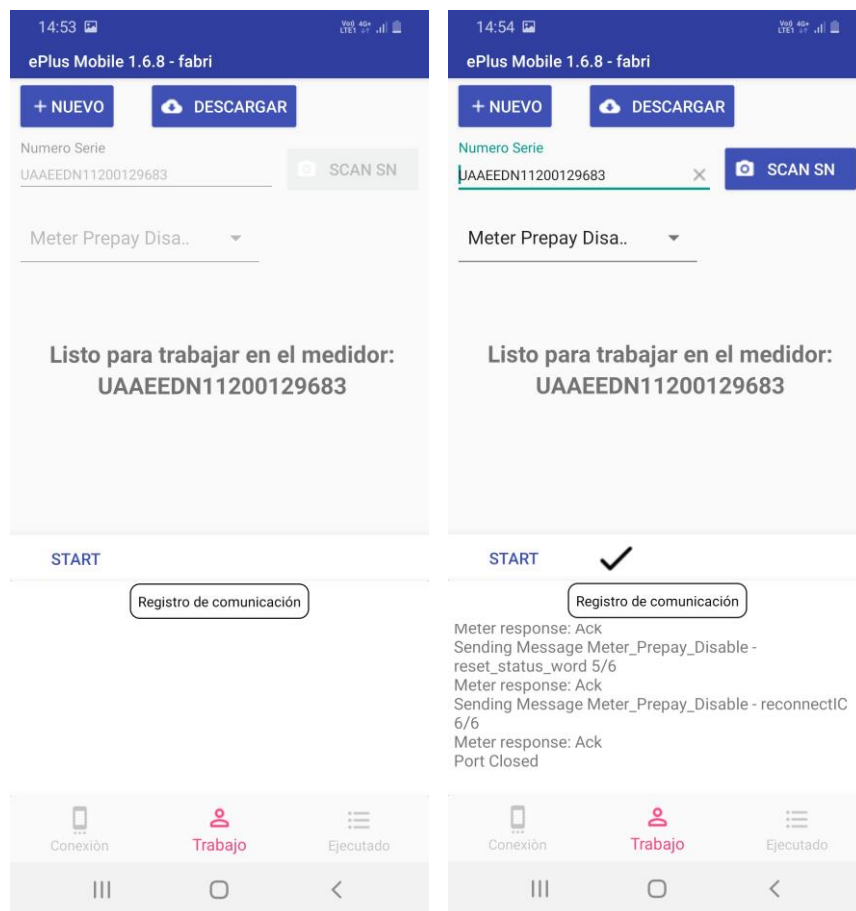
The result of the activity is visible in reports available in Report → Monitoring → Works



4.2.3. Local execution

Pressing the “Generate mobile activity” button, the system generates a WorkOrderMobile that will be downloadable from ePlusMobile application





4.2.4. SMMePlus integration (external commercial system)

To send a prepayment disable request via integration, it's necessary to send an EndDeviceControl request, specifying following code.

Code	Comments
3.20.81.22	Meter Prepay Disable

The result of the operation uses following codes.

End Device Event Type	End Device Domain	End Device Sub-domain	End Device Event or Action	Description
3.20.81.66	Billing	Prepayment Credit	Disabled	Response Meter Prepay Disable OK
3.20.81.220	Billing	Prepayment Credit	DisableFailed	Response Meter Prepay Disable KO

