Revenue Protection for Smart Utilities

big data

dig value
from
Big Data

Smart energy. **Powering progress**

Atos Worldgrid

Electricity theft and other non-technical losses cost European utilities €3.7bn annually

The smarter way to fight losses

Every year, electricity companies lose a significant proportion of revenue through non-technical losses, creating a growing financial burden for utilities, consumers and the nation alike. *Revenue Protection for Smart Utilities* can help you recover those lost revenues.

The systematic application of good management practices and IT tools has enabled utilities to dramatically reduce losses in their high and medium-voltage networks.

The real problem remains the low-voltage network where the majority of non-technical losses occur. Tracking down non-technical losses in the low-voltage network has traditionally been much more complicated because of the sheer size of low-voltage distribution networks and the large number of customers.

Low voltage, high losses

A distribution company may have millions of domestic customers and low-voltage networks were rarely monitored for losses in the past because, due to the high number of points to equip, monitoring was very costly.

Another problem is that the inspection teams can only investigate a small fraction of the possible cases of non-technical loss as site visits are time-consuming and expensive. Traditional methods, with their high dependence on field inspectors, have low detection rates - typically between just 5-10 percent.

The progressive roll-out of AMI first to large consumers and, more recently, to small businesses and consumers, can help reduce non-technical losses and make them easier to detect – but these improvements can also be achieved where traditional meters are still the norm.

Drowning in data

Technology advances make it easier to systematically monitor the network for non-technical losses, but without the right analysis tools, distributors risk drowning in a sea of data.

Even for distributors with traditional meters the volume of data that needs to be analyzed is substantial. And for those utilities rolling out smart meters the sea of data is growing rapidly each day.

That is why Atos Worldgrid developed Revenue Protection for Smart Utilities.

By combining data such as meter readings with customer records and other data sources, we help you mine the wealth of Big Data you have on consumption and customer behavior to pinpoint possible sources of non-technical losses and analyze their financial impact.

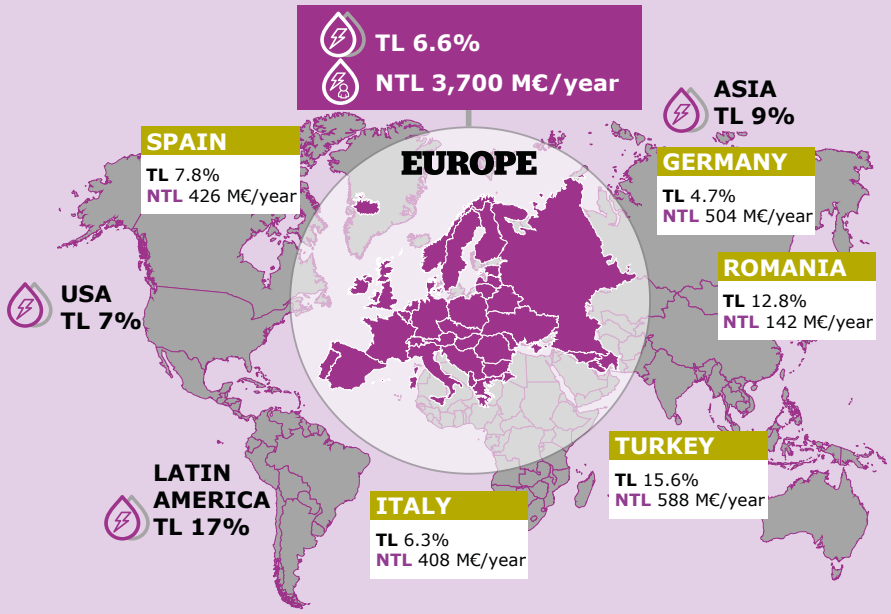
We then provide you with the appropriate tools, customized where necessary, to optimize the inspection process and maximize the financial return from each site visit. We don't just deliver the tools you need, however: we are also well-positioned to advise on revenue protection strategy.

