

SMART GAS METERS

*A major change
in GRDF employees
daily life*

November, 2020



Introduction

The 4 main benefits

A positive effect on the image of gas



The largest smart gas meter project in the world!



Vincent Pertuis
Smart Meter Project
Director

GRDF's smart gas meter project was launched 10 years ago already. These 10 years were an opportunity for afterthoughts, studies, design, experiments, joint construction with public authorities, with customers, energy suppliers and all our partners... 10 years during which we have already connected half of our smart meters. Aiming at 11 million customers, this is the largest smart meter project worldwide!

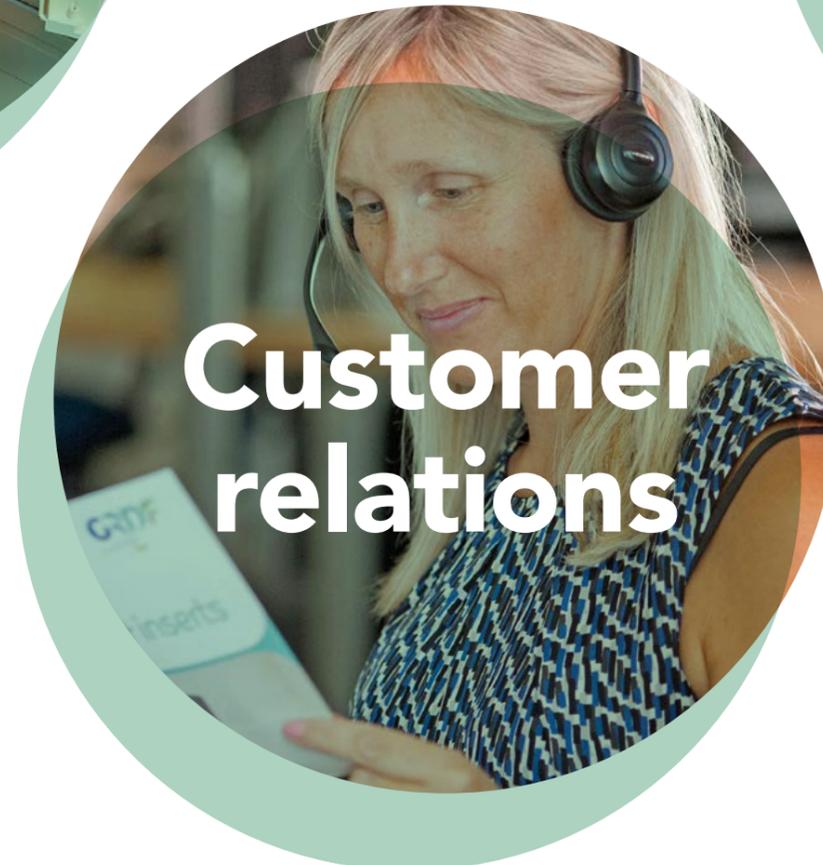
Have we realized the hoped-for benefits? Is the project keeping its promises? How has it made a deep-reaching change to the company and to the working lives of GRDF employees, in terms of economic performance, customer relations or social dynamics? And in what way does it also open the way to new uses now that GRDF has set up its own telecommunications network?

We wanted to hear what GRDF employees, experts, managers, executives have to say in their day-to-day activities to share a concrete and comprehensive vision of the project's impact on the company. We invite you to take a look to these feedbacks which also highlight the enthusiasm and commitment of each of us.

Enjoy your reading!

As France's main natural gas distribution system operator, GRDF distributes natural gas to more than 11 million customers every day for heating, cooking, mobility and industrial processes, regardless of their supplier. Performing a public service mission, GRDF builds, operates, and maintains the largest gas distribution network in Europe (200,715 km) safely, with the highest standards of quality. GRDF is highly committed to promoting the use of renewable gas as a crucial part of the energy transition.

Contact:
international@grdf.fr





Economic performance

The fact that many of our customers use smart meters is an opportunity to optimize the economic performance of our company. In addition to avoiding the costs generated by reading and special in-the-field services, the high quality and frequency of the consumption readings offers many benefits, illustrations of which are given in the interviews covered by this chapter.

Higher quality estimations, a reduction in the distribution deviation account, less back-office processing time of the requests, the detection of customers using gas without supplying contracts, fewer customer calls and claims, improved processes, are examples of the benefits of our project. There is also an improvement in the quality of relations with gas suppliers and the customers, and of all our stakeholders!

Employee testimonials

Frédéric Hanse

Data and Performance team leader, Smart Meter Project, Paris

Claire Aucher

Mass market meter reading manager, Customer Relations Department, Paris

Cyril Moreau

Head of South West gas agency, Gas Distribution Agencies, Rodez

Lilian Berterreche

Team manager in Data expertise, Smart Meter Project, Paris

Didier Hasse

Consumption modelling and analysis expert, Customer Relations Department, Paris

Justine Loisel

Smart Meter Project procurement manager, Procurement Department, Paris



Frédéric Hanse
Data and Performance
team leader, Smart Meter
Project, Paris

“Remote reading is changing the way customer relations work”

What does remote reading change in the business involving customers and suppliers?

