WITHOUT compromise

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Fassi Gru international magazine with information and updates

FASSI CRANE FATIGUE TESTS

QUALITY OF TRAINING

A Fassi crane is a top quality product, and getting to know it properly so as to make the best use of its performance is one of the tasks of Fassi training.

F450BXP AND F600AXP TESTED BY DETMERS IN GERMANY

FASSI
CRANES WITHOUT COMPROMISE

Fassi gru's international magazine

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Fassi quality, the service offered by its partners and customer satisfaction are the raw materials upon which our training projects are built.

The superior technical and constructive quality of Fassi cranes also compares itself with all those points that go to make up customer service. A constant factor in service is the professionalism of partners, who share Fassi's aim of setting up a constructive dialogue with the user. Contacting a Fassi partner means first of all finding competent answers to your expectations. A Fassi partner is somebody who is trained to pick up the needs of those purchasing an hydraulic crane, and is capable of drawing up a detailed plan for the machine configuration. It is Fassi itself who, by means of suitable periodic training sessions, encourages continual qualification of its partners and helps them to follow a route that will assist in the mutual growth of Fassi, its partners and its users.

A human resources and organisational project that, according to Fassi's philosophy, forms the backbone of a network of local structures, united in the awareness that quality of service is one of their strong points.

From a service point of view, training also includes the ability to offer set-ups that will fully satisfy the user, featuring the best possible synergism between crane and truck in terms

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of performance, efficiency and safety. The ability to ensure prompt assistance, optimising every crane control and maintenance operation, is also an integral part of the identity and job of Fassi partners. Finally, the Fassi partner is a sure contact for crane technological updates and "structural" evolutions, as its competence goes hand-in-hand with fast-lane application of the new technology perfected during ongoing Fassi research.

Training is thus the means of offering the user Fassi's entire wealth of experience and innovation.

in this number

FASSI PARTNERS AND USER TRAINING

Experience, technical competence and specialisation are the features placed at the disposal of users

Fassi is convinced that the quality of training depends to a great extent on the quality of service and on perception of the company's identity by the market. In this sense, every partner within the Fassi network, throughout the world, is aware that the service provided to users is just as important as the quality of cranes themselves. Based on this guiding concept, an extremely open, co-operative dialogue is built up with customers, with the idea that recommending, preparing and servicing a crane is much more strategic than merely selling one. The dialogue between the Fassi partner and the customer is important, and is aimed at understanding the true needs and expectations of those who will be using the machine.

Some examples of this dialogue are training on delivery and customised training. The training programs are always drawn up based on the needs and activities of each individual customer. Where it is not sufficient, it is possible to prepare specialist training for small fleets or to cover specific needs.

A Fassi crane is an extremely simple machine to use, but it is only when you know it the way a Fassi partner knows it that you can go still further and achieve unexpected levels of performance. In actual fact it is after purchase, when servicing, maintenance and updates become essential, that a Fassi partner is able to prove the long-term advantages and investment value of having selected a Fassi partner.


