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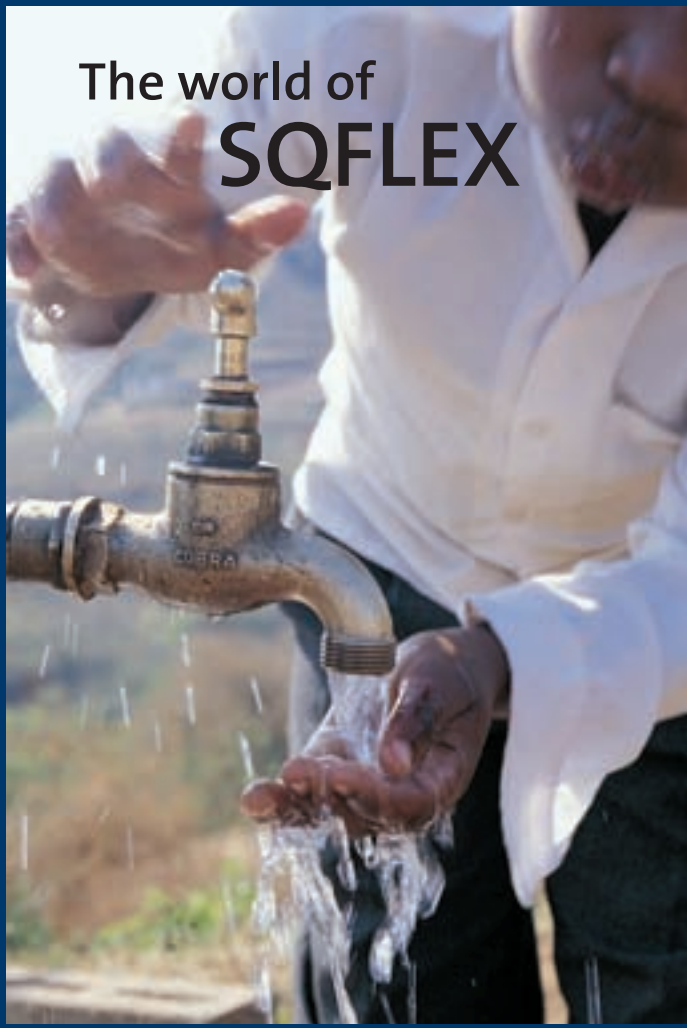
Being responsible is our foundation
Thinking ahead makes innovation possible
Innovation is the essence

GRUNDFOS **SQFLEX**

The world of SQFLEX



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GRUNDFOS

SQFLEX
– Your reliable partner in all weathers

Discover SQFlex's many possibilities and areas of application. Real-life cases tell unique stories of how SQFlex Wind, Solar and Combi solutions have solved individual water problems and improved daily life for people all over the globe.

Indians in the Amazon Rainforest, children and wildlife in Africa, bohemians and nomads in Asia, cattlepeople in the Australian Outback and wine farmers in Europe have all benefited greatly from an SQFlex pump solution from Grundfos. Some people now have access to a reliable supply of clean drinking water for the first time ever, whereas fresh water for livestock or irrigation of crops has meant improved business or substantial energy savings to others.

Powered exclusively by renewable energy sources, SQFlex provides water where traditional systems fail or simply can't reach – and at hardly any cost. SQFlex is your sustainable, reliable and cost-efficient alternative to irregular cost-intensive pump solutions. SQFlex is the perfect solution to remote water supply.

ENJOY!

Index:

NORTH-EASTERN SPAIN

Wind, water and earth are used together to create wines.

Spanish winery benefits from cost-efficient pumping

Amidst the otherwise barren landscape of North-eastern Spain, several thousand grapevines are flourishing year round. Each year, the moist winter and early spring give way to the hot and arid days of late spring and summer, and plant growth is inhibited. Sustaining an economical and environmentally sound irrigation solution for the winery was a challenge Grundfos was proud to meet.

Located in the Ebro River Valley, approximately 220 km northeast of Madrid, the winery requires several thousand litres of water each day in the summer months for a new section of plants. With plentiful groundwater and wind, but lacking mains power, a Grundfos SQFlex Wind solution fit in perfectly.

Grundfos provided

- An environmentally attractive, feasible solution
- High reliability at low cost

The situation

Grapevines are accustomed to extracting moisture from the ground, but in the summer, this life-giving humidity is rare. Little natural precipitation falls in the Ebro River Valley this time of year. The owners of the winery required several thousand litres of water each day to sustain their production of grapes for their popular wines. A reduction in the production of wine would be unfortunate for both the company and oneophiles alike.