To address the demands of customers and suppliers, GRDF previously had to send a technician into the field. Now, customer consumption data is available every day without any in-field travel being required, thanks to remote reading.

This has an impact on the three components of our front office activities: telephone call reception, the way we handle supplier requests (commissioning / tariff changes / decommissioning / etc.), and how we check the relevancy of the readings.

How is it materialized?

Every year, GRDF receives approximately 1 million calls from customers and suppliers. The reasons behind these calls vary and a fair number relate to meter reading issues and questions. In the sectors equipped with smart meters, the volume of calls drops by 20%. What might be called a good start! As far as responses to supplier requests are concerned (for instance, changes of customers, suppliers, tariffs etc.), our ability to handle remote reading indexes

ensures automatic processing of these requests, and could reduce the workload up to 30%. And let's not forget the time gained from no longer sending out technicians into the field !

20%
fewer calls
in towns using smart meters.

A fully positive experience, then?

Remote reading is changing the traditional business of customer and supplier relations. The traditional activities are being enriched by new ones, ensuring that the chain of communication operates smoothly, managing issues arising from the absence or inconsistency of the data (index/consumption), managing customer alerts. The final promise is more efficient relations between customers and suppliers, and the enhancement of the career diversification in the company.



“From on-foot meter readings to remote readings: a major change at GRDF”

Claire Aucher



Mass market meter reading manager, Customer Relations Department, Paris

What does your activity cover?

As my colleagues in other GRDF regions, my team is in charge of the control of the reading of 11 million mass-market meters. Our challenge is to make sure that the customer data is made available to our suppliers, and is exhaustive and of the highest quality.

What is the impact of smart meters on your business?

It is a major change! Smart meters will lead to enormous improvements to meter reading quality, giving us easy access to real customer data. Gas customer data will be available, more accurate, regular, and exhaustive.

What other benefits for GRDF do you think are noteworthy?

Well, for instance, 20% of today's meters are inside the premises. It means that twice yearly, we have to send a letter to our customers informing them that a meter-reader will need to be able to get to the meter, not always an easy matter. When 100% of the meters will be remotely read,

this administrative work will not be needed anymore. It represents an economic gain for the company but also incomparable comfort for the customer. There is also the environmental issue: fewer on-foot readings means less vehicle travel, and therefore a smaller carbon footprint.

In 2020, only half the meters will have a remote reading capability. How are you going to manage things?

We're right in the middle of this transition. It means gradually reducing the number of on-foot readings. The meters still requiring to be read by field operators are becoming less numerous, increasing the travelling time between each of them. Our subcontractors in charge of the on-foot readings always encompass the management of this decrease in their reflections, to achieve the planned performance, while adapting the dedicated numbers of staff. This major impact is a part of our contracts with subcontractors, designed to take over this transition phase, through to the end of on-foot meter readings.

Fewer on-foot readings, less travelling and a smaller carbon footprint.



“Remote meter reading improves reliability and performance”

Cyril Moreau



Head of the South-West Gas, Distribution Agencies, Rodez

How can smart meters improve the way GRDF distribution agencies operate?

For instance, when a “move in” operation is made, not requiring any technical action, we can execute the process by getting the meter reading through our IT, without sending a technician into the field. This productivity gain also has a bearing on the way the customer perceives things because he no longer needs to be present, or even to be contacted. It decreases the processing time of this type of request by approximately 30%.

Does it have an impact on the customers who use gas without having a supply contract?

Yes, remote readings enable us to detect them from the first cubic meters of gas they use. Previously, we had to wait for the next meter reading, sometimes six months later. In addition, remote reading minimizes the risk of making a mistake in transmitting indexes to the gas suppliers, while making the final invoicing of our customers more secure. We believe that the indexes with errors or discrepancies are down by 2 to 25% compared to on-foot readings, or a customer self-reading. Remote readings are definitely the way to improved reliability and performance.

Do smart meters improve customer relations?

For customers using gas without a supplier, the customers can be made aware more quickly of the situation, and the total potential recovery amount can be limited. In case of claim, the access to daily customer data allows us to manage issues two times faster than before, when real data were available at a six monthly interval, at the best. Smart meters mean that we react more quickly and guarantee that our customers get more reliable service.

20%
to
25%

reduction in incorrect readings and discrepancies thanks to smart meters.



“Analysing large quantities of data for operational purposes is something very new”

Lilian Berterreche de Menditte



Team manager
in Data
expertise, Smart
Meter Project,
Paris

What do smart meters have to offer in terms of data?

The first good news is that remote reading data is all-in-all more reliable than data from on-foot readings. In the past, there were sometimes input errors, or even readings that were not done although they were planned. Now, most of the time, when we compare remote reading data with data on-foot readings, and with a case of data inconsistency, the remote reading data is right! We verified that we could trust the smart meter data! Reliability represents the underpinnings of performance.

What new things can we learn from these data?