FASSI
FASSI
SERVICE

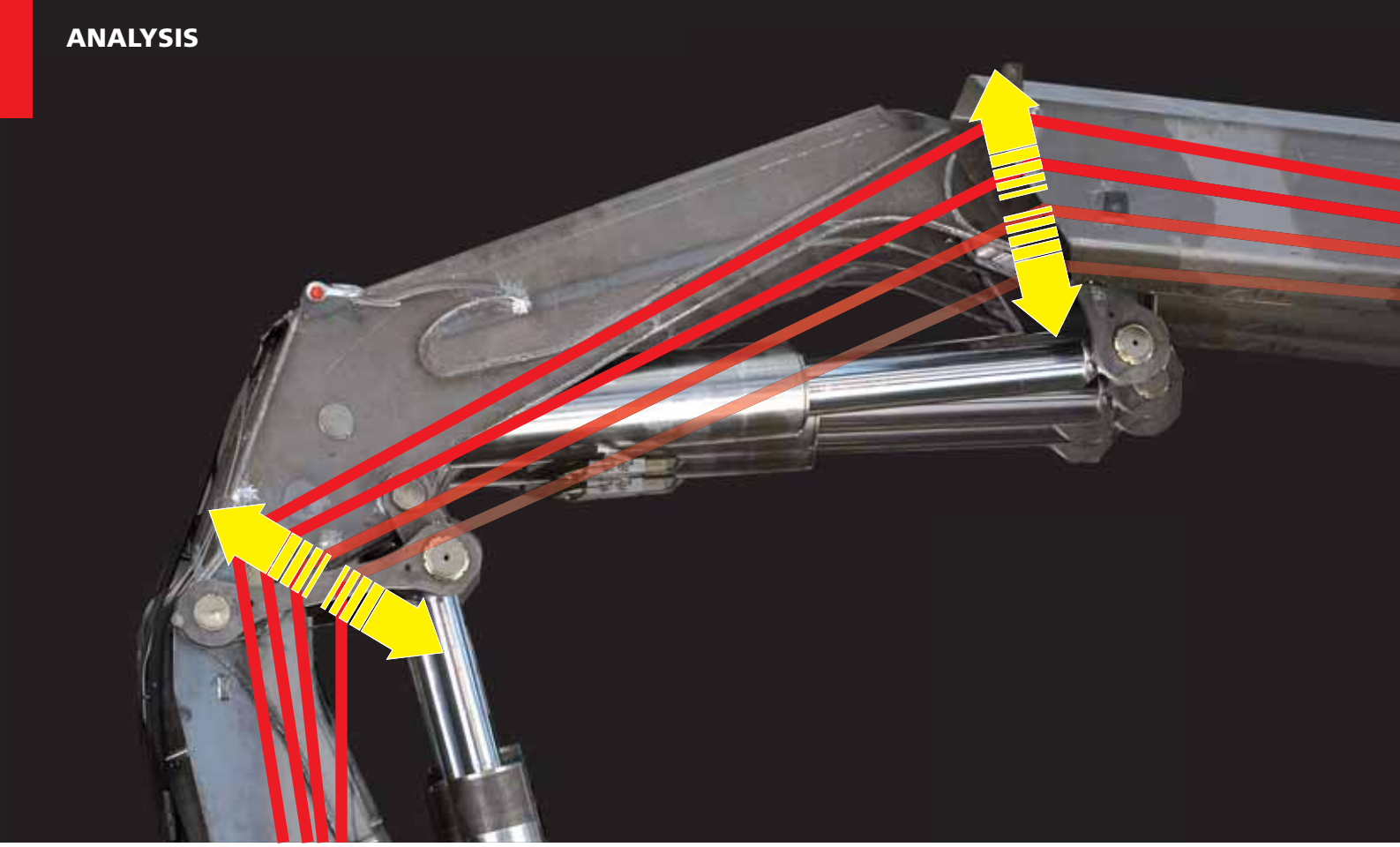

TechniComm News No. 1 – MARCH 2006
FASSI "RCH" EVOLUTION REMOTE CONTROLS
The basic features of these remote controls, which are not available with many of our competitors' products, are as follows:
TechniComm News

FASSI'S TRAINING ACTIVITIES FOR PARTNERS

Specialist training programs to pass on the technology and quality choices that make a Fassi crane truly unique

Fassi develops specifically targeted training plans for both technical and commercial partners. These programs are put into practice by organising technical seminars and meetings, held periodically at the company headquarters and in other suitable places, in which the principles behind Fassi innovation are discussed and what makes our cranes of such high quality is explained. Fassi training activities are aimed not only at the owners of hydraulic crane, sales and service centres, but also at the staff working at various levels in these structures.

Those who co-operate with Fassi know that you never stop learning, also because the development of Fassi technology and systems encourages a constant training process. Exchange of experiences and reasoned confrontation with colleagues means that Fassi partners are able to plan the characteristics of their own services in an increasingly efficient manner. This project is fully supported by the company, which is convinced that the quality of training depends to a great extent on the quality of service and on perception of the company's identity by the market.



Fassi crane fatigue tests

The birth of each new Fassi crane follows an organised, tried-and-tested procedure, and fatigue tests are just one of the steps taken to ensure quality without compromise.

Each new model of Fassi crane that goes into production represents the end of a particularly complicated process, involving designers and testers working for many months on an articulated and complex program that deserves to be known and understood in depth.

The only one in the world to have consolidated specifically "made in Fassi" product development philosophies and methods, the company is characterised by its strong and growing investments in terms of innovation and development, with continual comparison of virtual simulations and practical tests. It is for this reason that, in spite of the accuracy of computer design (CATIA), kinematic analysis (KINEMAT) and limit state structural analysis using the finished elements method (FEM), every solution and result is compared and tested on actual physical prototypes. This process is renewed and perpetuated for each new model, component or idea, because it is in this way that Fassi keeps its promise: cranes without compromise.

Three prototypes: research, testing, certainty

There is a department within Fassi where school never ends: this is because every new idea has to pass its exams before it can take concrete form in a new crane. To guarantee this result, three complete, fully functional prototypes are built.

The first: destined for the hard work of "fatigue" tests, is in itself a summary of the research process.

The second: destined for set-up and for functional and performance tests, confirms testing.

The third: destined for product industrialisation, guarantees its construction, production, and gives certainty to Fassi and its customers.

The additional value of fatigue

Still among only a very few in the world to take on the burden of carrying out fatigue tests on every new model of crane it develops, Fassi is thus able to guarantee its users that their crane will be with them for life. The term "fatigue" indicates a process during which a material can break, with the formation of cracks under the action of repeated loads. The stress that gives rise to this phenomenon may actually be less than the material's breaking stress, and in practice fatigue can come into play after 1000 loading cycles. For this reason, using a prototype crane fitted with instruments, mounted on a special test bench and operating in a continuous cycle, the validity

"During fatigue tests we simulate the working conditions the crane will have to face as exactly as possible, so we do not just lift from fixed positions, but we test at various reaches and with various loads at different lengths".

of the project is tested for a minimum of 200,000 loading cycles. Thanks to the fatigue tests, designers are able to evaluate whether or not the crane complies with its project specifications: firstly regarding the results of concentration of stress, of forms, of the number of cycles and the load statistics curve; secondly regarding factors such as static strength, average stress, residual welding stress, the thickness of metal sheets, working temperatures and loading frequency.

The aim of tests

If the main aim of fatigue tests is to test and validate the crane while it is at work, the range of tests carried out have a much wider purpose: in fact, Fassi does not believe that final testing should be carried out by the end user. In this regard, one of the technicians from the Fassi team specialising in testing and final testing explains: "During tests we simulate the working conditions the crane will have to face as exactly as possible, so we do not just lift from fixed positions, but dynamically, as we would in a real situation, and using the loading curve statistics we test the various combinations of reach and lifted load. This methodological approach means we can validate the product, and if necessary highlight problems that might otherwise go unnoticed.

The main protagonist in our cranes is the steel, which withstands fatigue in a manner proportionate to its static resistance, but with considerable reductions at welded joints. For example, we know that the fatigue characteristics of welded joints are largely determined by the macro- and micro-geometry of the weld, that is to say the quality of the weld itself. Any problems that might arise will thus involve everybody, from the designer, to the production technician, right down to the individual robot or welding unit, because they all play a decisive role in the fatigue characteristics of our cranes."

One specific area in Fassi's plant at Albino is entirely dedicated to the various fatigue tests, organised in a number of stations that subject prototypes to the severest possible experimental testing operations.