The Grundfos solution

A Grundfos SQFlex Wind solution harnesses the warm summer winds as they sweep up the mountainside, providing the power to draw water from a depth of 95 metres below the ground. 1,200 litres per hour flow from the well, irrigating the 3,000 individual grapevines through a drip irrigation system.
As the system does not feature any water storage, direct irrigation takes place. The SQFlex Wind solution becomes powered up with as little wind as 4 metres per second.

The outcome

The first grafts of the grapevines were planted at the end of April 2003. By the end of July, considerable vegetative growth had developed on most of them, and some plants had already developed clusters of grapes. Thanks to the regular contribution of agua fresca – cool water – by the SQFlex Wind solution, this year's vintage was well on its way.

Grundfos products used

- Pump: SQFlex SQF 1.2-2
- Wind turbine: H80 whisper
- Breaker box: IO 102

HOHE TAUERN, AUSTRIA

Reaching new heights

The breathtaking scenery of the Austrian Alps is often associated with skiing, hiking and a singing family, immortalised in a 1960's Hollywood musical. Encompassing a great deal of these high-altitude wonders is the 1,800 square km Hohe Tauern National Park. The provision of adequate drinking water to the livestock grazing these majestic slopes presented a major challenge to park staff. It is, after all, not a place where mains connections are readily available.

As the logical choice for water supply in remote areas such as this, a Grundfos SQFlex system was recently installed - at almost 2,200 meters above sea level!

Grundfos provided

- An environmentally attractive, feasible solution
- High reliability at low cost

The situation

Grazing livestock on the Austrian mountainsides of the Hohe Tauern National Park needed a dependable source of drinking water. Without natural watering holes or electricity, but with plenty of daylight, the conditions match the SQFlex concept perfectly.

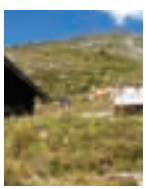
The Grundfos solution

Grundfos GF 43 Watt thin film solar cells harness the rays of the sun, providing the power to an SQFlex Solar installation. Utilising the solar cells special ability to produce energy even in the absence of direct sunlight, the SQFlex Solar solution delivers cool water to a trough 400 meters from the well. Water is lifted a total of 120 metres through a 1" pipe, until flowing into the trough.

The outcome

The livestock of Hohe Tauern are provided with a reliable and inobtrusive water supply, ensuring and enhancing their ability to produce milk used in local products. The staff of this unique park enjoys an economically agreeable, environmentally friendly and dependable pump system.

The entire project has even been submitted to the European Union for recognition within preservation of natural resources.



Grundfos products used

- SQFlex 0.6-2 helical rotor pump
- 16 GF 43 solar modules
- IO 100 switch box

HAMILTON DOWNS, AUSTRALIA

While water is a scarce commodity, sunlight is almost always in abundance in the Australian Outback.

A safe and reliable alternative in the Australian Outback

No commodity is more precious in the vast Australian Outback than water, especially on cattle and sheep properties that are measured in thousands of square kilometres. However, Hamilton Downs, a 2,000 square kilometre cattle property 80 kilometres South West of Alice Springs, average barely 280 mm of rain a year, and relies totally on underground water. Up until now the property has relied on wind power and a supporting diesel generator for a constant water supply. Nevertheless, a large number of windless days and safety issues in connection with the ongoing maintenance of the tall windmills have encouraged the Hamilton Downs Manager, Mr. Jamie Evans to look for a safer and more efficient alternative.

Grundfos provided

- Efficient and reliable water supply
- Safe and simple maintenance
- Substantial savings

The situation

Hamilton Downs runs about 5,000 shorthorn cattle. The original pump installation was operated by a windmill and supported by a diesel generator pumping water from a well 100 metres from the homestead. The solution provided water to a holding tank that, in turn, fed stock troughs in three paddocks - the largest of which is 223 square kilometres in size.

While ongoing maintenance and lack of wind have always been key problems associated with wind power, occupational health and safety had become equally critical. Hamilton Downs manager, Mr. Jamie Evans has become more aware of the dangers his employees face in climbing windmills - problems that are difficult to overcome in a vast land where cranes are a rarity.

The Grundfos solution

While water is a scarce commodity, sunlight is almost constantly in abundance in the Australian Outback. Therefore, a SQFlex Solar and generator back-up seemed a much more efficient solution for the cattle property in central Australia. But more importantly, the PV solar modules are virtually maintenance-free and much safer to handle than the original windmills. On a trial basis and in conjunction with Grundfos Australia, Territory Pastoral Services installed 12 PV solar modules to power a three-inch helical rotor pump set in the well at a level of 64 metres. The solar modules produce a maximum of 546 watts and if the sun fails, the generator will be used as a back-up power system.

