CONNECTIONS 26

In this issue:

020.1254

R&M

Convincing cabling solutions

R&M celebrates forty successful years

2004 is a special year for us: it's the year we celebrate our fortieth anniversary. But we won't make that an excuse to wallow in nostalgia or rest on our laurels. «Fit for the future» is still the R&M slogan in our jubilee year. We won't be reinventing the wheel, of course, but we'll keep on taking a critical look at what we can do even better in order to offer you, our customer, added value.

Customer advantage with a family business
Our principal endeavour is and remains to continue as a medium-sized family business, which gives us the benefits of independence and our customers the benefits of our great flexibility. This reflects our long-term company policy – we don't pursue short-term, short-sighted profit maximisation.

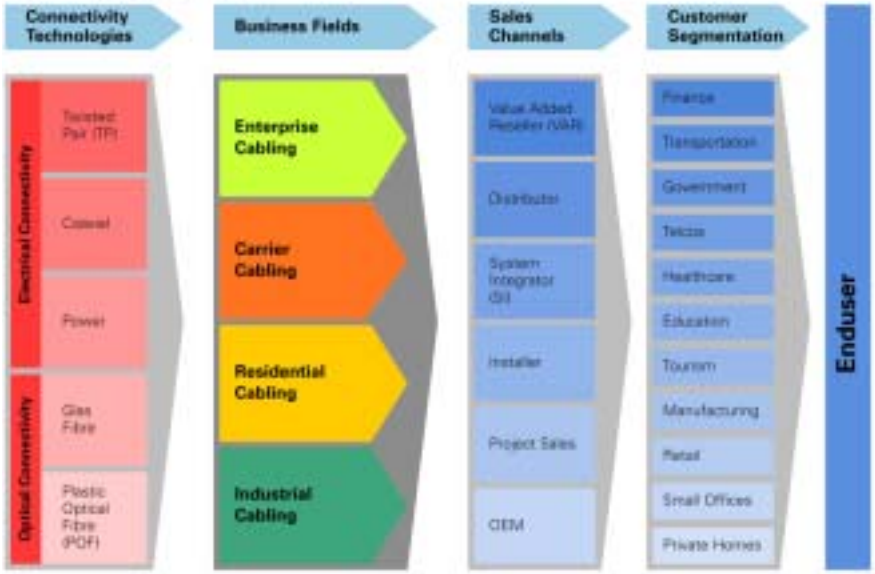
Uncompromising customer orientation
In the forty years since the founders of our firm developed the first telephone branch box, we have filed more than a hundred international patents. These new developments have always resulted from close engagement with the needs of our customers. For the future, too, it's important for us to continue our customer-oriented, innovative culture. That's how we intend to drive ahead with our technological lead and win further market shares.

Clear strategy
Our philosophy of not doing things that others do better underlines our commitment to close cooperation with our suppliers and marketing partners. Our business model, moreover, has a clear structure, organised into technologies, business segments, marketing channels and customer segments – a unique structure for a firm in our industry. This in turn highlights our clear focus on the manufacture and marketing of Layer 1 connectivity products. This, in addition to a strategically important spreading of risk over a number of supporting pillars, also emphasises the consumer benefit from a broad, modular product range.

A family culture
We at R&M – and this includes every individual employee – have proved that, even in a difficult economic environment, we can win market shares.
This is so not least because we have constantly directed our energy towards new market opportunities and product innovations, rather than sitting in a corner wringing our hands.

We, the owners, are quite simply delighted to see our customers getting excited about our solutions and our staff enjoying their work.

R&M Business Modell



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Number 1 for Layer 1
We never lose sight of our long-term aim, and we're getting closer to it step by step. You can also see this in the latest «Success stories from R&M». Thank you for constantly presenting us with new challenges. I hope you will enjoy reading the current issue of our customer magazine, which this time contains, very fittingly, forty pages that will give you an overview of our activities worldwide.

Get More @ R&M – precisely!

Martin Reichle
CEO


010.3060.1

In this issue

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Installations that look ahead

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In a newly built residence in Bäretswil, Switzerland, the fully networked multimedia future has begun. We are not talking about another research project but sound installation work with one foot in the future. It allows the application of innovative solutions from R&M, making full use of the potentials of RCC45®, POF and structured home cabling.