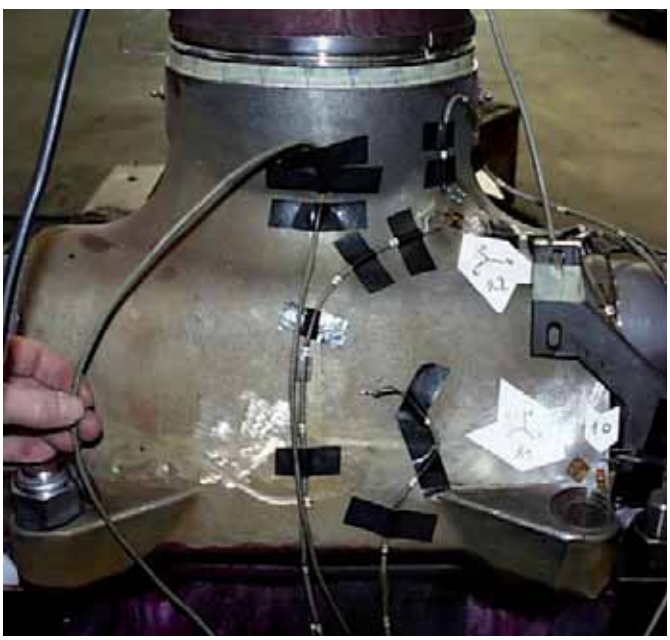
It is thus through the results of the fatigue tests that Fassi designers are able to request, test, classify and therefore use high and ultra-high resistance steel, an essential resource when constructing cranes that are unique in their ability to provide the best weight/lifted load ratio, that is to say the best possible performance, extraordinary strength and reliability.

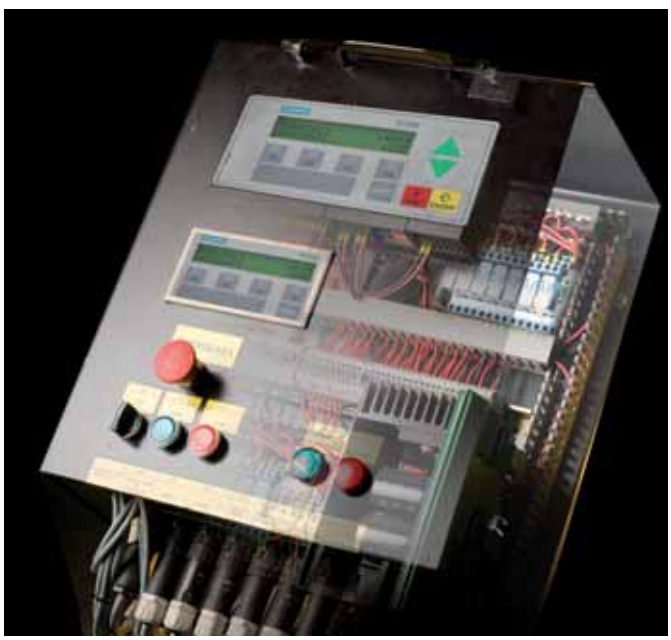
A unique experience that has lasted since 1980

Fassi has been carrying out fatigue tests on its products since 1980, a level of experience that in many ways has no equals in the world for the lifting sector. Over these years, an impressive amount of data has been collected, allowing the right test parameters to be identified.

Resistance to fatigue, as mentioned above, is influenced by a considerable number of factors, many of which are very difficult to extrapolate and quantify physically. It is only possible to obtain information on fatigue through wide-ranging test programs. The effects of concentrated stress, the number of loading cycles and their statistic recurrence are three factors with a primary influence on resistance to fatigue. Other factors include the static strength of the base metal, the average stress, residual stress, the thickness of the metal, the concentration of effort, the environmental conditions, temperature, loading frequency and even metal coatings such as galvanisation. It is easy to see why it is not possible to "invent" experience in fatigue tests, and how the know-how has to be build up with constancy and determination. With over 25 years' experience in fatigue tests, Fassi

The various fatigue tests foreseen enable testing of all the main structural and dynamic elements in the prototype cranes, with particular reference to the strength of steel and to critical points where high stress may result in cracks and other long-term problems.





is able to simulate working conditions that are entirely realistic.

The 200,000 cycles (and more...) of Fassi fatigue tests

When we talk about 200,000 cycles we refer to the number of lifting cycles that a new "standard" project is usually subjected to: this means a project for average, non-intensive use, at the hook. However, in certain specific cases, according to the use to which the crane is to be put, the number of test cycles may vary. Methodical testing of all projects has also made it possible to produce a detailed classification of development solutions for certain components; in effect the use of the same components on a number of projects, for example cast parts, means that it has been possible to subject these to several hundred thousand cycles, up to as many as 1,000,000 cycles. To ensure proper consistency and comparison of data, Fassi carries out the tests on cranes with 4 extensions, dividing the 200,00 test cycles over positions using a variety of possible reaches combined with the position with respect to the base.

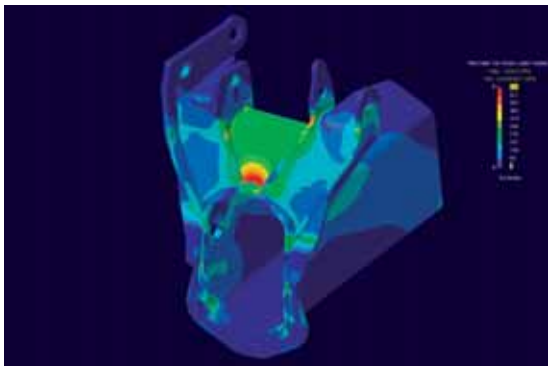
Using these tests the project can be verified, and in particular it is possible to see the response of innovations to forms, welding methods and the use of new types of steel or other alloys. As well as the fatigue test carried out on the crane's vertical plane, which is necessary to verify the stress caused by lifting capacity, a further 200,000 cycles are carried out on the horizontal plane so as to verify the torsion stress induced by rotating torque. In carrying out the tests, we use calculation parameters that comply with crane regulation classifications, from 1980 according to DIN15018 and from 2004 for the new European regulation EN12999. This classification applies to the entire range: from the small M10 in the Micro range to the imposing F1500AXP the classification is H1-B3.

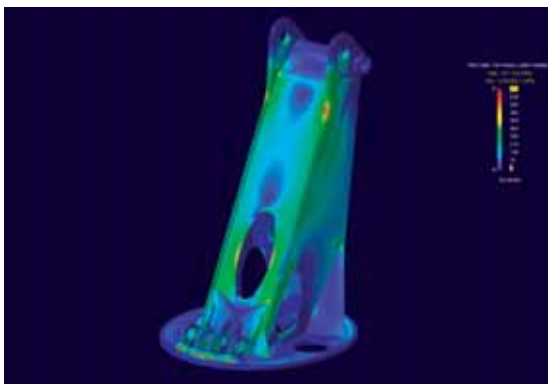
From a practical point of view, as mentioned above, the prototype used for testing is fitted to a special bench equipped with instruments. After using a special calculation program to determine the dynamic effects of load movement, the structure is subjected to fatigue by acting directly on the lifting rams. This means that, even when a combination of various positions and reaches is used, it is possible to operate by isobars, that is to say at constant pressure. This maintains the crane's lifting power more or less constant, because at Fassi we do not make an average of the loads, but all tests are carried out with the crane 'moment' at set values, i.e. maximum strain.