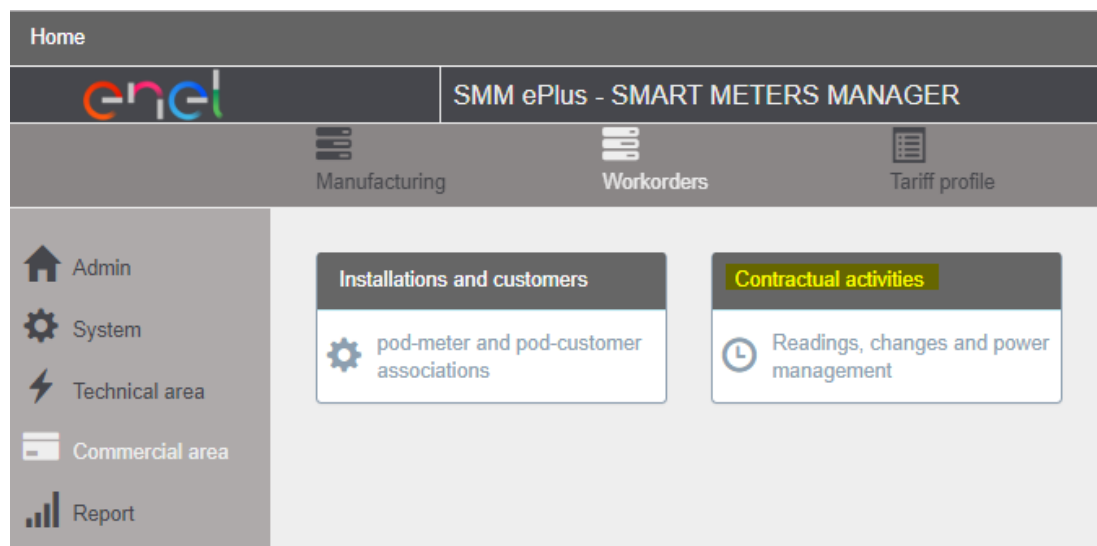
4.3. Credit charge/reduction

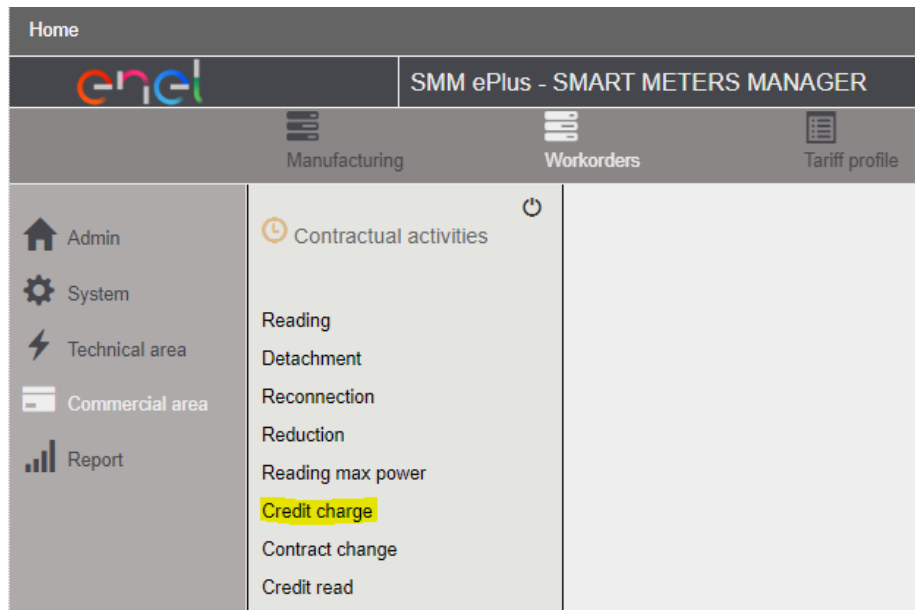
The credit charge and the credit reduction activities can be generated through commercial area for SMM ePlus website or can be sent via integration.

4.3.1. SMM ePlus commercial area

Credit charge

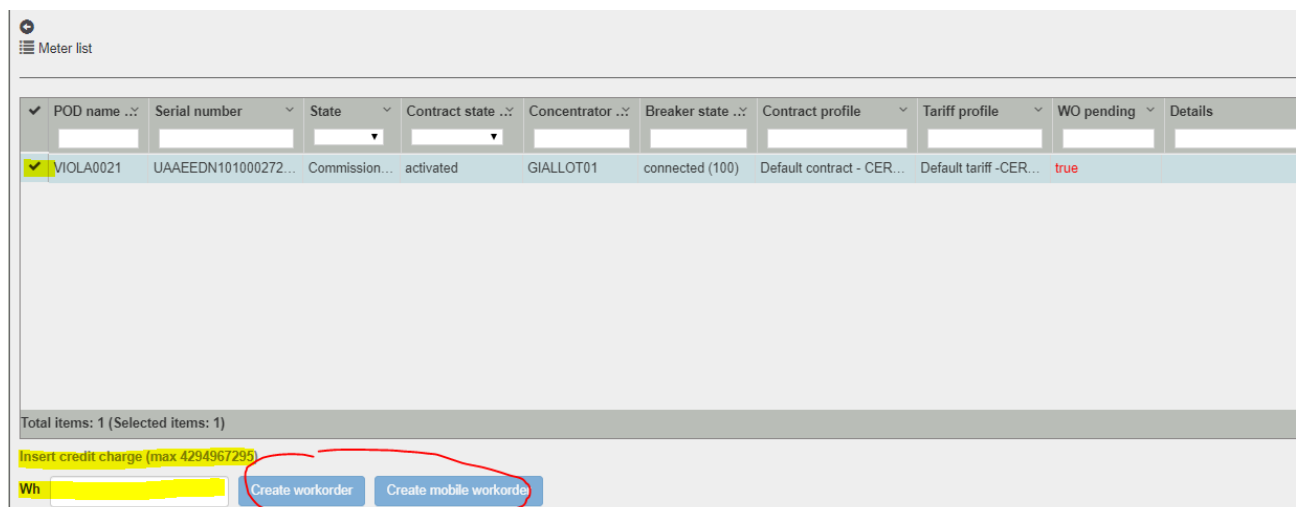
In Commercial Area → Workorders → Contractual activities it's possible to generate a credit charge request.