As pacemaker of modern home cabling, R&M has introduced all the tools to the market that are necessary to bring the residential sector up to speed with the requirements of our multimedia and information society. Development and product management at R&M are characterised by a keen perceptiveness of the residential cabling market needs and of the feasibility of innovations. Here are some examples:

R&M has formulated the structured home cabling concept working with the key elements communication distributor, star topology, and multimedia outlet. This provides architects, planners, installers, contractors and real estate companies with a precise and computable course to follow, which takes all expected standards into account. All components are modular and therefore highly adaptable. Plus they are user-friendly and open for future technologies yet compatible with media, LAN, and telecommunications interfaces in use today.

The multi-talented RCC45® R&M builds up on the well-proven principle of the RJ45 interface, following logical and practice-oriented lines. The plug interface features two additional, solid connection openings in the plastic body to accommodate either power contacts or ferrules for POF connections.

Star cabling leads empty data tubes to every room.

The very first POF house

get more

Residential Cabling

Residential cabling and the structured home cabling concept offer real added value:

- Ease of use for users and installers
- Multimedia options in every room
- Availability of all services
- Satisfying all information and communication requirements
- Style, safety, usability
- Future-proof cabling
- Added value to the real estate

@ R&M

The holders for additional cables are simply snapped onto the plug. Using the handy tools and terminal clamps from R&M, fibers and RCC45® modules are installed within minutes.

R&M have also well positioned themselves regarding plastic optical fibers (POF). In private residences, home offices, and the areas of health and recreational services, POF are going to be a viable supplement of copper cabling and the future-focused transmission medium for fast IEEE 1394b networks. High-quality apartments need a multimedia backbone. With the RCC45® and the POF product range plus the handy tools it can be installed right away.

The trend towards multimedia home cabling for everyday use is obvious. A standard is on its way. Yet, architects, planners and installers are not yet entirely familiar with the matter. They need empirical data, e.g on the sizes of empty tubes, bending radii of optical fibers and the possible combinations with wireless LAN. The best provider of the required know-how is R&M.
Supported by and in cooperation with R&M, the companies Levy Fils AG, Basel, and Hustech, Gossau, are implementing all these aspects of modern home cabling in the reference project in Bäretswil. The building owner and his contracted suppliers deliberately opted for a future-proof network. The future dwellers will not only enjoy all the advantages of the R&M multimedia outlets but the diverse options the RCC45® offers – and they will live in the **first POF house of Switzerland**.

Digital lifestyle – what users want

Modern home cabling is the expression of an attitude to life, the digital lifestyle. This means individuality, comfort, and multi-optionality. Private customers and users want:

- More performance and bandwidth
- Discretionary use of media
- Open choice between access systems
- Services availability – at any time
- Networking of different devices
- Flexible positioning and applications
- Comfort, safety, ease of use
- Style and design instead of cable spaghetti

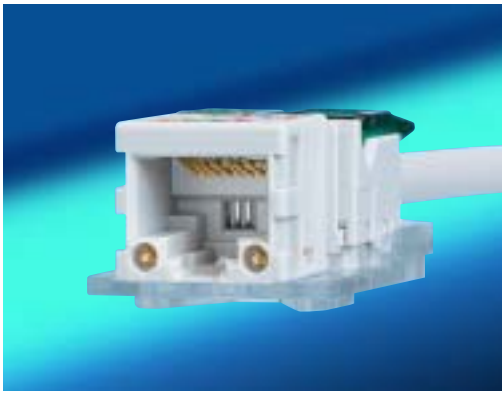
RCC45® – the connection talent

MORE MODULARITY, FLEXIBILITY, SAFETY AND INVESTMENT PROTECTION. WITH RCC45® CONNECTION TECHNOLOGY THESE AREN'T JUST PROMISES, BUT HARD FACTS.

The additionally integrated apertures in the plug interface make the RCC45® the heart of highly variable cabling systems.

- Modularity: Cat. 5e, POF, power – one module can do it all.
- Safety: protection against electromagnetic interference in POF transmissions.
- Investment protection: your smooth migration to the technology of the future, POF.

RCC45® brings more flexibility to your network!



RCC45® with power contacts

Get More @ R&M

40 years R&M 1964-2004

R&M
Convincing cabling solutions

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www.rdm.com

Extended Office Cabling: integrated installation for offices


010.3042

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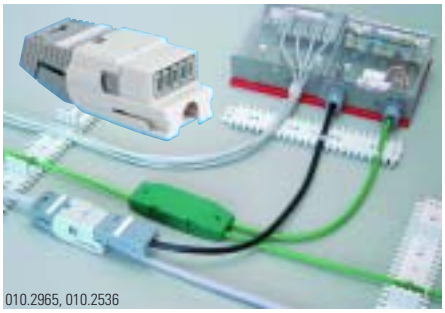
The separation of data, voice and power in the planning of an installation up to the completed workplace is a thing of the past. Today, the keyword is integration given that the new and flexible working practices and the demand for high-performance communication channels call for system solutions. That's what extended office cabling from R&M stands for.