Our estimations for private customers are more accurate. It enables us to know, and therefore understand, consumption variations

due to global events. For instance the COVID crisis, or a periodic event, such as school holidays, or a special event, like a renovation project. Previously, we only had estimations for this type of subject. Today, we have real measurements on a daily basis, opening the way to unsuspected perspectives!

How has it changed what you do?

We have always had expert teams working on data at GRDF. But there was less data, and it was not so all-embracing and accessible, while interpretation was more limited. Analysing large quantities of data for highly operational purposes is something very new. We are now also able to operate on data management, and even on telecoms. These openings are particularly attractive, representing high stakes and allowing remote work situations.

Previously, we had estimations and now, we have the real data.

**Didier Hasse**

Consumption modelling and analysis expert, Customer Relations Department, Paris

Didier Hasse (left, with the team of experts).

“For quick analysis, we count on smart meter data”

How is the smart meters linked to your activity?

Consumption figures are used as basic data, to calculate climate correction, losses and deviations, allocations to suppliers, as well as studies on consumption evolutions. During the COVID crisis, for example, the question was raised about the impact of lockdown on natural gas consumption. Results had to be delivered very quickly, internally and externally. The daily consumption data from the smart meters soon proved to be indispensable.

But you didn't wait for COVID-19 to start using this data?

Of course, we didn't! Smart meter data is not available on D+1, so we sometimes use typical consumption profiles. But thanks to daily data, we have been able to improve these profiles. For instance, we have then reduced the distribution deviation accounts (CED- i.e. the differences between estimated consumption with standard profiles and the real consumption figures) by approximately 20%.

What is the impact of this deviation account improvement?

If a supplier purchases 100 GWh in a given month, it means that he expects to sell 100 GWh and forecasts his turnover on that basis.

But if the consumption on his contract is of 97 GWh, with a 3 GWh CED, he will actually sell 97 GWh at the market price and GRDF will reimburse him for 3 GWh at the wholesale price. Which is not at all the same from his point of view. So, by reducing the level of distribution deviation account, suppliers get a more accurate and earlier view of their sales revenue

And what difference does it make to GRDF?

Our energy regulator (Commission de Régulation de l'Énergie) challenges GRDF using a service quality indicator on CEDs (distribution deviation account) with significant financial bonus/malus arrangements. So, we'd better be prepared!

20%
reduction in
distribution deviation
account with suppliers
thanks to smart
meters.



Justine Loisel
Smart meters procurement
control manager,
Procurement Department,
Paris

“€1bn for a tailor-made solution: a new challenge for GRDF buyers!”

How has the smart meter project affected experience on Procurement?

We have upgraded our processes by defining a purchasing strategy for a complete and bespoke solution encompassing equipment design, development, and industrialization, and supply. We have also implemented mechanisms to endow GRDF with optimal security in executing these contracts. Financial issues are so significant, made over such a short period of time, we have had to foresee the cases that could allow us to get out of the contract: technological breakthrough, change in regulations, decision to stop the deployment, etc. We have also set up mechanisms to guarantee against equipment failure over its lifetime.

Have you developed any new skills?

We certainly have! We have developed new contracts including the purchase of off-the-shelf products and tailor-made complete solutions.

We also had to face new operational issues. For example, delocalizing production sites to outside France, the changing of the main shareholder in a supplying company, or technical damage triggering a suspension of the authorization to use the equipment... Given the duration of the project (more than 5 years), and the volume of equipment ordered, mechanisms for annual price adjustments and discounts granted on quantities were also implemented.

And what's in it for GRDF?

The expertise we have developed, and our return on experience, enabled us to enhance the purchasing strategies, to set up new markets, monitor them operationally and contractually. For instance, the field feedback from the smart meters contract has been used to improve the security of new contracts for the new remote reading equipment market for our professional customers.

The smart meters purchasing strategy extends to equipment design, development and supply.



Customer relations



Smart meters offer very appreciable benefits for customer relations. Not only does this project offer higher quality readings and better invoicing to energy suppliers, it more especially opens doors to new services for private customers, and for local communities, helping them to manage energy consumption in of their area.

It is also an opportunity for third parties to use data, after customer's acceptance, and offer numerous energy control services. This makes this smart gas meter project a real breakthrough in energy efficiency to the benefit of our customers, and to that of society as a whole.

Employee testimonials

Clélie Chardard

Data projects manager, Customer Relations Department, Paris

Hanah Matmati

Territorial manager, in charge of Energy policies, Greater Paris

Linda Benabdelmoumene

Digital division manager, Customer Relations Department, Paris

Nicolas Bernasconi and Johann Le Coz

– Nicolas, Supplier relations manager, Customer Relations Department, Paris

– Johann, Supplier relations department manager, IT Department, Paris

Economic performance **Customer relations** Social dynamics New usesClélie Hanah Linda Nicolas et Johann

"Secure customer data is from now on accessible to authorised third parties"

Clélie Chardard



Data projects manager,
Customer Relations Department,
Paris

How is the smart meters changing GRDF's previous customer approach?