It's necessary to:

1. Select a commissioned meter
2. Insert the credit charge value expressed in Wh
3. Generate an activity: remote or mobile



4.3.1.1.1 Remote execution

Pressing the “Create workorder” button, the system generates a commercial Workorder that will be sent to technical area for remote execution.

Insert credit charge (max 4294967295)

Wh

Create workorder **Create mobile workorder**

The result of the activity is visible in reports available in Report → Monitoring → Works

Home

enel SMM ePlus - SMART METERS MANAGER

Manufacturing Field Monitoring System

Admin System Technical area Commercial area Report

Works

Company
Collaudo

- Pending works
- Completed works
- Commercial pending workorder
- Commercial completed workorder
- Technical pending workorder
- Technical completed workorder
- Completed works scheduled
- Pending works scheduled
- ACM concentrator completed
- Provisioning workorder
- ACM meter completed
- Count scheduled completed
- WO mobile pending
- WO mobile completed

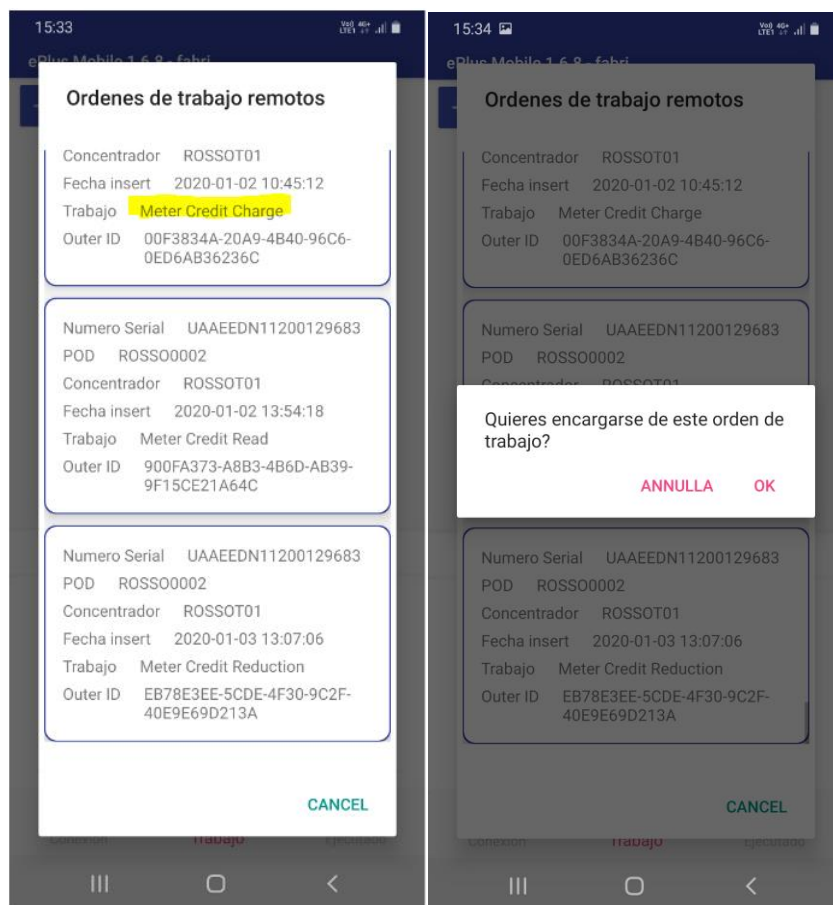
4.3.1.1.2 Local execution

Pressing the “Create mobile workorder” button, the system generates a commercial Workorder and a WorkOrderMobile that will be downloadable from ePlusMobile application