090.2020

Comprehensive installation solution for data, voice and network connections at the workplace.

Up to now, the electrical installation of an office environment has been looked at, planned and executed separately for mains current / bus, data networks, and telecommunications. As a rule contracted suppliers and planners concentrated on individual areas, only seeking cooperation at project level. As a result, little attention has been given to mutual interaction between the components or possible synergetic effects, and points of contact have been inadequately coordinated. This holds the risk of diminishing performance values, increased project costs and in the worst cases even system components failures.

More demanding requirements on the design of the working environment are moreover making coordinated system solutions absolutely necessary: temporary work areas and discrete options for positioning permanent workplaces, more flexibility for spatial rearrangements and changes of use, together with high security of data transmission and power supply, are increasingly being demanded by customers and users. In permanently changing requirements of application all connections have to be highly available at all times.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The cable outlet.

Extended range of products

R&M are responding to these demands, constantly extending their product range to cater to the power supply in floorbox or wall duct systems. With their service programme extended office cabling (EOC) and respective in-house expertise, R&M can supply overall office cabling concepts from one single source.

EOC is already effective at planning level. Everyone concerned gains unmistakable added value and gets to the objective faster. A modular product range, easy planning and short installation times ensure high economic efficiency and flexibility for customer request.

From cable outlet to the deskbox

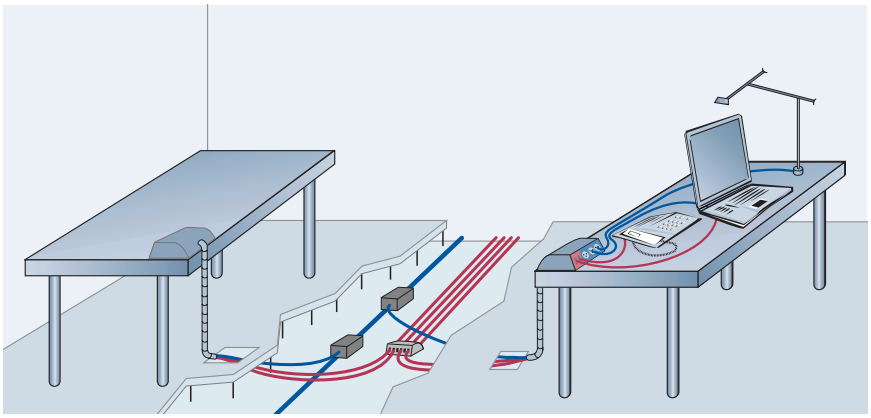
The EOC product range also embraces the R&M quality programme for data and communications networks with connection solutions for wall ducts and consolidation points. Plug connectors with three safety levels, cable management systems, and accessories for solid integration with existing infrastructure complete the package.

On top of to the convenience for end users, EOC means efficiency advantages for installation professionals. With the cable outlet an interruption-free, safe tapping can be fixed into a customary five-core mains round cable for the power supply within 40 seconds.

Combibox and Interbox build the modular installation system for various stand floors. These housings are available in numerous, factory-equipped versions or can be configured to individual requests.

The flexible wiring duct is used where cables need to be routed in a neat and protected way – especially from wall and floor boxes to the desktop. All components can be combined or separated, be rigid or flexible, no tools needed.

The connection solution for the desktop is available in trendy transparent colours. The deskbox accommodates data and communication connections, jacks and switches, as needed.



The data-only CP is set up in the double floor with a double deskbox. Up to 16 data connections allow the connecting of six to eight PC workstations, where the factory-mounted deskboxes are placed. There are direct power supply connections in the Cable Outlets. The cables are neatly routed through the flexible wiring duct.

Plug & play for field sales representatives


010.3041

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project
co-management:
Christian Reck

Wandering around with network cables? Where to plug in the laptop to the mains? Helvetia Patria has put an end to all that. When field sales representative come together for a meeting, their computers are powered and connected in no time.

In their headquarters in Basel, Helvetia Patria Insurance are introducing the extended office cabling (EOC) programme from R&M. In a first step, the conference centre was the pilot project for the flexible wiring ducts and desktop boxes, then R&M developed an overall solution for a redevelopment project covering mains and network cabling, and outlets installed in columns and walls.