The smart meter project is above all an energy efficiency project. The whole idea is to help managing energy demand, and private customers, suppliers and professionals all have a role to play. It is essential for us to give them means of access to the data and to develop their knowledge about the subject. That is why there is a trend for GRDF to move to more extensive digitisation.

What is GRDF proposal?

For private customers, we are offering a dedicated and simple extranet that walks them through their understanding of their gas consumption: daily consumption, comparisons, graphics etc. Suppliers have access to bi-annual, monthly, and, after customer's acceptance, daily or even hourly data through a dedicated web service. Starting in May 2020, GRDF ADICT will give other third parties the opportunity of access to the raw customer data via an automated and secure flow, so that they can be integrated into the service proposals. Obviously, this also depends on customer agreement.

Who are these "third parties"?

They are public entities (communities, associations), lessors, service companies from self-employed people to start-ups and listed firms, associations and interest groupings (energy offer comparators) etc. They all want to gain access to gas data as a means of industrialising multisite consumption monitoring or of developing new paying services or non-profit services. We have referenced 200 of them and 40 already use access to the service.

And what are the services developed by third parties?

Let's consider a typical example: a company will be proposing to its customers, more particularly multisite operations, a single platform combining all their consumption data for gas, water, electricity, collective central heating, and will be proposing monitoring, analysis and consulting services about their consumption. To get to grips with the process, we are organising functional and technical workshops and giving access to anonymous data to learn about the service, as well as a public document database accessible from the GRDF ADICT portal. The company will then be ready to use the service!

40 third parties already have access to customer consumption data.



Economic performance

Customer relations

Social dynamics

New uses

Clélie Hanah Linda Nicolas et Johann**Hanah Matmati**

Territorial manager, in charge of Energy policies, Greater Paris

“Smart meter data is particularly useful for the energy diagnosis of an area”

What does your job entail regarding smart metering?

One of my assignments is to accompany local communities in the use of their energy policy, especially when it concerns ecological transition projects: methanization, clean mobility, energy demand control etc. Smart meters are one of the key subjects we tackle.

What impact is the deployment of smart meters having?

It's an opportunity for contact with the various municipalities. We meet and take the opportunity of negotiating concentrator installation, and of outlining the conditions for the roll-out of the meters. This often leads to rewarding relations concerning development or ecological transition. It's an opportunity to help the towns make the most of their possibilities in terms of the taxpayers, boosting their confidence in GRDF. It is also an opportunity for the municipalities to value their actions in energy transition among their citizens.

What about the provision of the data?

Data changes the dynamics of the local ecosystem. First of all, in energy policy exercises for which aggregated data is particularly useful in diagnosing an area. Some Smart City projects are also emerging and, for instance, lead the towns to monitor all their utilities including the gas consumption of community buildings, using a display and data analysis platform. Local energy and climate agencies are also an opportunity for new initiatives, for instance, accompanying a joint-owner projects where there are smart meters, to identify the ways of making collective and individual energy savings.

Is the roll-out of the smart meters an advantage in territorial terms?

It enhances our relations with our contacts because it makes them more stronger, and it offers a structural advantage too because it positions GRDF as an essential player, adding legitimacy to the statements we make about the advantages of gas.

Consumption data is changing the dynamics with our local stakeholders in charge of energy policies.

Economic performance **Customer relations** Social dynamics New usesClélie Hanah Linda Nicolas et Johann

"Smart meter is the foundation stone of bespoke customer relations digitisation!"

What are the impacts of smart meters on your job?

My job is to speed the digitising of customer relations on the grdf.fr website, especially in the "My Account" customer area. The roll-out of the smart meter programme was the first step in creating this customer area. By giving our customers a consumption monitoring service to help them control energy expenses is something very important: this service was the foundation stone of our bespoke customer relations digitising services.

How was this new service greeted by customers?

The reaction was positive. In September 2020, there are 610,000 "My Account" customer areas and attendance is 20% up since the previous half year. One third of these customers found out about the service when the smart meter project was installed. We aim at having more than a million "My Account" customer areas by 2021.

What is new in customer relations?

Through smart meters, we have a privileged contact area with our customers, and we use it for two essential goals: customer knowledge and customer loyalty. Our customer data and operations benefit from enhanced quality, and we offer more and more customisation: online surveys, proposal of dedicated assistance by GRDF advisors, high risk customer screening to enhance their loyalty and to know better the way they use gas... It really represents a positive development.

How is the impact measured?

GRDF services design is backed by 500 "ambassador" customers. Each of them has a "My Account" capability and discusses matters concerning the installation of the smart meters and the way they get to the customer data. One had this to say about his experience through the forum: *"our consumption dropped more than 22% in 8 months thanks to our use of the data provided to us! The real motivation comes from seeing the consumption impact of better programming of our condensation boiler, in just a few days"*.

2 key stakes:
customer knowledge
and enhanced loyalty.



Linda Benabdelmoumene
Division manager, Customer Relations Department, Paris

Economic performance **Customer relations** Social dynamics New usesClélie Hanah Linda Nicolas et Johann

“Suppliers are getting new services, but there are new requirements too”

**Nicolas
Bernasconi**



Supplier relations manager,
Customer Relations
Department,
Paris

How do you communicate with the gas suppliers today?