The outcome

Not only has Hamilton Downs' new water supply proven very reliable and efficient, Mr. Jamie Evans also emphasises that the SQFlex Solar saves him considerable amounts of time on maintenance and repair: "This is an important factor when it takes a day to do a well check and inspect troughs and stock. That used to be a full time job."

In close cooperation with Grundfos Mr. Jamie Evans monitors the efficiency of the system during the trial period and he is very pleased with the potential of the pumps. "We would certainly - when drilling new wells - look at installing SQFlex pumps in future rather than using windmills. They certainly require less maintenance, and are a heck of a lot safer and easier to repair than windmills", says Mr. Evans.

Grundfos products used

- 12 GF 50 solar modules
- 1 CU 200 control unit
- 1 SQFlex 2.5-2 pump

FLINDERS RANGES, AUSTRALIA

A series of new Grundfos solar-powered pumps has made a big difference at Mt. Lyndhurst in the Australian outback

SQFlex revives historic Australian outback station

A century-old sheep and cattle station situated near the Flinders Ranges, 650 km north of Adelaide, is gaining a new lease of life thanks to Grundfos solar powered SQFlex pumps.
Mount Lyndhurst Station is a 3,500 km² property, which when fully stocked will run up to 15,000 breeding ewes and 1,500 breeding cattle. Mark & Anne Scammell acquired it some 18 months ago.
When purchased, 30 windmills - half of which no longer worked - provided the property's water supply. The need for water, however, was not reflected in this reduction in output. Rather than repair them, the Scammells decided to replace them all with 17 Grundfos SQFlex Solar pumps.

Grundfos provided

- Favourable Cost of Ownership expenditures
- Reliable water supply
- Usage of natural resources

The situation

The Mount Lyndhurst station was very run down when purchased by Mark & Anne Scammell. This large sheep and cattle station was established in the mid 1870s, but had fallen on hard times. Like many cattle stations of that era, it was extremely labour intensive. Over the past 20 years, however, it failed to maintain pace with modern trends. The Scammells set out to revitalise the station, finding out that the unreliable water supply system needed attention.

The Grundfos solution

17 Grundfos SQFlex 2.5-2N units are powered by 136 GF 50, 50 watt solar modules. Each installation has eight modules on average. IO 101 switch box accompany them, and each system has replaced a windmill – one of the Australian outback icons. Even though the water depth varied from nine to 50 metres and the flows ranged from 3,000 to 5,000 gallons (11 to 19 m³) a day, the same pump model was flexible enough to cope with this varied demand. Each pump is fitted with the IO 101 switch box, enabling the usage of a generator, if pumping is necessary for additional hours. The systems range from 150 watts to 600 watts, and all are mounted on a passive gas tracking system so that the sunlight is maximised. The pumps fill water reservoirs then in turn gravity feed water to stock troughs.

The outcome

Mount Lyndhurst Station is now freed from maintaining a large range of spare parts for various different pumps. Additional benefits include the SQFlex's AISI 316 stainless steel casing, enabling it to cope with the harsh and corrosive nature of the water. Mr. Mark Scammell is very pleased with the result. "Properties such as Mount Lyndhurst operate with as few staff as three or four people. Had we kept the windmills, we would have needed at least two additional staff simply to maintain them. "Solar power is the way to go, and the SQFlex pumps offer versatility, great performance and reliability." "We decided that the expense of installing the Grundfos SQFlex Solar pumps would be a sound investment in the long term. We could either keep and repair the windmills or replace them. The cost of repairing the windmills was going to be $90,000 and as an added benefit, the windmills could be sold as they were, for $30,000. So it became very cost effective to consider solar technology," he continues.

Grundfos products used

- 17 SQFlex pumps 2.5-2N
- 136 GF 50 solar modules
- 17 IO 101 switch boxes

THREE STATES, AUSTRALIA

Submersible solar powered pumps such as the Grundfos SQFlex are becoming a highly viable alternative in outback Australia.

Three SQFlex installations in three days in three Australian states

Reliable and flexible are two words usually associated with the Grundfos SQFlex pump system. Most often they refer to pump performance during operation. However, a team of Australian pump specialists experienced a different dimension of these same adjectives recently.

Three SQFlex pump solutions were installed in a mere three days, in three different Australian states to boot. In fact, two of them were installed on the same day! In doing so, dependable and environmentally friendly water supply solutions now serve the people and livestock on these remote outback stations.

Grundfos provided

- Ease of installation
- Flexible solutions
- Complete package

The situation

Installing a windmill can take up to four days, including transporting the structure to the site and building the foundation. Then there are the ongoing maintenance costs that are compounded by today's very strict occupational health and safety regulations. Submersible solar powered pumps such as the Grundfos SQFlex are therefore rapidly becoming a highly viable alternative in outback Australia. Two pump specialists were called upon to install the three Grundfos SQFlex pump solutions.