Field sales representatives meet in conference rooms for their consulting and training sessions. Before the meetings, they'd be «crawling around the table legs», as one of them puts it, to reach mains and LAN connections in floor sockets. Precious time was wasted hooking up the laptops of a team.

Now meetings can start immediately. Flexible wiring ducts and desktop boxes from R&M's EOC programme bring all the connections onto the table, directly to the seats. The laptop is hooked up and powered in no time, training and data exchange can begin. Plug & play – that really suits the mobile, flexible working practice of the field sales force.

Advantages of a LAN cabling compared to WLAN

- High performance reliability
- Higher QOS (Quality of Service)
- High data rates
- No need for any special LAN cards
- Simpler configuration of the PCs
- Ease of use (no switching between network cards)
- Familiar, routine handling
- Controlled network access
- Higher protection against eavesdropping and hacker attacks
- Less EMC effects (minimising health risks)

Helvetia Patria Group

Helvetia Patria Group is a Europe-wide all sectors insurance company with key competence in risk management (life and non-life insurance, re-insurance) as well as pension plans. It includes subsidiaries and associated companies in central and southern Europe. The company is based in St. Gall, their Swiss head office is in Basel. The company has a staff of about 2300 in Switzerland. The group collected a total volume of premiums of over CHF 5.1 billion in 2002. Head office in Basel is distributed over five administrative buildings, interconnected over a Gigabit backbone. There are two computing centres with approx. 300 km of network cables and 20 distribution rooms – equipped with R&M installations – networking around 1000 computer workplaces.
High access and data availability have top priority in today's insurance business.


010.3013
Field sales representatives can start their meetings immediately, no time wasted.

«A further advantage is that all the cables are bundled, protected, of the right length and remain at the seats. We don't need to worry about the conference rooms anymore or find special cables», says Gilbert Widmer, Head of Infrastructure Operation Network Services of Helvetia Patria. He emphasises that «Because of our responsibilities towards our internal and external customers as well as our field sales force we must offer a certain standard and absolutely reliable infrastructure for data communications». That includes an organised, highly available cable supply in the conference rooms.

The entire EOC product range at work
Helvetia Patria also want to benefit from the high standard and ease of installation in the reconstruction of administrative building no. 3 at St. Alban Anlage. In August 2004 the 30-year old building will be completely renovated and equipped with state-of-the-art technology, including the entire EOC product range. Gilbert Widmer explains, «The competent support and individual solutions convinced us».

An example: for architectural reasons many rooms would not allow the installation of wall ducts. The solution was adapted conduits and outlets in the columns. The overall systematic concept and the coordinated planning were further advantages. The LON-Bus cabling could thus be integrated into the conduits right from the start. Even the electrician liked the EOC programme. Gilbert Widmer: «No screwdriver is needed to wire the cables.»

get more

Extended Office Cabling

- Transparency
- Flexibility
- More ease of use
- Individual combinations
- Investment protection
- Data security

@ R&M

OSP solutions: ready for anything!


010.3043

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Thanks to the worldwide existence of telecommunications structures, any piece of information can be sent around the globe in seconds. That is an enormous technical achievement, since the largest part of the networks used is exposed to the harshest environments. R&M makes sure things run smoothly.


010.3014
R&M is a leading supplier of OSP solutions in Cuba.

Networks outside the four private walls are facing increasingly stringent requirements, too. Increased transmission speed, more bandwidth, international interconnections, and accelerated technology developments have their immediate impact on the OSP sector (OSP = Outside Plant, i.e. networks out of doors). Here, it is essential that cables and connection interfaces withstand anything nature comes up with, year after year: storms, rain, heat, cold, UV radiation, lightning, salt, dirt, fungi, rotting, vibrations…

Millions of kilometres of cables and transmission links span the world today. Existing copper networks are constantly extended or replaced by fiber optic networks. Each breakdown results in enormous costs for all parties concerned, not only for repairs but also for consequential damage. That's why operational reliability is more important for network operators than ever.


010.3015
R&M cross connection cabinet in downtown Havana.

Updated and extended product range
Responding to these trends and quality requirements R&M have upgraded and optimised their entire OSP product range. First, the products had to undergo numerous tests and fulfil the standards. All OSP products passed these tests with flying colours. In addition, before delivery each individual component is thoroughly tested on the basis of a stringent quality management.

In the face of future requirements, all products were designed with specific emphasis on reliability, easy handling and maintenance, ease of installation, functionality, price and suitability for customer-specific applications. R&M's OSP products follow a modular concept, and complement each other perfectly. The intelligent conception enables copper and fiber optic applications, and hybrid solutions are possible too.