Revenue Protection for Smart Utilities: the smart solution to non-technical losses

Boost detection rates

Using Revenue Protection for Smart Utilities, companies can expect to increase their success rate for detecting non-technical losses from 5-10 percent to 20-40 percent.

In one recent case, a distributor increased their success rate in detecting non-technical losses due to theft from 8 percent to 18 percent using Revenue Protection for Smart Utilities. The company saw this increase further to 25% when both theft and anomalies were taken into account.



Source:
- 2011 (ECLAC) 2012 / Eurelectric 2011.
- Atos Worldgrid estimation on other sources.

Paying a high price for non-technical losses

As well as the direct financial loss to the companies, non-technical losses add to a country's energy bills and greenhouse emissions, and they have a more pernicious effect, as they unfairly burden the weakest consumers in society who effectively subsidies users who don't pay their way.

Electricity theft from tampered meters or illegal hook-ups accounts for the lion's share of non-technical losses. In some developing countries, theft levels run so high that they push total electricity losses to 30 percent or more.

Non-payment constitutes another important loss of revenue and it has become a serious problem in some countries, while in others it only surfaces when the economy declines or the weather turns cold.

Chronic revenue losses due to theft or non-payment can have serious knock-on effects for the whole energy system.

System errors

Sometimes the lost revenues that utilities suffer are not due to consumer behavior but are due to malfunctioning meters, or errors in their accounting or billing systems.

Whatever the cause of the non-technical losses, taken together they are estimated to cost European utilities €3.7bn a year.

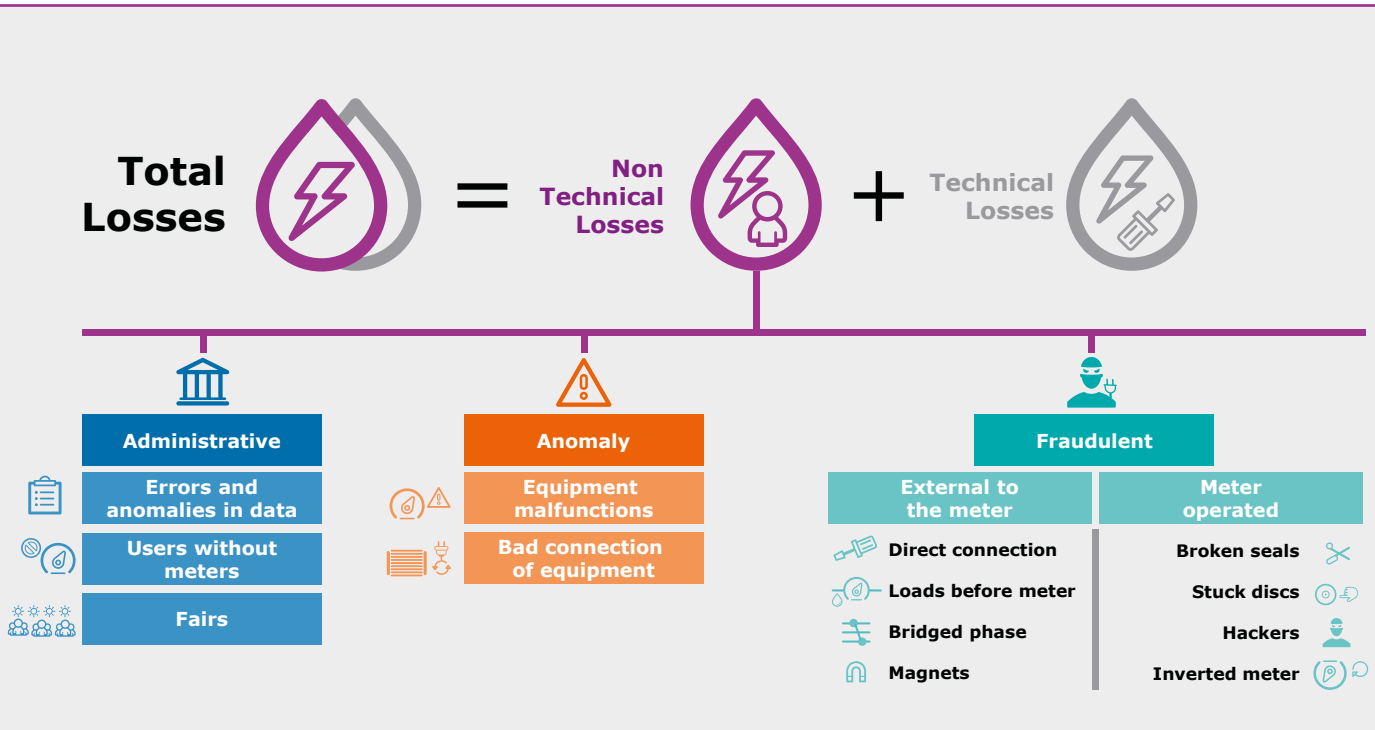
As well as the direct financial cost of electricity theft and other non-technical losses, there are also indirect ones, such as the cost of inspections and the security costs associated with preventing unauthorized tampering with distribution equipment.