The Grundfos solution

"On Friday morning my team and James Horgan's from MSY Bikes and Irrigation drove 450 kilometres from Broken Hill to Tonga Station, arriving at about midday where we installed an SQFlex 2.5-2N and a single pole 200 watt solar system. Installing the pump and solar modules took about two hours," tells Chris Blackmore of Blackmore's Water Systems.

"On Saturday morning we drove to Orientos Station, about 600 kilometres from Broken Hill in the south west corner of Queensland, arriving in the evening," he continues.

"On Sunday morning we got off to a great start, installing a second SQFlex 2.5-2N pump and a two-pole 500 watt solar array system in a couple of hours. We then went on to Gidgealpa, where we installed our third SQFlex 2.5-2N pump and a single pole 300 watt solar array," says Blackmore. "On the way back we stopped at Mount Lyndhurst Station, where my company had last year installed 17 SQFlex solar powered submersibles. I wanted to check the performance of the pumps. All were performing well, with the owner's only complaint being they were producing too much water!," reports Blackmore.

The outcome

For James Horgan the trip was an eye opener. "My company had not previously installed any Grundfos SQFlex pumps and solar modules, so we were on a steep learning curve. But it was amazing - had we been installing windmills, we would not – in three days – have even completed erecting the first one," says Horgan.

Grundfos products used

- 8 units: SQFlex 2.5-2
- Solar modules: GF 43 8 units

AUROVILLE, INDIA

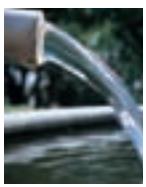
Locally manufactured solar modules in Auroville are easily compatible with the Grundfos SQFlex.

SQFlex guarantees independence in Auroville

In the late 60's a group of people dreamed of creating a place "that no nation can claim as its sole property, where all human beings can live freely as citizens of the world." Only a few years later the Utopian dream became Auroville Universal Township in the South Indian State of Tamil Nadu, which today counts a population of 1800 representing more than 30 nationalities. Arising from Auroville's adherence to principles of collective and harmonious living, renewable energy development and implementation has come to feature strongly in the community. As a result there are several local enterprises with impressive renewable energy expertise, which they apply within the community and "export" beyond. Among those is AURORE (Auroville Renewable Energy), which has developed a special expertise in solar water pumping systems, installing more than 1000 of these systems throughout India.

Grundfos provided

- Low maintenance
- Unmatched compatibility
- Excellent service



The situation

Electricity is cheap in India. In fact it is so cheap that energy savings are not a major concern at all. However, the majority of the clients in Auroville do not have grid-connection, leaving no alternative to a renewable energy solution for a supply of drinking water as well as water for irrigation.

What's more, Auroville is an international role model of future energy savings and the community serves as a vast demonstration site for the application of renewable energy technologies. Therefore, most of the customers were already equipped with solar modules, but required reliable and low maintenance pump systems.

The Grundfos solution

In accordance with Auroville's aspiration to utilise renewable energy, AURORE has so far installed 6 Grundfos SQFlex Solar systems. The solutions were exactly the reliable alternative to an outside electricity supply that the inhabitants of Auroville required.

Not only was independency of outside electricity an important factor, compatibility with locally manufactured solar modules and track racks was also an essential asset when choosing the Grundfos SQFlex.

The outcome

The main benefit for the people of Auroville and Tiruvanumali is that they are independent of any outside electricity supply. The Grundfos SQFlex solutions have proven to be very reliable with low maintenance input and the compatibility of the SQFlex has furthermore enabled them to reuse their existing solar panels and thus save money.

"You have a really fantastic product" says Jos van den Akker a solar engineer for AURORE. He is very pleased with the reliable SQFlex solutions and service provided by the Grundfos service centre in Chennai. AURORE is promoting the Grundfos SQFlex throughout India, because of it unique possibility to pump on both solar, wind and grid-electricity, which is unmatched by anything else so far.

Grundfos products used

- 6 SQFlex 2.5-2 pumps
- 50 SP 5A-7 and SP 3A-10 submersible pumps

This farmer and his family used to fetch water twice a day from a village 4 kilometers away. Now they have their own supply of water.

SQFlex Solar provides water supply for villages in Kyrgyzstan

The Central Asian republic Kyrgyzstan is a beautiful country with vast steppe, baren and mountains up to 7,500 metres above sea level. In the former Soviet Union, close to the Chinese border water is plentiful, especially in the spring after a cold winter's snow. But it quickly disappears into the porous soil and leaves the poor inhabitants with no other choice than walking miles and miles after good drinking water. Most of them are first or second generation after the nomads who have lived their lives on the steppes for hundreds of years, moving around in search of pasture for their animals. Today they live in small villages and make their outcome from small-scale farming, although many of them still move into the mountains with their animals during the summer months.