Insert credit charge (max 4294967295)

Wh

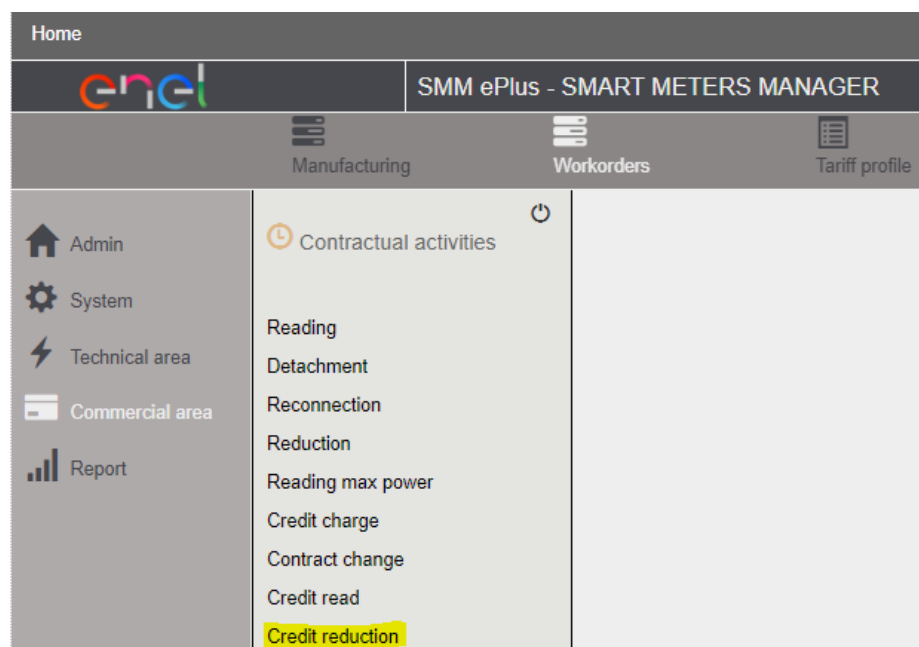
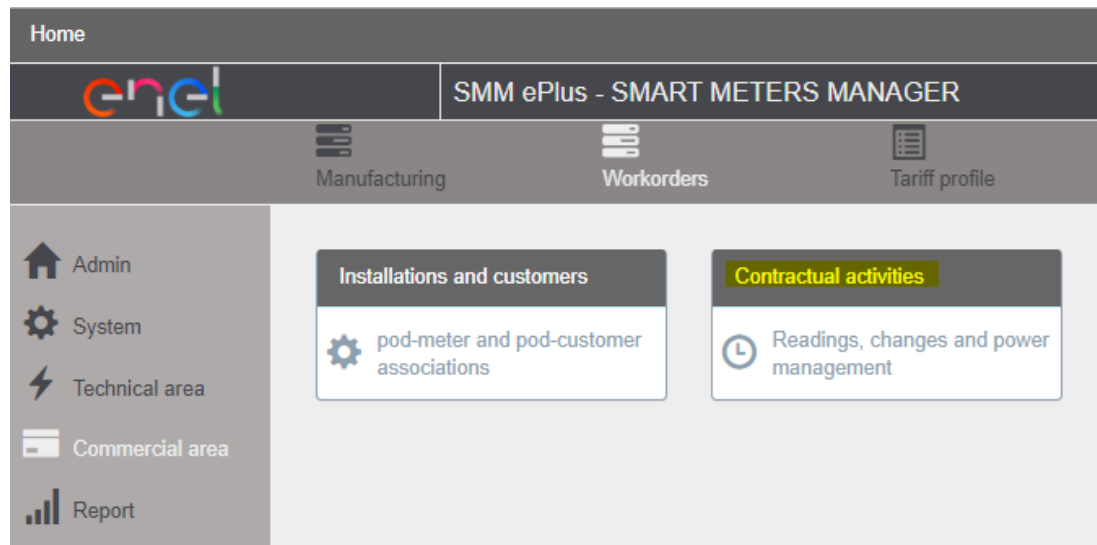
[Create workorder](#) [Create mobile workorder](#)



Credit reduction

The credit reduction activity can be generated through commercial area for SMM ePlus website or can be sent via integration.

In Commercial Area → Workorders → Contractual activities it's possible to generate a credit reduction request.