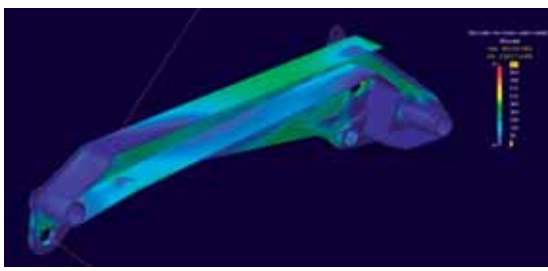
During the test an experienced test technician monitors the integrity of the structure at clearly defined times, by means of non-destructive visual tests. With the aid of technology such as penetrating fluids, magnaflux, ultrasound and extensometers it is thus possible to produce a report both on positive results and on the possible appearance of 'cracks', so as to provide analysis of progress and a proper solution for the problem.

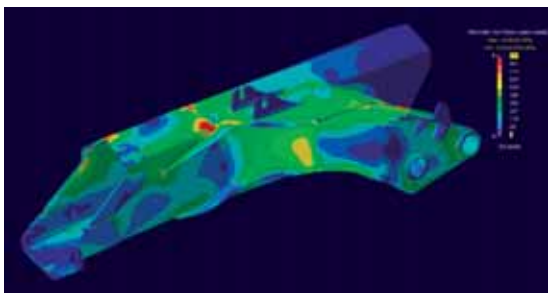
At the end of the test the crane is dismantled completely and each individual component is checked for damage using the instruments described above, involving both the R&D team and other company bodies, such as industrialisation, the technology laboratory and quality control.

To conclude these notes on fatigue tests, it must be remembered that here in Fassi we also carry out these tests on accessories such as the hydraulic jibs or tiltable outriggers, as well as on many of the hydraulic and electrical components that might be affected during the crane's working cycles.





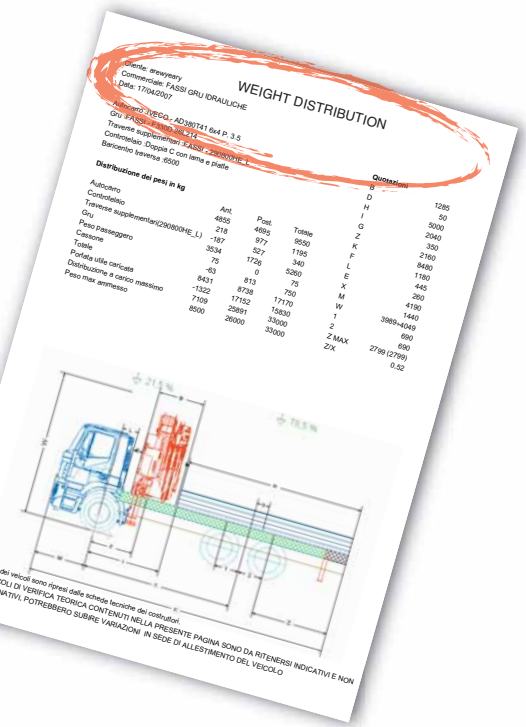




The Fassi R&D laboratories use state-of-the-art analysis instruments to produce virtual simulation of the response of various crane components to the stress induced by an intense working life. These results are then compared with those obtained from the actual fatigue tests. The Fassi experimental procedure is thus based on verification of design principles using actual tests that involve all the crane components.

Organisation of set-up work

The procedures that characterise crane set-up operations reveal to what extent the quality of end results is the fruit of a lot of well co-ordinated attention.



A good set-up starts with the ability to define which choices are best able to respond to the user's needs. Talking to the customer, the ability to translate needs into solutions, clear and reasoned quotes, all form an essential basis for the complete satisfaction of those wishing to purchase a crane. Together with the industrial vehicles dealer, the fitter is the specialist who gives a precise definition of the combined characteristics of crane and truck.

However, there is a second, and deeply synergetic aspect to all this: knowing how to carry out fitting operations according to working rules that are aimed at guaranteeing the best possible result. It is in the workshop that experience materialises and takes form.

An increasingly difficult task

The great technological evolution seen in the field of industrial vehicles during recent years, with increasingly high-performance, highly equipped machines, has forced fitters to equip their own workshops to deal with this, and to engage in 360 degree training. It must be remembered that when fitting out a truck in the workshop, the first job is to dismantle not only the body, but also most of the components positioned behind the cab and along the chassis. This often means removing, storing on a temporary basis and then re-fitting hundreds of components, many of which involve hydraulic, compressed air and electronic connections. There is nothing strange in the fact that recently the average fitting time

has extended considerably, above all since new generation trucks have started to look more and more like high-performance vehicles.

Order, organisation, planning

These are the three principles upon which good workshop operations are based: pursuing these tasks means first of all making precise decisions, in particular as regards how the working environment is structured. This is why the workshops of Fassi partners are designed to use solutions that encourage cleaning and order; areas in which it is possible to dismantle trucks with rational efficiency, following clearly defined plans. When you visit the workshops of Fassi partners you will see how operations are organised in clearly defined work islands, designed to house trucks comfortably, without getting in the way of other workers or creating confusion. Equally important is the use of suitable shelving and containers, where the parts of the vehicle can be stored while fitting is in progress. Likewise the cranes and other Fassi parts, while awaiting assembly on the truck, are stored according to dedicated logistics.