Grundfos provided

- Complete solution
- Know-how and full line supply
- Reliable and sustainable water supply

The situation

During the Soviet period, a large number of hydro energy plants were constructed to turn the natural water resources into electricity and consequently many villages were connected to the power lines. Wells were drilled and electrical pumps installed, but the quality of the installations was poor and after the collapse of the Soviet regime there has been no funds for repairing or renewing the installations, most of which have not been working for years. Moreover, the electricity that is still being generated is now sold to the neighboring countries though it is Kyrgyzstan's almost only natural resource. In the countryside, the remaining electricity is unstable and very expensive for the poor villagers.

The Grundfos solution

In remote villages in the provinces of Naryn, Kochkor and Issyk Kul, more than 50 Grundfos SQFlex Solar systems and a few SQ pumps are now being installed in existing wells and boreholes. Grundfos has delivered the systems with every bit and piece needed to raise and run them: modules and support structures, pipes and cables in tailored lengths, fittings, tools, etc. In these remote areas, even a missing screwdriver can be a huge problem.
The project is organised via UNDP in Kyrgyzstan and financed by a Danish trust fond. UNDP is also organising the installation work, which is carried out by local craftsmen who received on-site education from a Grundfos specialist.

The outcome

The easy access to water leaves more time for women and children to cultivate the soil, take care of the animals and go to school.

-"It is hard to exaggerate what this means to people. It facilitates their daily village life very much and probably helps reducing the migration of young people to the cities where most don't get a job anyway. Now they can stay here instead and get a decent income for their families. It suits perfectly well with UNDP's strategies", says Programme Associate Mr. Adilet Abdybekov, UNDP in Kyrgyzstan.
Mr. Orozbek Bekturov, 1st Deputy Governor (Issyk Kul Province), adds: "For these people, this is a great saving. They are very poor and can hardly pay for electricity. Now they have a constant, free water supply at hand".

Grundfos products used

- 53 SQFlex pumps, CU 200 controls and level switches
- 11 SQE pumps
- 516 GF 43 Solar modules

NORTHERN CALIFORNIA, USA

Erecting the solar-powered Grundfos SQFlex installation

SQFlex on the ranch in northern California

When a northern Californian farmer was looking for a way to get a better supply of domestic water, a Grundfos SQFlex solution made it possible to locate the well and the pump in the best place, even though it was a mile and a half from the nearest electricity supply.

The situation

On a 3,000-acre cattle ranch in northern California, USA, just south of San Francisco, the owner needed a better domestic water supply to deal with the many requirements in a small rural location. Electricity is very expensive, making it a luxury.

Grundfos provided

- Consultancy services regarding solar-powered installations
- Sustainable water supply, reliable products

The situation (continued)

There is a 2-acre lake on the property that is approximately 14 feet deep, but this simply cannot be used to supply drinking water. Unfortunately, the farm and its buildings were one and a half miles from the nearest electricity supply. It would therefore be way too expensive to lay in a power supply to the location near the buildings where there were plans for sinking a well. Proximity was important in order to be able to pipe the water into the farm. The owner therefore called in a local plumbing company to help devise the best way to tackle this situation.

The Grundfos solution

Mr. Richard Henry, proprietor of H.R. Henry Plumbing, called on Grundfos USA for the necessary technology, based on the Grundfos reputation for top quality, reliability and innovation.
After considering all the alternatives, a solar-powered Grundfos SQFlex installation was decided on, thus making the pump unit completely independent of any need for a power supply. An SQFlex installation has the added advantage of versatility – if electricity becomes available in the future, it is still compatible.
The SQFlex pump unit was installed 300 feet down at the bottom of a 4½-inch well, with power supplied by an array of 24 GTF 55 solar modules on the surface.
This solar-powered SQFlex configuration made it possible to pump approximately 6 gallons of clean drinking water per minute up from deep below ground. This is easily sufficient to meet the domestic needs on this ranch, despite the fact that the well produces a relatively poor flow.

The outcome

The system is now used to supply domestic water to both the farm buildings and the cattle troughs via a series of 10,000-gallon storage tanks. There is even sufficient overflow to provide water for a decorative pond.
Both the contractor, H.R. Henry Plumbing, and the farmer were very pleased with the final result – which may well serve as a source of inspiration for more sales of this kind of installation.

Grundfos products used

- 1 SQFlex 11 SQF-2
- 1 CU 200 control unit
- 1 IO 101 switch box
- 24 GTF 55 solar modules

XINGÚ RIVER, BRAZIL

Malaria and water-born diseases have decreased considerably among indians in Brazil's rainforests, since SQFlex Solar systems were installed in many villages.