Nicolas: we use a variety of means like email and the phone on a daily basis, physical meetings once or twice every year, and there are also events bringing the suppliers together.

Johann: there are often discussions between the IT teams, always with the same goal in mind: facilitating supplier work on the subject of gas connexions, and on using our IT services in relations with smart meter data.

What are the main subjects discussed during these meetings?

Nicolas: one key subject is the increased frequency of meter reading while other subjects are the project roll-out, the schedule for each municipality, for better marketing communication plan on suppliers offers, and, last but not least, action plans to deal with some malfunctions.

Johann: from the IT standpoint, the publication of the readings for billing is at the heart of our discussions, to achieve a high level of quality. Smart meters also bring in new services, like customers subscriptions enabling suppliers to benefit from daily readings. They also have the possibility of requesting a reading for a specific

date. It facilitates operations involving a change of suppliers.

What are your proposal for tomorrow?

Nicolas: we intend to greatly simplify the way we manage contractual events (customer move-in service, change of suppliers...) and we will react much more quickly in detecting discrepancies. Our supplier relations will be improved in an equivalent measure, having a positive impact on the number of claims. Everybody wins: the customer, the suppliers and GRDF!

Johann: the published data must be made more reliable and a mass access functionality to consumption data is essential. We are also thinking together about the direction we could take at the end of the smart meters rollout. For instance, we could provide distribution invoices by calendar month to our suppliers. In addition, the definition of profiles and the calculation of allocations, currently partly estimated, will be more accurate and closer to reality.

**Johann
Le Coz**



Supplier relations
department manager,
IT Department,
Paris

We intend to greatly simplify the way we manage contract events and react much more quickly in detecting discrepancies.



Social dynamics

Considering its scope and the new skills to which it calls upon, the GRDF smart gas meter project leads to a tremendous enrichment of the distributor's jobs. Implementing **new metering devices has led to the advent of new activities**, new entities and new value-added trades. It represents a genuine social dynamic movement in customer relations, equipment maintenance, information systems etc.

The project is a vector for personal development and social advancement for company staff, from the technician to the managing executive. It's difficult to put a price on the gain but it is definitely there. The testimonies of the people working for GRDF speak themselves!

Employee testimonies

Jérôme Château

Head of the North West
Distribution Agency,
Mont Saint Aignan

Yann Maugueret

Manager, Measurement Quality
Agency, Smart Meter Project,
Lyon

Loïc Fildard

Radio Supervision, of the Smart
Meter Project, Paris

Cindy Cashera

Supervisor with the Supervision
Team, Smart Meter Project, Lyon

Frédéric Soulier

Head of the South-West Gas
Specialised Maintenance Agency,
Pau





"Analysing claims on smart meters means having new skills"

Jérôme Château



Head of the
North West
Distribution
Agency,
Mont Saint
Aignan

What impact does the change to smart meters have on the volume of calls?

There was a time when customers would call to contest an index. The issues to handle were simple and well-known: incorrectly registered index, wrong meter read, etc. Today, causes of issues are more numerous: the chain of communication is more complex and there are many more interfaces. It requires more thorough analysis.

Does this required special skills?

Now, at a time when remote reading is living side-by-side with on-foot reading, the complexity facing a new worker is higher: he needs to be trained on 2 different IT tools and on 2 meter reading processes. The job is becoming increasingly technical: it takes a specialist to understand why an index is not collected through communication system. Although complex, it is an opportunity for

professional development and we support our colleagues on that path. Indeed, recruiting criteria are changing with these new professional demands and we must take care not to leave anybody out, by providing them with the necessary complement and by dedicated training.

How can you help distribution agencies to integrate the smart meters processes?

By integrating IT tools into a single distributor portal which would be more intuitive and legible, for instance. It would provide advisers with a more fluid relations with users, combined with a gain in time and comfort in recurring requests. We are still in the process of building some of these facets but we are thinking in terms of eventually having a controlled workload, improved processes and, above all, customer satisfaction.

With these new professional demands and we must take care not to leave anybody out.



Economic performance

Customer relations

Social dynamics

New uses

Jérôme Yann Loïc Cindy Frédéric

“We’ve built a new team to monitor the transmitters, quite an experience!”

This “Quality of Measurement” agency was specially founded as part of this project. What does it do?

The agency was set up to process malfunctions coming from meter transmitters. Nothing is ever perfect and there can be several types of discrepancies: a radio signal might not be strong enough to send recorded pulses, there can be an electronic issue or a faulty battery, a wrong clock or date setting, a defective connection between the module and the meter. The team deals with these malfunctions either by remote operations, or requests to send a technician on the spot.

What are your everyday motivations working with smart meters?