Working with a precise plan

Fassi partners follow a working method organised into job lots on special "planning sheets", where every worker knows exactly what he has to do from day to day and what times need to be respected. These planning sheets are on display and are updated daily at each of the work islands. This may seem excessive in the case of small or medium workshops, but it is also an important means of optimising work. Another essential factor is professionalism during preparation of the vehicle to house the weight and dynamic stress produced by the crane. Set-up requires the creation of supports and subframes that give total structural reliability, located in points that must harmonise with the vehicles original configuration. This means constructing made-to-measure parts based on the set-up plan drawn up and agreed with the customer. These parts must be perfectly shaped and balanced, and must not interfere with the other technologies, but on the contrary enhance the strength and stability. It can easily be seen that fitting a crane is a "tailor-made" operation that requires abilities gained in the field, as well as solid technical basis, combined with a will, or better still a passion, to see each job as a way of proving your own technical and professional skills.

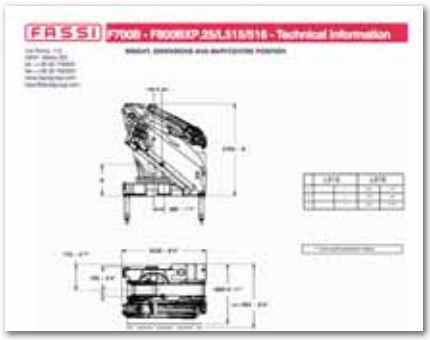
One of Fassi's winning ideas: the integrated, self-supporting subframe for high-performance cranes

When fitting cranes of considerable dimensions (cranes with turntable), Fassi has adopted an original engineering solution: the self-supporting subframe integrated with the base of the crane. This is a structure made from the same high-strength material used for the crane base, and welded to it; its design and construction thus make the structure a self-supporting, releasing the truck chassis from the stress produced during dynamic use of the crane and optimising the discharge of stress along the subframe structure. This is all achieved without the need to add other elements that might have a negative effect on driving response, overall dimensions or weight. It also gives reduced height to the set-up, as the crane is normally installed directly on the truck chassis, merely inserting plates to prevent damage to the contact surfaces.

Fassi electronic instruments for servicing

The instruments prepared by Fassi for basic training, on-line training and constant updates, allow partners to keep the entire company at their fingertips at all times, and provide customers with valid support for a better knowledge and proper use of cranes.

For Fassi, having the largest range of cranes in the world and being constantly at the forefront in terms of the technology employed also means providing solutions to access what is above all a wealth of "information". News and specifications relating to Fassi products and technology are constantly entered in a special database, which is extremely useful for technical and commercial partners, and is unparalleled in this sector for its richness and size. This heritage becomes an immediate means of opportunity to add quality to service, to the advantage of crane operators, giving precise, clear, problem-solving answers. Fassi then thought about improving access to this great collection of news and data, which is growing on a more or less daily basis.



Fassi's extranet Service

On its web site www.fassitech.com the company offers its partners a complete and fully up-to-date repertoire of all the most useful information for normal running of dealerships: Fassi Parts Catalogue - Fassi Technical Sheets - Fassi Technical Info - Fassi Software Update - Competitors' Leaflets - Leaflets' Edition - Leaflets PDF - Promotional Items - Technicomm News

Interactive training: basic user training, on CD

Among the Fassi tools dedicated to basic training on the "crane product", the special "Interactive training" CD is particularly important. This is designed for users, and FASSI partners will not fail to present their customers with one free of charge when the crane is delivered. The CD contains a particularly rich selection of information on proper use of the machine: controls, preparation, lifting and moving, maintenance and repairs, lifting charts and warnings, recommendations and advice of a technical and operating nature. There is also no lack of essential information on the responsibilities of operators, the technical documentation available from the dealer, the protective equipment required to work in safety. Watching this CD, which also includes the option of customised "tours" and gives immediate answers to the main questions that may arise when starting to use the crane, provides an easy introduction to the subject and immediately improves the dialogue between user and machine.

All Fassi's technology in one click

Fassi has also provided itself and its partners with highly evolved on-line tools, a genuine universe of technological crane knowledge that is constantly available on the computer. The web site www.fassitech.com is the main reference for a growing request for training and updates.

This extremely useful site is structured to include a rich menu of subjects and questions, which are expanded in a full, articulated manner. Using the site it is possible to access the full Fassi spare parts catalogue in real time, as well as technical information on the product, updates for Fassi programs/software, technical and commercial information, and lots of useful information on the lifting market and developments in this sector.

The CD's graphics interface has been specially designed to combine simplicity of use and completeness of contents. It also includes a test section to verify the level of training reached.

Co-ordination of electronics and printed matter

For Fassi, the use of interactive CDs or the Internet as an information, training and updating channel certainly does not mean giving up more traditional methods or direct discussions arising from periodic meetings with partners. They are provided with technical manuals, detailed fact sheets and catalogues, which are generally handed over during the training seminars and courses promoted and held by Fassi in house or on the premises of its dealers, throughout the world. Fassi's technical and commercial "library" is updated on a regular basis, and is arranged in a logical order of consultation, making it a constantly available working tool.

F450BXP and F600AXP tested by Detmers in Germany

Spotlight on Wolfgang Detmers of Mannheim, one of Germany's most important container transporters, also specialising in event logistics.

Fassi Ladekrane GmbH on the German market

Founded in 1995, Fassi Ladekrane GmbH has grown continually, until it is now among the leading figures in this sector in Germany, with a market share of almost 15%. Operations are based on certain characterising principles that are particularly dear to the German market: reliability, dedication and quality. The company has developed a national service network, with over 100 centres, covering both commercial business and servicing. The main headquarters are in Gründau, where the main spare parts warehouse is also located. Fassi Ladekrane GmbH has ambitious plans for the near future, which will take it in approximately three years right to the top of the German market; a situation that is of great importance to Fassi but also involves a great deal of work, bearing in mind the presence of many competitors and consolidated attention for German-made products. The Fassi Ladekrane GmbH team is firmly convinced that Fassi quality and innovation will make all the difference with German users.