In addition, non-technical losses add to a country's energy bills and greenhouse emissions by obliging generators to produce more electricity than would otherwise be needed.

That's because if the electricity consumed is supplied free or significantly underpriced, then consumers have little incentive to use it efficiently. Once they are obliged to pay the correct price, their consumption often adjusts down as they pay the true cost of the electricity they consume.

So, in addition to producing a rapid ROI for distributors, initiatives to reduce non-technical losses can also have a significant and positive impact on reducing national energy consumption and promoting greater efficiency.

The many types of NTL



Compelling case for Big Data

Revenue Protection for Smart Utilities leverages Atos Worldgrid's expert knowledge of Big Data technologies and our extensive experience working hand-in-hand with energy companies to deliver revenue protection solutions tailor-made to your needs.

Revenue Protection for Smart Utilities is the demonstration that Big Data technologies are ready to deploy today in an application that addresses one of the utilities' most pressing problems, non-technical losses.

In the past, attempts to detect electricity fraud and other types of non-technical loss using IT have been hampered by the large variety of patterns that have to be analyzed against data sets consisting of millions of customer records and consumption data stretching back several years.

Using traditional database tools it might take days to run just one analysis.

Thanks to the advent of Big Data technologies such as Hadoop, which is central to our solution, these complex types of analyses can be performed in just a few seconds.

Analyzing the process

Here's how Revenue Protection for Smart Utilities works:

1. Utility data, such as meter readings, billing information, and historical data on NTL incidents, is combined with external data on the weather, business registries, demographic data, and so on.
2. Atos Worldgrid data scientists, working in close cooperation with the utility's own data analysis experts, configure analytical models designed to detect non-technical losses and tuned for the specific revenue recovery strategies required by the client.
3. The models are then executed and the results are revised by Atos Worldgrid experts who use the powerful visualization features of the solution to create reports that will form the basis for possible inspections.
4. The outcomes from the field inspections are used to refine the data models creating a feedback loop that allows the model to continuously "learn" from field experience and also to adapt to changing demands, such as the emergence of new types of fraud.

Our data scientists create an "analytical toolbox" by selecting analytical techniques and algorithms most appropriate to the specific challenge facing the customer and the technical characteristics of NTLs.

The utility staff can then access the reports and other end-user applications via the NTL portal that is dedicated to each utility. The portal may be accessed on tablets and mobile devices, and we provide specific mobile applications for the utility field workers, to help them in their inspection activities.

Adaptable analytics

An important feature of our solution, particularly for utilities in less developed economies, is that it adapts to the level of technological maturity of each utility and can work with whatever data sets the client can provide.

For a utility that has no smart meter infrastructure, Atos Worldgrid data scientists build their models using historic consumption data, billing and account information and other technical information.

Fraud gets smarter

If the utility has smart meters, the available data is much richer and granular, and so it is possible to detect different types of patterns in the data which suggest more sophisticated types of fraud.

For example, an electricity meter may have been rigged so that it can be bypassed at certain times of the day.

As infrastructures become smarter, the fraudsters will also become more ingenuous.