It’s no simple matter to build a team around this new activity but it’s certainly motivating! Hiring new agency managers is a real challenge because it is a new activity, little known in-house for the time being,

and very much turned towards information systems. Every day, or nearly, something new is added to what we do: a new incident, new processes, a new solution for resolving an issue, a new operation possible in the field. It’s great if you like dealing with unprecedented events! But you have to be able to adjust the source not to lose the efficiency of the agency and maintain it in the course of time. One of the most appreciable aspects is having a team that shares the same everyday enthusiasm. It makes you proud and contributes to making the project a success!

And how would you best summarise this professional experience?

Smart metres are not just a technological project but also a human undertaking that I am lucky enough to share with a great team and committed contacts as part of the project or connected to it.



Yann Maugueret
Manager, Measurement
Quality Agency, Smart Meter
Project, Lyon

Every day, something new is added to what we do.

Economic performance Customer relations **Social dynamics** New usesJérôme Yann Loïc Cindy Frédéric

“Being part of a project like this one is a real professional opportunity”

Loïc Fildard



Radio Supervision,
Smart Meter
Project,
Paris

What did you do before you joined the smart meters team?

For close to 10 years, I was project manager with the IDF (Greater Paris Area) team working on the renewal of the gas distribution grid. It was a very interesting job, offering an opportunity to discover the world of gas and build up your skills in technical, steering and site management domains.

And what do you do today?

My assignment as part of the Radio Supervision team differs from what I was doing previously. It involves setting up a brand-new activity for the company: we are now building tomorrow's maintenance for the new data concentrators. It's a real boost and helps you assume new responsibilities. You learn as you advance, and it is giving me the opportunity to enhance my skills in many areas.

What skills have you acquired through this assignment?

I have new skills in terms of support, project steering and organisation and networking. We meet many people in different areas (such as purchasing, legal, experts, etc). It is very rewarding but calls for a lot of work in terms of knowing how to talk and build up the necessary self-confidence. You have to be careful about your communication, written and spoken. Relational proficiency is an essential soft skill because we are in a co-construction venture; it makes it very important to know when to give the players an opportunity to say what they want ... And to know how to decide and arbitrate. Advancement means making choices and it's encouraging to have the autonomy to do so.

And how do you think smart meters could help you make the most of your professional venture?

Participating in the smart meter project is a definite opportunity in terms of my professional roadmap. Without this experience I would not have been able to develop my abilities so quickly to reach an executive post. It's a jump-off point to jobs with a higher level of responsibility. For the future, I think that everything is possible!

To advance, it takes skills in support, in project steering and in network organization and management.

Economic performance Customer relations **Social dynamics** New usesJérôme Yann Loïc Cindy Frédéric

“This job is a career boost: it’s an advantage to have these skills”

Cindy Cashera



Supervisor,
Smart Meter
Project
Supervision
Team,
Lyon

Where did you work before the smart meter project?

I worked for Human Resources, managing a portfolio of 220 employees. My mission was to ensure the accuracy of the payroll, the quality of administrative files, complying with the due dates, the regulation in force and the policies of the operational units in GRDF.

You made a complete professional turnaround when you joined the smart meter project. Why was that?

Yes, I can understand that this professional change can appear surprising! But after several years with HR, I really felt it was time to try something new. Smart meters is one of the leading light projects at GRDF and I was attracted to it. I also saw it as an opportunity to develop my knowledge in differing and complementary fields, perhaps more technical but still then my reach.

In reality, what does your day-to-day work entail?

In the supervision department, we are in a way the guardians of the concentrators. We are

there when the concentrators are installed, keeping a remote link with the technicians in the field, and we check that they work properly. Then we deal with current incidents, analyse discrepancies and make the necessary corrections, remotely or by sending out maintenance teams on the spot.

The interesting thing about this job is the mix between technical and relational aspects, with the GRDF teams working in the area, the concentrator hosts, the other supervisors and the region managers etc. It calls for an analytical mind and a pedagogical approach. It also calls for reactivity too because when a concentrator breaks down, the customers will not get the customer data unless we take fast action. We have a certain level of knowledge and must know how to explain matters simply.

What do you see as the future for your job?

This job is a career boost: it’s an advantage to have these skills thanks to my work and it is something atypical for somebody coming from the HR world. I am sure that it will open doors for me within the company.

We must make concentrators maintenance easy to explain.



Economic performance

Customer relations

Social dynamics

New uses

Jérôme Yann Loïc Cindy Frédéric

“Concentrator maintenance in the field is opening new doors to us!”

Frédéric Soulier



Head of the South-East Specialised Gas Maintenance Agency, Pau

What is the connection between your activity and smart meters?

My agency works in several expert areas involving cathodic protection, network surveillance, live work, non-destructive testing or regulation and remote operations. In this last field, we work at the heart of the smart meters technology.

In what ways are you affected?

We are in charge of the maintenance and operations of the concentrators in our area. We handle the troubleshooting and plan the preventive maintenance in the system. Simple operations are carried out by the operational teams that work on the whole area. Complex operations are performed by maintenance engineers specially trained in the use of this new equipment.

So, it is a new job with new skills?

Yes, it is a new string to our bow. It involves technical actions and a new approach in safety because we work at height. And working at height is not something that comes naturally to a gas operator!