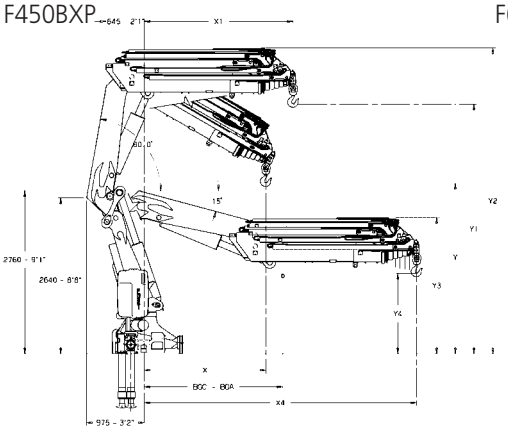
Afrika Afrika: transferring the circus using FASSI heavy cranes

Once again, 75 containers need to be shipped over 750 km from Oberhausen (Germany) to Zurich – that is no problem for Wolfgang Detmers, container shipping and event logistics specialist.

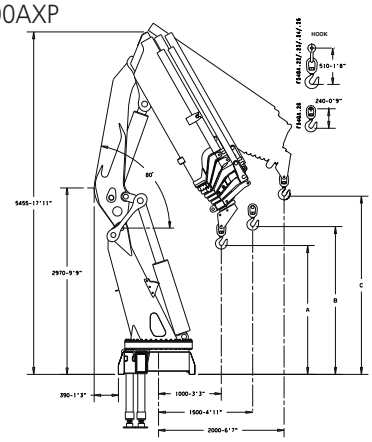
But let us return to Oberhausen: Monday morning sees the arrival of two truck-mounted cranes, which form part of the fleet of 35 four-axle trucks plus a dozen other special vehicles.

In the shadow of the Big Top, in which the circus acts had been performed right up until the day before, loading of all the backstage infrastructures begins. The cranes take up their positions near the "stacks" of containers, and start loading them one by one onto the articulated trucks and trailers – thanks to a hydraulic reach of between 14 and 16 m the cranes do not have to move much, which speeds up loading operations considerably. The 75 white rented containers house offices, kitchens, living accommodation, stores and so on – all the commodities required by a

F450BXP



F600AXP



In these pictures, some of Wolfgang Detmers fleet of Fassi cranes "steal the show" while moving an entire circus stored in 75 fitted containers.

Identity card

Wolfgang Detmers, container shipping agent and specialist in event logistics. The true professional in the shipping field, this gentleman from Mannheim is considered a pioneer in Europe. In 1978 his company began transporting office containers, which at that time were not widely used, and for a number of years now his preferred combination has been that of new Scania trucks and the hydraulic crane technology provided by Fassi, the world number two. The reasons for this are more than clear: these are light-weight cranes with considerable reach, precise controls (very important for reaches of up to 16 m) and excellent service provided by Fassi's Germany headquarters, which works in close co-operation with approximately 50 vehicle manufacturers and their partners.

moving circus. Detmers arrives early and oversees loading of the containers in person, as they have to reach Zurich in a set order. A special truck fitted with a Fassi F450BXP is also used for this operation. This truck was supplied by the firm Apeltrath, friends from Mühlheim/Ruhr.

For his own fleet of vehicles, Wolfgang Detmers prefers to use the F450BXP and F600AXP.

Detmers, who has been a customer of Fassi Ladekrane GmbH for years, counts on his Fassi type F450CXP.25 and F600AXP.26 cranes, which are used exclusively at hook. The F450BX.25P provides 14.40 m of hydraulic reach, the F600AXP.26 is larger and gives 16.10 m of hydraulic reach with a lifting capacity of 3,100 kg, sufficient to deal with the heaviest containers. The cranes are folded away transversally with respect to the direction of travel, with a width of 2,465 mm and a weight of approximately 5.5 t according to the version. Safety has top priority, and for this reason each of the cranes is fitted with the FX (Fassi Electronic Control System, a new electronic moment limiting device) and also has an easy-to-use radio control with display. In this way the driver knows exactly "what he has hooked". The Software developed specially by FASSI for the Evolution series provides a high level of versatility, safety and comfort, along with an automatic indicator of service intervals and self-diagnosis in the event of problems.

With Detmers, Fassi cranes travel 100,000 km per year

With his 120 assistants and 45,000 containers carried, Detmers is convinced that he has an advantage over competitors in terms of his fleet of vehicles. "Our range of products includes not only vehicles with four outriggers, cranes with continuous rotation, radio control, load sensing and special low superstructures with fold-away twistlok, but also low subframes. Our trucks are specialised vehicles, and places in the driver's cabs are highly required".

His company owns 35 four-axle trucks fitted with hydraulic cranes, 12 articulated vehicles, 5 tractors with tandem semitrailers, while cradle semitrailers and other special equipment also form part of the fleet. Every year the trucks travel between 90,000 and 120,000 km on road. A chassis lasts 5 years, but the Fassi cranes last 10!

The 75 white rented containers house offices, kitchens, living accommodation, stores and everything else that a moving circus requires. A special truck fitted with a Fassi F450BXP is also used for this operation. This truck was supplied by the firm Apeltrath, friends from Mühlheim/Ruhr.

How to read the “lifting capacity chart with jib”

When the crane is fitted with hydraulic jibs, Fassi develops specific lifting capacity charts showing the capacity of the hydraulic jib at the most significant reaches, and highlighting the relevant loading curves.