SQFlex improves indians' health in rainforest

Along the Xingú river in central Brazil, south of the Amazonas, we find one of South America's largest and most remote habitats for indians.

The Xingú reserve is about the size of Florida and houses about 6,000 indians in a few hundred villages scattered around the huge rainforest area. The Xingú river itself and its tributaries unite and divide the indians at the same time. All transport is by chunks and small boats, there are no roads and almost no paths in the extremely swampy area, and there is often more than 30 kilometres between the small villages.

Grundfos provided

- Easy access to clean water
- Improved health conditions
- Local backup

The situation

In spite of all this, the indians' main problem is – water. Very few villages have drilled wells, simply because it is an enormous challenge to transport heavy drilling equipment, fuel, etc. hundreds of kilometres from the nearest road into the rainforest. And of course there is no electricity to drive pumps. A few villages have a generator, but fuel is expensive and hard to get. Therefore, the indians collect drinking water where it is easily available: in the rivers. The result is frequent stomach diseases and many people die, especially children. For the same reason most villages lie close to the riverbeds, where malaria mosquitoes are a constant threat.

The Grundfos solution

Through FUNASA, Brazil's national organisation for improving indians' health conditions, it became possible to finance well-drilling and installation of 17 SQFlex Solar systems in remote villages so far. Another 50 systems are in the pipeline. Outside the Xingú reserve itself there are several smaller, but still isolated communities where another seven systems are installed.
Each system delivers about 5,000 litres a day, so there is plenty of water for each village and its about 100 inhabitants in average. Most systems are installed by the engineering company Village Energía Ambiental, and its owner Roberto Lopes. Village is responsible for the systems during the first two years, during which local indians are trained so they can take over responsibility later.

The outcome

Where the SQFlex systems are installed, daily life of the Xingú indians has changed dramatically. In one village a young mother carrying her child explains, "Everybody feels much better now, and the diarrhoea has almost disappeared. Many children died from it before. It is also much easier to fetch water now for drinking and cooking, but we get a bit lazy and wash our clothes here instead of going to the river, so we use more water".
One other impact on their daily life is the possibility of growing more crops year round, and not only during the rain season. For most villages, this will create new income possibilities from e.g. coffee farming and honey manufacturing.

Grundfos products used

- 17 SQFlex 2.5-2
- 185 Solar modules
- 17 IO switch boxes and CU 200 Control units

LESOTHO, SOUTH AFRICA

Five solar panels are utilised in the Grundfos SQFlex Combi solution in Mafeteng Mountains

SQFlex makes a difference in Lesotho

In the Mafeteng Mountains of Lesotho in southern Africa, things are not taken for granted. Resources are limited; therefore they need to be utilised economically and wisely. For the rural villages in this part of the developing nation, special solutions are often necessary to meet their unique demands.

Until recently, the residents of one particular village needed to trek 1.2 km to fetch water for drinking and cleaning. A Grundfos SQFlex Combi solution has changed that. Two energy sources are combined: solar modules for when the sun is shining and a wind turbine for when the wind is blowing. For the villagers, water is available whenever it's needed.

Grundfos provided

- A specialised solution
- Peace-of-mind
- An easing of everyday tasks

The situation

180 km from the major city of Maseru, the village of Mafeteng Mountains faces numerous challenges. In the mountains of eastern Lesotho, the densely populated village had no reliable, permanent water supply within its boundaries. Traversing the 600m of rocks and red sandstone mountainside to the local spring each day to fetch water was an arduous task. Returning to town entailed climbing the mountainside, only this time lugging the heavy containers of water.

The Grundfos solution

A Grundfos SQFlex Combi solution draws power from the sun as well as the wind. With five solar panels and a wind turbine, fresh water now comes to the residents, rather than the other way around. Finding a location for the wind turbine was the most challenging aspect of the solution for installer Lesoli Mohapi, Managing Director of Maseru Pumps and Plastics, who tendered and installed the solution.

The outcome

For the villagers and their livestock, their daily lives have received a lift. Time has been freed up, enabling them to concentrate on more important duties.

Quote:

"I have been very happy with what Grundfos has been able to offer," Mohapi said, "especially the solar. It does exactly what it is designed to do."

Lesoli Mohapi,
Managing Director
of Maseru Pumps and Plastics

Grundfos products used

- Pump: SQFlex 2.5-2
- Wind turbine: H80 whisper
- Solar modules: GF 50
- Breaker box: IO 102

KWAZULU NATAL, SOUTH AFRICA

A refreshing drink - delivered by Grundfos following a long day of school.