It's necessary to:

1. Select a commissioned meter
2. Insert the credit reduction value expressed in Wh
3. Generate an activity: remote or mobile

Meter list

<input checked="" type="checkbox"/>	POD name ..	Serial number	State	Contract state ..	Concentrator ..	Breaker state ..	Contract profile	Tariff profile	WO pending	Details
<input checked="" type="checkbox"/>	VIOLA0021	UAAEEDN101000272...	Commission...	activated	GIALLLOT01	connected (100)	Default contract - CER...	Default tariff -CER...	true	

Total items: 1 (Selected items: 1)

Insert credit reduction (max 4294967295)

Wh

Create workorder Create mobile workorder

If the value of credit to reduce is higher than the available credit on meter, the system will set the available credit to 0.

4.3.1.1.3 Remote execution

Pressing the “Create workorder” button, the system generates a commercial Workorder that will be sent to technical area for remote execution.

Insert credit reduction (max 4294967295)

Wh

Create workorder **Create mobile workorder**

The result of the activity is visible in reports available in Report → Monitoring → Works

Home

e-nel SMM ePlus - SMART METERS MANAGER

Manufacturing Field Monitoring System

Admin System Technical area Commercial area Report

Works

Company
Collaudo

- Pending works
- Completed works
- Commercial pending workorder
- Commercial completed workorder
- Technical pending workorder
- Technical completed workorder
- Completed works scheduled
- Pending works scheduled
- ACM concentrator completed
- Provisioning workorder
- ACM meter completed
- Count scheduled completed
- WO mobile pending
- WO mobile completed