Our experts can work with you to identify new types of fraud and adapt existing algorithms or create new ones to help you stay on top of revenue loss.

Engineered for success

When you adopt our solution for Revenue Protection, you will benefit from a highly developed foundation of application and process assets. Using the core of our development work to date as the foundation, we will then fine tune the implementation according to your particular situation and requirements. Wherever possible, we will exploit existing Atos investments in Big Data analysis technologies, helping speed implementation times and minimize adoption costs.

We combine technology elements, such as the Big Data platform and the analytics engine, with our project and consultancy skills, and leverage our extensive know-how of the energy industry via our dedicated business unit, Atos Worldgrid.

This "pre-built" approach enables us to minimize project start-up times and save you costs and risks.

Deployments of Revenue Protection for Smart Utilities in Europe show that the revenues recovered more than paid for the investment in less than one year.

If fraud and non-technical losses have grown to be a problem you can no longer afford to ignore, talk to us about Revenue Protection for Smart Utilities.

End-to-end management and powerful visualization for NTL

A picture is worth a thousand words which is why Atos Worldgrid has built stunning visualization capabilities into Revenue Protection for Smart Utilities.

Visualization is the key to making data analysis useful to utility decision managers. They need to be able to easily categorize and prioritize the many different cases of non-technical losses identified by the software, so that they can draw up inspection strategies with the best possible chance of success.

The Atos Worldgrid NTL portal offers a familiar executive dashboard approach which allows decision-makers to see at a glance the geographic location of cases. Once a specific case is selected, the decision manager can access complete information about the case, including revenue impact estimates and historical information.

Dashboards integrate NTL information

Zoom in for case views

A winning combination

Smart utilities specialists Atos Worldgrid and business technologists Atos combine their skills and experience to deliver this outstanding solution for Revenue Protection.

- Atos has deep industry knowledge of the utilities sector via Atos Worldgrid
- Experienced in handling large volumes of data
- 3350+ experts in data management, business intelligence, analytics and business process integration, with a global reach
- Vendor-independent, but strong partnerships with key Big Data technology vendors
- Partnership with Siemens providing Industry Data Analytics (IDA) services to Atos and Siemens customers
- Capability to source and provide computing, storage and software for on-premise and managed Data Analytics environments through an attractive CAPEX/OPEX model
- Adherence to global security policies and standards
- Bull acquisition, creating a European global leader in Cloud, IT Security solutions, and Big Data.

Business Benefits of Revenue Protection for Smart Utilities

About Atos

Atos SE (Societas Europaea) is an international information technology services company with 2013 annual revenue of €8.6 billion and over 76,000 employees in 52 countries. Serving a global client base, it delivers IT services in 3 domains, Consulting & Technology Services, Systems Integration and Managed Services & BPO, and transactional services through Worldline. With its deep technology expertise and industry knowledge, it works with clients across the following market sectors: Manufacturing, Retail & Services; Public sector, Healthcare & Transports; Financial Services; Telco, Media & Utilities.

Atos is focused on business technology that powers progress and helps organizations to create their firm of the future. It is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and is quoted on the NYSE Euronext Paris market. Atos operates under the brands Atos, Atos Consulting & Technology Services, Worldline and Atos Worldgrid.

For more information, visit: atos.net.

About Atos Worldgrid

Atos Worldgrid, an international subsidiary of Atos, is a unique player in smart energy. It delivers sophisticated integration projects and real time Smart Energy solutions to Energy & Utilities companies across the power, water, oil & gas value chains. Building on an unprecedented track record in the Energy & Utilities market, it has the capability to cover all business critical systems across the entire Energy & Utilities value chain from production, to transport, distribution and supply. With over 1,600 engineers and over 30 years experience, Atos Worldgrid operates in more than 15 countries. It has in particular equipped 70 nuclear power units with its Supervision and Command & Control software in France, UK, Russia and China and delivered the world's largest smart metering system.

For more information, visit: atosworldgrid.com

For more information, contact: dialogue@atos.net

atosworldgrid.com