Fresh water from SQFlex in KwaZulu Natal

1,800 people recently had their every day lives turned upside down in the Abantunga Community, 45 kilometres to the north of Durban, South Africa. Located in the South African province of KwaZulu Natal, the Abantunga Community has recently undergone a number of improvements.

The project involved the building of a primary school, an adult skills training centre, the provision of electricity and running water. Driven by Mr. Sidney Gcabashe, and funded by both local and foreign aid agencies, the upgrade project has had a large impact on the daily lives of the residents.

Grundfos provided

- Sustainable usage of natural resources
- Reliable pumping
- Improved quality of life

The situation

A reliable supply of water is a basic human necessity. It is especially essential for the well being and upliftment of persons in areas that are not serviced by clean piped water.
The residents of Abantunga Community often had to walk in vain to fetch water. They depended on a pump powered by electricity and the local electricity supply often failed. Furthermore, electricity is very expensive, making it a luxury.

The Grundfos solution

A new borehole was drilled, and a Grundfos SQFlex Solar pump lifts water from 74m below the ground. The system covers the water needs of the community from public standpipes, the school for drinking and ablution and the training centre for its needs.

The AISI 304 stainless steel used in the SQFlex Solar pump offers a lifetime of solid performance, with a minimum of service or break-downs. The eight Grundfos GF 43 solar modules have been placed inside the protected fenced property of Dr. Gcabashe to protect them from thieves. From here, an underground cable feeds the SQFlex pump, which is some distance away in commonage.

Ground water is pumped into two large 4,000-litre tanks. From the tanks, which are placed 500 metres apart, people may tap as much fresh water as they may need.

The outcome

The success of this system is unquestionable. Renewable energy pumping equipment will eventually be commonplace in South Africa, as it is in many parts of world. This is the system of the future.

One of the water tanks is placed at the local school, which has eight classrooms for its approx. 300 pupils. Not only may water be fetched there – but it is also brought to use at the school where for instance low-usage toilets and sinks have been installed.

Grundfos products used

- SQFlex 2.5-2
- 8 GF 43 Solar modules:

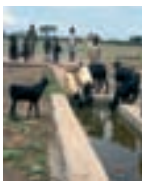
Two members of the Kaikor Water Committee examine the solar panels that supply the power to the Grundfos SQFlex pump system.

SQFlex helps put down roots in Kenya

For the Kwatella tribe, finding adequate grazing land and water for their livestock has been the driving force in their lives for centuries. Living in Kenya's northwestern Turkana district, these pastoral nomads have always been on the move, following seasonal patterns of rain, dry spells and vegetation growth.
Severe droughts in the end of the 1970's saw the gathering of several nomadic clans around feeding centres, where water and food could be had for both people and livestock alike. The community of Kaikor, approximately 700 km northwest of the Kenyan capital of Nairobi, is one such place. Foreign aid plays an important role in this impoverished area, including the establishment of a permanent water supply.

Grundfos provided

- Durability
- Sustainable water supply
- Outstanding product quality



The situation

The arid climate in Turkana prohibits sustainable, large scale farming, thus making the grazing of livestock to be the only viable alternative for the Kwatella. Their herds mainly consist of goats, but also camels, cattle and donkeys are present. The years of drought have however eradicated many herds. The residents of the Kaikor settlement are those who have lost their animals, and thus their livelihood.

The 2,500 residents of Kaikor were furthermore dependent on shallow wells, dug in riverbeds during the rainy seasons for most of their water. After two or three months, however, these wells would dry out, forcing them to travel long distances for water from springs and boreholes.

The Grundfos solution

A Grundfos SQFlex Solar solution was donated to the community by an external aid agency. The large solar panels collect the energy from the sun, utilising it to draw water from deep below the parched soil.

The outcome

Since being installed, the Grundfos SQFlex Solar installation has performed flawlessly, pumping life-giving water to the Turkana and their livestock. Kaikor Water Committee Secretary Mr. Albert Mio expresses the appreciation of the community for the reliability of the Grundfos pump system:

"Since being installed, the Grundfos pump system has performed without any damages or failure to operate. We have not even had to perform the slightest service on it, which is very important, when you are located as far away from the installer company as we are. It is this facility that people really rely on in times of drought. The other boreholes may dry out, but not this one. The nomads even drive their animals from afar to get water here," he states.

Grundfos products used

- SQFlex SQF2.5-2
- Switch box: IO 100

NAMIBIA, AFRICA

The Namibian desert is one of the driest wilderness areas in the world.