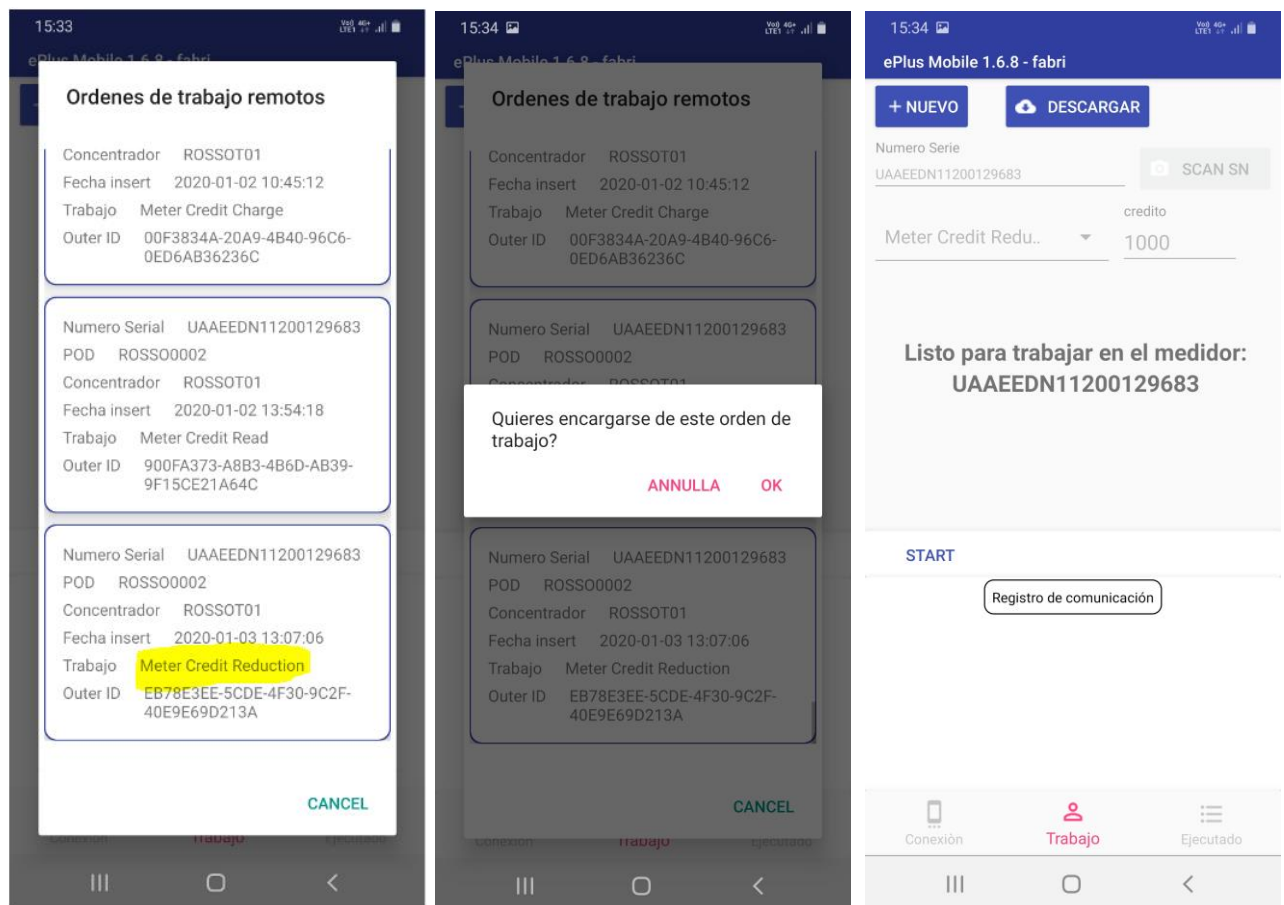
4.3.1.1.4 Local execution

Pressing the “Create mobile workorder” button, the system generates a commercial Workorder and a WorkOrderMobile that will be downloadable from ePlusMobile application

Insert credit reduction (max 4294967295)

Wh

[Create workorder](#) [Create mobile workorder](#)



4.3.2. SMMePlus integration (external commercial system)

To send a **credit charge** or **credit reduction** request via integration, it's necessary to send an EndDeviceControl request, specifying following code.

Code	Comments
3.20.81.30	Electric meter prepayment credit charge/reduction request

SMMePlus integration generates a credit charge or a credit reconnection request based of the credit value (Wh) in “eventOrAction” field.

FIELD	REQ	DESCRIPTION
EndDeviceControls.EndDeviceControlType[n].eventOrAction	M	Integer value: Credit value → Value of charge or reduction (Wh)

If the credit value is **higher than 0**, the generated activity will be a **credit charge**.

If the credit value is **lower than 0**, the generated activity will be a **credit reduction**.

The value 0 is not accepted. If this value is received, an error is generated.

Code	Comments
1.8	Format of request does not validate against schema

The result of the operation uses following codes.

End Device Event Type	End Device Domain	End Device Sub-domain	End Device Event or Action	Description
3.20.81.15	Billing	Prepayment Credit	Charged	Meter Credit Charged/Reduced Successfully
3.20.81.85	Billing	Prepayment Credit	Failed	Meter Credit Charge/Reduction Failed

4.4. Credit and alarm collection

The collection of information from meters is made in two ways:

- Scheduled (CEData procedure)
- On demand (Credit Read workorder)

4.4.1. CEData procedure

CEData is an internal procedure of the concentrator that collects automatically information from meters.

During the concentrator configuration activity, the system configure on the concentrators how many times the procedure runs and the profiles for the collection of data.

The procedure is usually configured to run between 2 and 4 times per day inside concentrator.