Was it difficult to learn these new skills?

We went through a relatively fast learning curve. In addition to learning new technical gestures, method is required during the work to avoid any risks of falling: these skills have to be acquired. It also requires discipline in writing up the work file to keep good traceability of each element of each of the concentrators. It is really essential to have a clear and accurate overview of the inventories. In a way, we guarantee that the concentrators are in good operating condition as they are an essential link in the customer data transmission chain and tomorrow, may be used for other purposes. It's a big responsibility!

12,000

concentrators

will eventually be included in the GRDF IoT network.



New uses



With 11 million daily consumption data and a radio network reusable for other sensors, GRDF knows how to make good use of these new sources of value. GRDF is learning quickly about how to put these new value sources to good use. Today, what is new is the many uses, ideas and initiatives that are changing the face of our daily activities.

To analyse an incident, detect abnormal consumption, operate the biomethane network, develop sensors through the network or accurately size tomorrow's network, **we rely on innovation in every step taken by our teams.** The smart meters are opening the way.

Employee testimonies

Franck Goetgheluck

Project manager, Technical and Industrial Division, Paris

Matthieu Vinet

Data and Radio expert, Smart Meter Project, Paris

Thibaud Desforges

Head of operations agency, Montpellier

Julie Mousli

Project manager, Energy Transition Division, Paris

Jean-Philippe Cagne

R&D, Data and Innovation Director, Lyon



Franck Goetgheluck
Project manager, Technical
and Industrial Division,
Paris

“Data provided through smart meters can be used for better network sizing”

What has the smart meters changed for the gas network operation business?

The data remotely collected via smart meters enables teams to carry out finer and more precise analyses today than in the past, both in terms of post-incident analysis and network modelling.

What is the impact on this network modelling?

For GRDF, the objective is to have a well-dimensioned gas network. If it's too big, it's a useless financial investment. If it's too small, it will be unable to meet customer demand in terms of flow and pressure. It is therefore very important to know how to best size the distribution stations you install to define the best quality/cost/performance ratio. Our network simulation software is used to calculate the ideal size of the network according to the volume of gas flowing through it. Smart meter project data will be progressively integrated into the related database, starting with the data from “high portfolio” customers, and will enable these

calculations to be refined. The challenge will then be to manage this huge volume of data and integrate it into our tools so that the gas network Engineering Department teams can carry out more precise simulations of network sizing studies.

Can we imagine real-time data analysis to prevent incidents?

That would be great! We're thinking about it in the Technical Division of GRDF, and we're working on the preventive maintenance and on tomorrow's Operations Office. In the future, detecting incidents in real time would make it possible to identify post-meter leaks, but also leaks due to damage to structures, which represent the most numerous incidents. Every operator's dream!

In the future, detecting incidents in real time would make it possible to identify post-meter leaks.

“We develop artificial intelligence models for forecasting consumption”

Matthieu Vinet



Data and Radio expert, Smart Meter Project, Paris

What does your daily activity consist of?

We support, on a national level, the supervision teams on issues related to meter data or consumption inconsistencies. We also participate in the dissemination of knowledge to other GRDF entities via numerous tools.

Can you give us some examples?

One of the tools we have created, Optimus, allows us to query no less than ten databases to cross-reference information and identify the cause of a problem. Another example: the meter keeps three days of hourly consumption data in its memory. When an incident occurs, a gas technician can go to the customer's premises and retrieve the data from the meter. This data is then analysed in our tools and can contribute to the understanding of the incident.

What can we learn from the data from smart meters?

With 11 million meters deployed, there will be 100 million pieces of information available every day! This data already enables us to work on artificial intelligence models to detect consumption anomalies or make consumption forecasts to improve security and optimize our distribution network.

And what type of tool are you looking for?

To go further, we have built Nostradamus, which will analyse the history of daily consumption of each customer to correlate it with temperatures, days of the week, vacations and warn us if consumption deviates too much from the forecast. We are still at the experimental stage, but we really believe that this type of system will become an important part of GRDF's activities.

100 million information collected every day



"Smart meters data help us analyse the situation in case of incident"

Thibaud Desforges



Head of operations agency, Montpellier

In what way does smart meters enable the safety aspect of the network to be better managed?

Hourly data and the ability to extract data from the meter during a safety intervention are very helpful in understanding what happened during an incident and identifying the causes. Having a clear view of the state of the meter also allows emergency action to be carried out with more peace of mind.

What example could you give?

When a boiler exploded in 2019, a smart meters had been installed the same day: it was necessary to explain and check whether there was a causal link. The data extracted from the meter showed that consumption had been abnormally high: almost 24 m³ (cubic meters) in 6 hours. The meter checked in metrology was confirmed to be working properly, as was the regulator and the shut-off device. With this information, GRDF could demonstrate, in court, that its installations are truly compliant.

Why is it important to keep an eye on meters that are cut-off for safety but still register gas consumption?