SQFlex Combi system provides game reserve with water

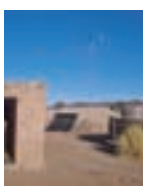
The Namibian desert is one of the driest wilderness areas in the world. Even in midwinter, the temperature often soars to over 30°C.
When the rain finally comes, it is so heavy that most of it quickly seeps right down through the dry earth to the subsoil and the rest simply evaporates from the surface. The many animal species in the desert cannot survive without water, and are dependent on watering holes.

The situation

The NamibRand Nature Reserve in Namibia extends over approximately 200,000 hectares (2,000 square kilometres) from the Naukluft Park to the west and the Nubib mountain range to the east.

Grundfos provided

- Sustainable usage of natural resources
- Reliable pumping
- Improved quality of life



The situation (continued)

The idea behind this reserve was to extend the frontiers of the natural desert environment by integrating a large number of former sheep farms and developing a reserve free of fences, where the wildlife can roam unhindered.

The Grundfos solution

Mr. Achim Lenssen is the NamibRand Nature Reserve head ranger and he has tried virtually everything to provide the animals with water. “It used to take the best part of a day,” he says, “to drive out to a pump and repair it or just top it up with diesel oil. And we had to do that several times a week.”
In 2002, however, Grundfos installed an SQFlex pumping system that now supplies water to much of the reserve. Wind and solar energy are used together to provide these pumps with electricity so that they can pump up water from reserves 50-100 metres below the surface – reliably, silently and without polluting the environment.
The Combi system installed at the NamibRand Nature Reserve uses a combination of wind and solar energy. It pumps water from a depth of 60 metres to a reservoir located 2 kilometres away and 40 metres higher. One of the SQFlex pump systems pump the water higher up to another reservoir. From here, the water is gravity-fed via underground pipes to watering holes spread over 10,000 hectares (100 square kilometres).
The other two SQFlex pump systems operate individually to cover a similar area of land. They also pump water up to reservoirs on high ground, from where the water flows to the watering holes by gravity.

The outcome

Mr. Achim Lenssen is very impressed with how reliable the SQFlex units are. “To start with, we kept a close eye on them,” he says, “but now they just run on their own. This helps us focus on looking after the animals and the landscape – while also making big savings.”
Game researchers have also made interesting use of the water provided by the SQFlex units to provide a special watering hole where they can place carcasses to attract vultures. This enables the researchers to then study the behaviour of these birds, which are threatened with extinction in this area.

Grundfos products used

- 3 SQFlex Combi systems
- GF 43 solar modules
- H80 Whisper turbines

UGANDA, AFRICA

A rousing Hello from the children of the Lake Victoria Children's Home

Ugandan children's home benefits from SQFlex

Fresh water is not a problem for those who live along the shores of Uganda's Lake Victoria. The second-largest inland body of water in the world, its waters abound with edible fish. On Bombo Island, boiling its waters for drinking purposes had until recently been the normal course of the day.
At the Lake Victoria Children's Home, a residence for children orphaned by AIDS, the children and staff counted this amongst their everyday duties. A Grundfos SQFlex Solar pump system has changed that, enabling them to concentrate on more important matters including schooling, improving their self-confidence and the development of practical and social skills.

Grundfos provided

- Humanitarian aid
- Reliability
- Improved quality of life

The situation

Mr. Chris Boxall established the Lake Victoria Children's Home in 2000 for children whose parents had died of AIDS. This humanitarian effort provides the approximately 30 residents with the opportunity to receive an education, develop their own sense of worth and have a place to call home.

Whilst the water supply in Lake Victoria is indeed plentiful, fetching it from the lake each day was a cumbersome process. Boiling it for purification took additional time. Drawing water from a borehole located close to the settlement was seen as the best solution. The only drawback was the limited supply of electricity.

The Grundfos solution

A Grundfos SQFlex Solar solution, with 8 GF 43 Grundfos solar modules, draws its power from the powerful African sun. Literally located on the equator, Bombo Island and the Lake Victoria Children's Home are not hindered by numerous days without sun. Water is pumped approximately 60 m from the lake to the main residential area.

Mr. Chris Boxall and the residents and staff of the home carried out the installation. The SQFlex 0.6-2 pump now reliably pumps 85 litres of water per hour to this small community on the island's ridge.

The outcome

Clean drinking water flows consistently to the appreciative children and staff of the Lake Victoria Children's Home. Founder Mr. Chris Boxall speaks highly of the generosity of Grundfos Pumps Ltd., as well as the durability of the SQFlex Solar solution.

"The donation of the pump, the solar modules for it, and all the fittings has truly been fantastic. This is a very kind gift and real big deal; every African child's daily job is to fetch water, and carry it uphill, until their little arms and legs ache. Everyone, including me, went absolutely mad with excitement when the water flowed out of the pipe for the first time."

Grundfos products used

- Pump: SQFlex 0.6-2
- Solar modules: 8 units GF 43