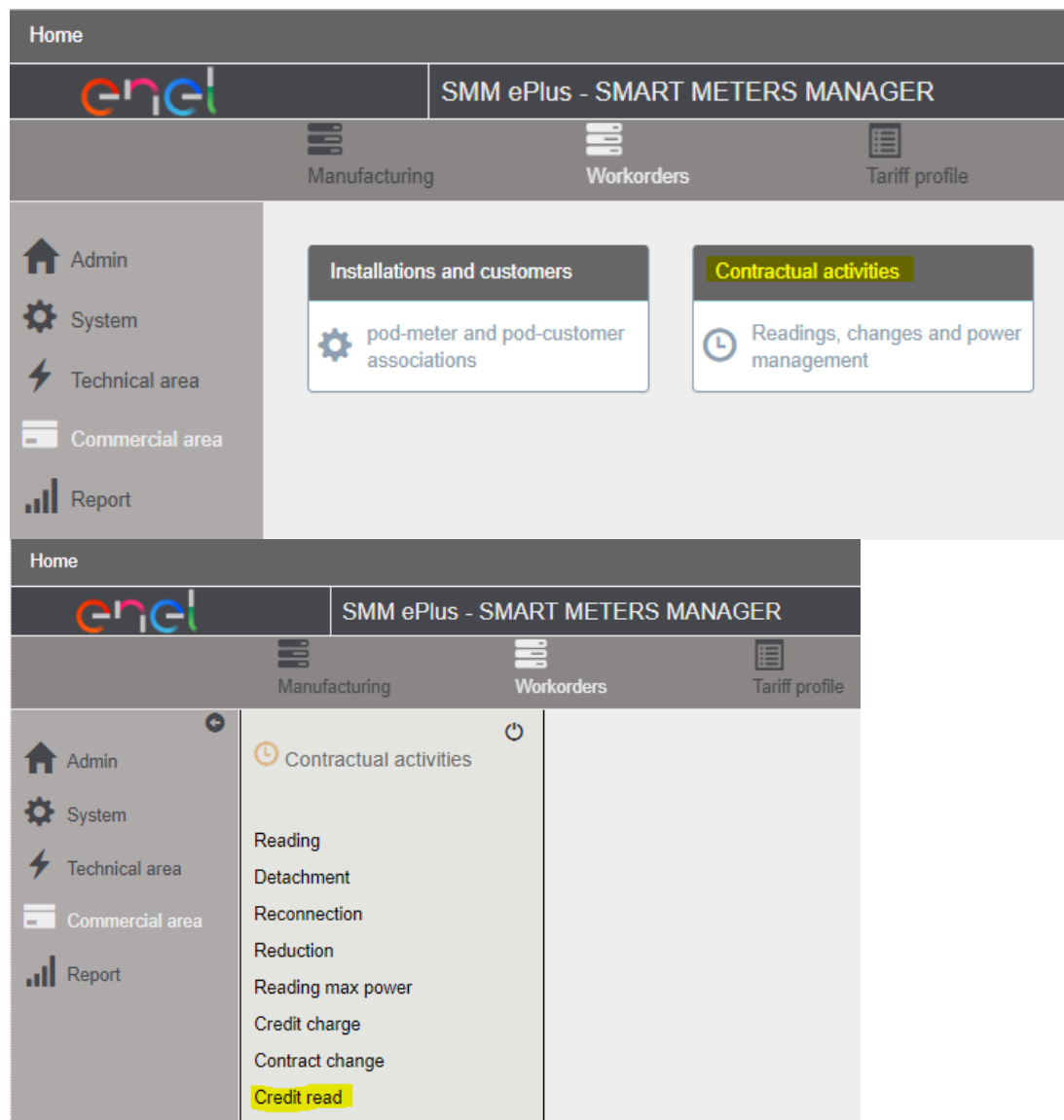
The profile that is configured collects following data:

- Meter status words (alarms)
- Current credit
- Datetime of the meter
- Voltage variations

The system usually collects this information from concentrator with an interval between 6 and 12 hours.

4.4.2. Credit read workorder

In Commercial Area → Workorders → Contractual activities it's possible to generate a credit read request.



Home

SMM ePlus - SMART METERS MANAGER

Manufacturing Workorders Tariff profile

Admin System Technical area Commercial area Report

Credit read

Find commissioned meters

Company *
Collaudo

Filter by POD's field
...

OR

Filter by meter's field *
Serial number

Type a value *
UAAEEDN10100027566

Click to show commissioned meters

Commissioned meters

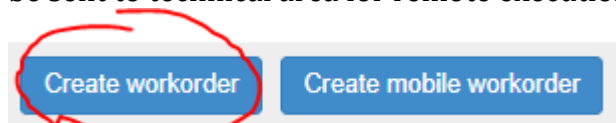
POD name	Serial number	Contract state	Concentrator	Breaker state	Contract profile	Tariff profile	WO pendi
VIOLA0001	UAAEEDN101000275...	closed	VIOLAT01	detached (0)	Default contract - CER...	Default tariff - CER...	true

Total items: 1 (Selected items: 1)

Create workorder Create mobile workorder

Remote execution

Pressing the “Create workorder” button, the system generates a commercial Workorder that will be sent to technical area for remote execution.



The result of the activity is visible in reports available in Report → Monitoring → Works