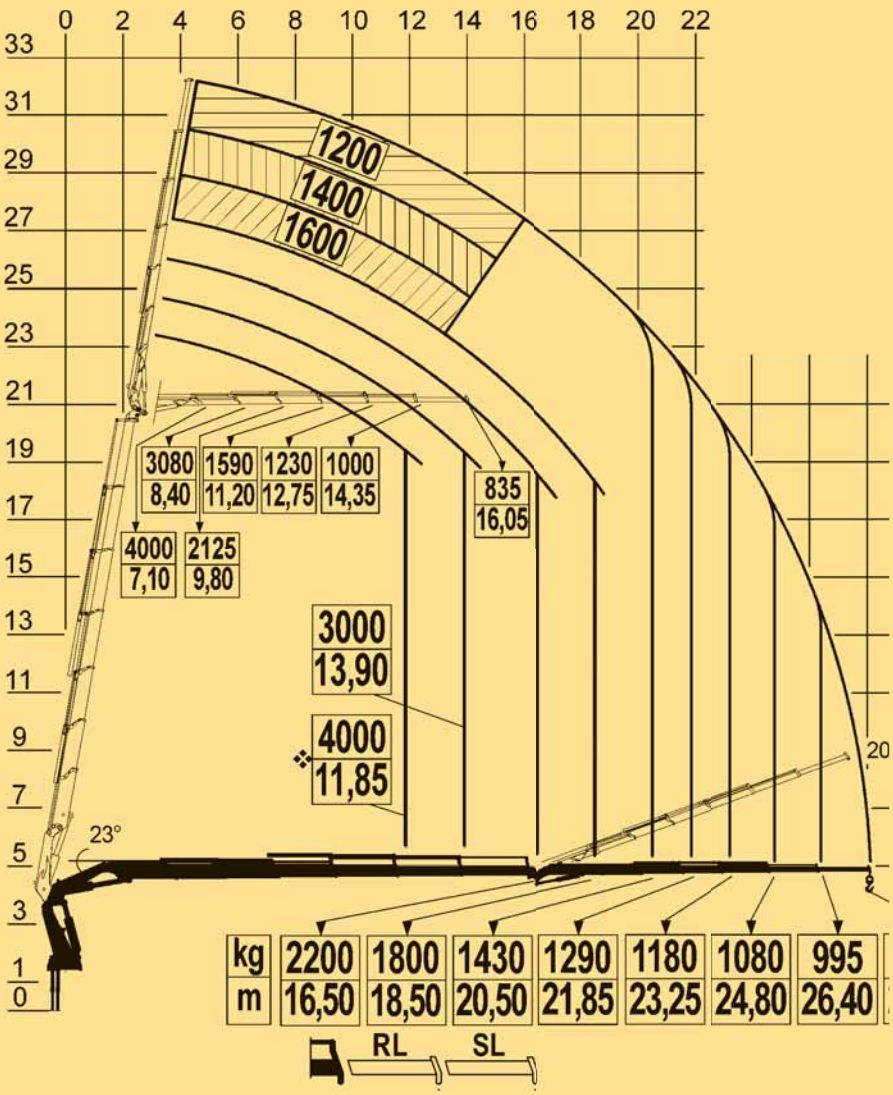
Fassi lifting capacity charts are dynamic

The decisions taken when defining the lifting capacity charts supplied by Fassi, which are drawn up with maximum precision and clarity, can also be seen in the lifting capacity charts for cranes with hydraulic jibs. The values declared can be used in practice, guaranteeing full operating safety, and the charts are dynamic. This means that at the stated reach the corresponding load can actually be lifted and can follow the curve shown. It must also be remembered that Fassi charts take into account deformation of the rods and extension booms when configuring vertical lifting. Furthermore, all indications are clear and easily legible and comprehensible, both as regards booms, loads and lifting curves.

Graph for the hydraulic jib

When looking at how Fassi draws up and provides lifting capacity charts for cranes fitted with hydraulic jibs, you can see that it shows the loads that can be lifted with the hydraulic jib in a horizontal position, and the relevant lifting curves to reach a completely vertical position. It also shows the loads that can be lifted with the crane vertical and fully extended, and the horizontal jib. Reaches take into account deformation of the extension booms of the crane, so that they represent real working conditions.

In this case also it is important to underline the fact that there are a number of lifting capacity charts on the market for cranes with hydraulic jib that may at first glance seem more complete than those provided by Fassi, as they give a graphic representation of three or four working configurations for the crane/jib combination. In