Each metering point that has safety shut-off and that continues to consume may be a risk for the customer. It also generates extra work in each link of the chain: inadequate asset listing, IT extraction, analysis and regulation. Smart meters supplies information about this consumption in less time and at shorter intervals than before. This circumvents the extra work and avoids customer dissatisfaction. It also allows a quicker return to a vision of the inventory as it actually stands. In the Montpellier area, in 11 months, we have regularized the situation of 1400 meters in this case, which corresponds to 80% of our stock. This may not seem much compared to the 2 million PCEs in the region, but it is still the equivalent of the workload of a full-time person who could be assigned to other activities... and makes for a cleaner data base! And in terms of safety, we are also gaining credibility with our customers.

Having a clear vision of the inventory makes emergency action easier.



“Smart meter data is an essential asset for operating tomorrow’s biomethane network”

In what way can smart meter data help to better manage gas network?

Our business project aims at 12 TWh of green gas injected in 2023. It is essential for us to have the most reliable knowledge possible of our network. Having a 169 MHz network will help us to report data more regularly, improve our understanding of the dynamics of the zones and enable us to control matters with greater finesse.

What types of data are concerned?

Pressure data, for example, at a lower cost than today. And with the arrival of biomethane, increasing the number of debit and calorific value measurement points is very important: there is a major billing issue with gases in the network that have different calorific values. A customer close to a biomethane injection station is sure to have a lower calorific value of gas than one further away. And we have to bill them as fairly as possible.

How can we illustrate in concrete terms?

Let’s imagine a biomethane producer who is no longer

able to inject: thanks to more regular and reliable consumption data, we will be able to tell if it’s because the consumption on the network is insufficient, or if it’s a problem of pressure regulation in the network stations. If so, we will know how much room we have for changing parameters to reduce the pressure, making biomethane a priority without bringing down the network. All this data will also feed our Engineering Department and enable them to run even more reliable and realistic studies. The impact will be felt both upstream and downstream of the gas distribution chain.

Is it already working?

We are working on it! Hardware tests are currently underway, and others will be launched in 2021, notably in two experimental zones in Troyes and Pontivy. Several possible systems and technologies are also being investigated for data transmission: the target is 2022-2023 for the test phase. We are also preparing the “Change management” component, which will have an impact on our way of working and on processes. We are getting the company ready for tomorrow... and the challenge is huge!



Julie Mousli

Project manager, Energy Transition Division, Paris

The challenge is to increase what we know for network design and analysis.



Economic performance

Customer relations

Social dynamics

New uses

Frack Matthieu Thibaud Julie Jean-Philippe

Jean-Philippe Cagne
R&D, Data and Innovation
Director, Lyon

“We have deployed the largest corporate radio network in France, after telco operators”

Does the GRDF smart meter project also include a radio network?

Absolutely, and it is even France’s biggest corporate radio network, with the exclusion of the telecom operators. What is less well known is that on this network, the consumption data from smart meters only take up a few percent of the bandwidth. It would be a shame not to use the remaining available bandwidth! There are two ways to do this: resell part of the available bandwidth, and the subsidiary, IOWIZMI, was created for that purpose, and use this bandwidth internally to serve our gas infrastructures.

Might any outside users be interested?

We cannot transmit big data or voice via 169 MHz, only short messages. It is quite enough for simple data from water or heat meters, or even alert sensors for temperature or air quality, a blocked garage door in a multi-family building or hot water valves in a boiler room, for instance. The feedback of this type of information in real time can be a great advantage for operators and service companies, enabling them to trigger a fast reaction and avoid customer complaints or material or even human

damage. We have created a subsidiary - IOWIZMI- to market data transport services on the 169 MHz network.

A large share of the bandwidth can still be used, particularly for the secure transport of data from connected objects.

What are the potential usages of this IoT infrastructure for GRDF’s usages?

There are many. A call for ideas to exploit the 169 MHz network was launched internally and simultaneously in several regions: 146 ideas emerged, including 23 very concrete use cases. Four have led on to experiments. For example, tests to report cathodic protection measurement data have already been run in Lyon. An experiment simulating a gas leak has also been performed: the information was recorded by the sensor and successfully transmitted to the various links in the chain. It works! We have proved that some things are possible, but now we have to work on how to make them happen. We are only taking the first steps in these new uses, and many new horizons for innovation are opening up at GRDF.



Jérôme Chambin

Director of Communications and Digital
Director of Development

“GRDF is a major player in the energy systems of tomorrow”

In addition to the many economic, environmental and operational advantages described in this document, the smart meters are an illustration of the transformations that GRDF is living as it enters the third gas revolution. They are contributing to enabling us to give thought to our partners, customers, institutions and our entire ecosystem in the image of a dynamic, modern and connected company serving people and the energy transition.

By deploying 11 million smart meters, processing millions of data items every day, and running an increasingly digitalised network, GRDF takes a place as an attractive digital company - both internally and externally - deploying large industrial projects.

We are a major player in the energy systems of tomorrow, with businesses and processes changing in step with the production of greener gas, and offering solutions to the challenges to which our society is confronted.



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Contact: international@grdf.fr

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