Home

SMM ePlus - SMART METERS MANAGER

Manufacturing Field Monitoring System

Admin System Technical area Commercial area Report

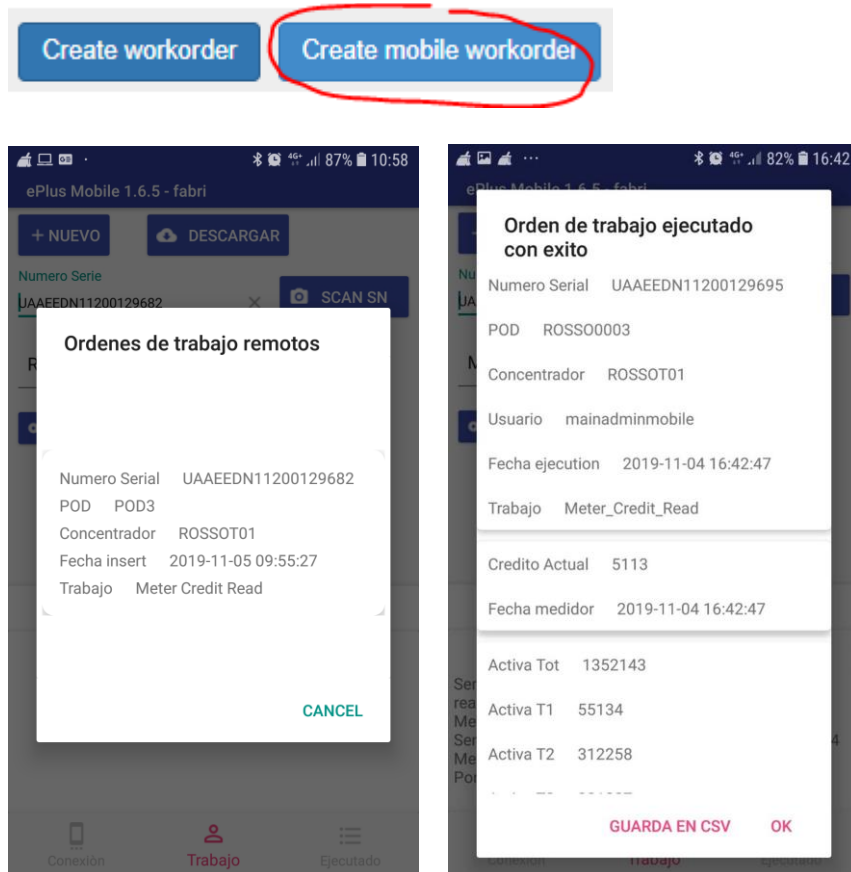
Works

Company
Collaudo

- ☒ Pending works
- ☒ Completed works
- ☒ Commercial pending workorder
- ☒ Commercial completed workorder
- ☒ Technical pending workorder
- ☒ Technical completed workorder

Local execution

Pressing the “Create mobile workorder” button, the system generates a commercial Workorder and a WorkOrderMobile that will be downloadable from ePlusMobile application



4.4.3. SMMePlus integration (external commercial system)

To send a credit read request via integration, it's necessary to send an OnDemandReading request, specifying following code 0.0.15.13.1.1.3.0.0.0.0.0.0.0.80.0 (Credit available for Pre-Paid meter) as reading type:

Code	Comments
0.0.15.13.1.1.3.0.0.0.0.0.0.0.80.0	Credit available for Pre-Paid meter

The result of the operation uses following codes.

End Device Event Type	End Device Domain	End Device Sub-domain	End Device Event or Action	Description
3.21.87.30	Metrology	Readings	Execute	Meter Reading Response
3.21.87.85	Metrology	Readings	Failed	Meter Reading Response

4.4.4. Collected data

Credit

Code	Comments
0.0.15.13.1.1.3.0.0.0.0.0.0.0.0.0.80.0	Credit available for Pre-Paid meter

Credit available for Pre-Paid meter

This value is used to refer the credit of the meter

In SMMePlus website, it's possible to see prepayment data (available credit, last credit charge activity) for each meter.

Last prepaid credit reading for meters

concentrator	usagepoint	macaddress	serialnumber	version app1	state	process state	available credit
GIALLOT01	GIALLO006	86041601FA98	UAAEEDN11200129688	3131	Commissioned		1255

Offset minutes from UTC: 60

available currency credit	last trans id	local date	last credit charge local	last update local
1255	18	11/4/2019 2:41:28 AM	8/10/2019 11:13:48 AM	11/4/2019 3:32:00 AM

Alarms

End Device Event Type	End Device Domain	End Device Sub-domain	End Device Event or Action	Description
3.20.81.286	Billing	Prepayment Credit	Limit Reached	Meter Credit Limit Reached (Warning threshold active)
3.20.81.150	Billing	Prepayment Credit	Limit Reached	Min Limit Reached (Debt limit threshold reached)

Meter Credit Limit Reached (Warning threshold active)

This alarm is fired when the “**Warning threshold credit**” is reached (see 4.1.1 Configuration)

Min Limit Reached (Debt limit threshold reached)

This alarm is fired when the credit is below “**Limit credit**” (see 4.1.1 Configuration).