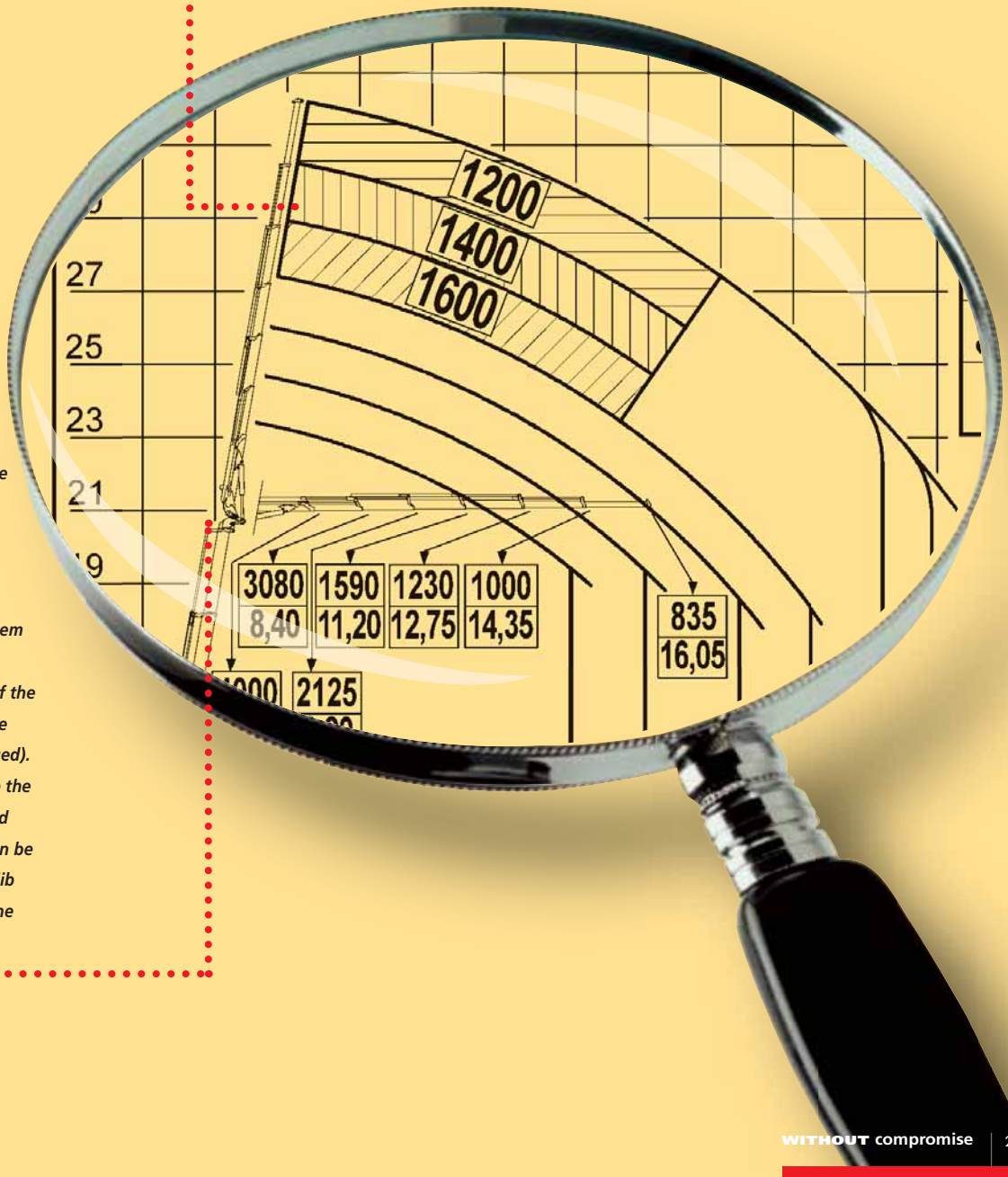


reality the opposite is true! These charts, unlike Fassi charts, do not show the loading curve, and this makes it practically impossible to decipher the real behaviour during lifting or when the lifting moment limiting device will cut in for all intermediate configurations. What is more, these lifting capacity charts are static.

Data on the charts with respect to use of the lifting moment limiting device

Finally, it should be noted that these charts, unlike the Fassi charts, relate to intervention of the lifting moment limiting device, so that the load stated for the corresponding reach cannot actually be lifted at that reach, but will only be able to reach it using the extension booms. To lift the load it is necessary to shorten the distance from the centre of the column to the load by approximately 10% or decrease the load itself by the same percentage.

As regards the lifting capacity chart for cranes fitted with hydraulic jib, nothing is left to doubt: Fassi's clearness and professionalism mean they provide a chart in which performance is "actual" and can be achieved with maximum safety for the user.



In the Fassi charts, to complete the information, the angles of the inner boom in loading configuration are also given, together with the angle for application of the Prolink system to the articulations of the hydraulic jib (within the 20° of the Prolink the performance of the hydraulic jib remains unchanged). Finally, and again to complete the information provided, the load for manual extensions that can be combined with the hydraulic jib are shown at the bottom of the chart.

Interview with ENRICO GUERINI

Training Team Fassi

The training activities developed by Fassi for its partners are an essential component in order to get to know the characteristics of Fassi technology and how its cranes have evolved. Through its training activities, Fassi transfers information that is of great importance to ensure that its partners provide users with ever-better service.

"The Fassi Campus is a place in which to gain knowledge of the cranes themselves and the technology behind them". This summary, brief but extremely to the point, in harmony with his character and the way he expresses himself as a professional trainer, Enrico Guerini identifies the significance and purpose of the Fassi Campus. This term refers not so much to a physical location (it can be at the company itself, or in the training hall of a dealer in any other part of the world), as to Fassi's permanent training ideal. "Today it is of strategic importance to realise that you never cease to learn. This is because technology evolves, and innovation is not a rare event, but an active component for those manufacturing at certain levels. For this reason Fassi is firmly behind training, as it considers this an essential factor to ensure proper understanding of all the aspects and unique values of its products".

On the Fassi campus there is a training course for every need

"Our campus offers an extremely wide range of training opportunities, both for partners and for their staff and assistants. We offer basic courses to teach the meaning of evolution in the crane sector, and the general characteristics of Fassi technology: hydraulics, electronics, control and safety devices, practical seminars for practical troubleshooting of technical and working problems, and courses on use of Fassi software.

These are combined with specific courses on certain aspects of the technology that we consider particularly important. Training sessions are specifically aimed at mechanical components and practical operations on the crane during fitting or servicing. We also organise special courses when offering completely new technological solutions or devices that are the fruit of our own research. The training and re-training of our partners' technicians is also of fundamental importance, as they will in turn be training the end users. This complex, multidisciplinary operation is developed in house and all over the world, and we are also prepared to provide made-to-measure courses to cover the specific needs of our partners".

Fassi cranes carry the most important technological heritage available world-wide in this sector today

"In just a few years the company has come a very long way, overtaking its competitors in both the system and application software. Today, when you purchase a Fassi it means you will be working with the most highly evolved machine on the market. It is therefore obvious that we are talking about cranes that deserve to be properly known by their users, so as to appreciate their full value. The task of transferring this information is an integral part of the activity of Fassi partners. However essential this may be, it is not just a case of transferring knowledge of how to work the crane properly, but also of making the user understand the validity of his choice. Our training activities, regardless of their subject and the level of information, always feature two components: one of a more pragmatic nature, to encourage learning, and another, which is sometimes no less technological, but which is designed to present Fassi's involvement in innovation. Each one of our cranes is accompanied by a full, highly detailed manual, with the addition of tools that will make learning about the machine's working characteristics even easier. However, by their very nature, the user and maintenance manuals are unable to provide the detail that even one well organised training course can provide".

Fassi Glossary

Catia - Kinemat - Fem

Procedures for the design and analysis of prototypes, used by the Fassi R&D Centre, which precede fatigue tests. The latter confirm the results of computer-aided design (CATIA), kinematic analysis (KINEMAT) and limit state structural analysis using the finished elements method (FEM) on complete, fully-functional prototypes. This operation is renewed and perpetuated on each new model.

Fatigue tests

Strict test program carried out on the prototype of a new Fassi crane before it goes into production. These tests are aimed at confirming the validity of the new product, both from a structural point of view and in terms of performance. Thanks to the fatigue tests, designers can evaluate whether or not their work was carried out properly, observing how the new machine responds to the stress it will have to withstand during its working life. Cranes are in fact subjected to as many as 200,000 working cycles and more.

fassitech

Fassi web site (www.fassitech.com) specially dedicated to training and re-training activities for crane products. This is an interactive reference point in which you can find a vast and well-organised collection of information and technical/professional product databases, Fassi spare parts catalogues, software programs and all the latest news from the lifting market.

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4 QUALITY OF PARTNERSHIP

5 QUALITY OF TRAINING