From distribution cabinets to subscriber terminals
R&M's OSP product range covers all sectors of communications networks, from distributors to subscriber terminals. In the CCC (cross connection cabinets) area R&M offers an extremely space-saving solution of leading quality: up to 3200 pairs can be terminated in copper-only applications; purely fiber optic applications allow up to 480 terminations. The R&M solution is particularly ideal for hybrid applications.

Further advantages are the simple installation, neat arrangements, the very high ease of installation, and optimum accessibility thanks to the large door opening angle of 110°.

Splice closures for the most exacting requirements
R&M's splice closures programme is of universal use as well. The compact, cylindrical plastic housings fulfil the most exacting requirements in above and below ground applications, connecting, branching and distributing network cables. The splice closures are made of a high-density polyethylene (HDPE). This tension-crack and UV resistant material is absolutely ideal for outdoor applications. Most cable manufacturers use this well-proven material for their cable sheathings. The new, mechanical cable entries allow tool-free installation. In copper cabling, the splice closures can take up VS Compact connection modules for up to 100 pairs, or dropwire modules for up to 10 pairs, or simply accommodate single connectors.

The splice closures for fiber optic networks all accommodate R30 and R40 splice trays. The cable entries can be pre-

pared as fixed, flexible or as dropwire entries, according to requirements. All splice closures feature leak testing valves and earthing, and are absolutely watertight acc. to IP68. R&M's splice closures are ideal for pressure-free and pressure-controlled cable systems.

The resistant Venus
Venus is used for above-ground distribution point terminals as well as subscriber terminals. The housings are made of UV stabilised ASA (acrylonitrile styrene acrylate), an excellent material that is also used in the automobile industry, sports and recreation. The material's characteristics are high-grade resistance against weathering, ageing, yellowing, high impact and scratch resistance plus a very wide temperature range. All metal parts are stainless steel. The large opening angle of 130° (snap-in cams) enables simple and fast mounting. Venus can be equipped with VS Compact connection modules (up to 100 pairs), VS Standard connection modules (up to 50 pairs), dropwire modules (up to 16 pairs) or with up to 12 fiber optic adaptors.

Jointly developed with customers
The R&M dropwire modules are designed for OSP applications. They are the link between dropwire and conductor cables. Dropwire cables are aerial single-pair copper cables of large diameters used between distribution points and subscriber terminals. The modules are usually snapped onto DIN 35 rails in splice closures or Venus housings.

These dropwire modules are the fruit of close customer cooperation, meaning that all requirements could be covered right from the word go. Particular consideration was given to resistance against environmental effects. On top, these modules are also designed to withstand a wide temperature range.

Single and repeated wiring of the cables does not require tools. Transparent covers allow visual testing of the contacts. Moreover, the modules allow parallel interruption-free measuring with standard tools.

Weather-resistant connection module.

Venus in a tough spot – put to use in Switzerland.

Splice closures under adverse conditions in South Africa.

One stop shop for highspeed solutions


050.0617

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More data traffic, more bandwidth, more speed... the trends are mutually accelerating. Network operators are on the lookout for higher performance components in order to keep up with requirements. That's where fiber optic solutions get in. Only they need to adaptable – like the FO product range from R&M.

Carrier and operators of industrial and corporate networks who think ahead will be upgrading key areas of their infrastructures today, since the question of capacity can already be raised tomorrow. However, the upgrade can only be gradual because next to efficiency advantages, economic effectiveness is paramount and investments must be wise. Network quality and security may never be neglected; on the contrary, they should be improved.

R&M is a one stop supplier of solutions in copper and fiber optic technology, as well as highspeed and security applications. Their innovative solutions allow networks operators from different branches to extend existing infrastructures on a modular basis, guaranteeing highest security and quality.

Particularly in the area of fiber optics R&M supplies innovative, future-proof and precisely matched components that flexibly integrate into the customer situation and operational area. R&M's fiber optic network solutions count on the connector technologies E-2000™, SC-RJ, and now also LC. These first-grade products can guarantee the realisation of capacities and distances that will be the target tomorrow.

Carrier, enterprise and industrial cabling solutions

All it takes for network operators to jump to the next highspeed generation is the fiber optic management system (FOM) from R&M. The FOM system fulfils all the requirements of wide-area networks, local access networks and data centres. The intelligent and fast cable management system even helped the computing centre of the Swiss healthcare group Roche take a quantum leap (see pages 22, 23).

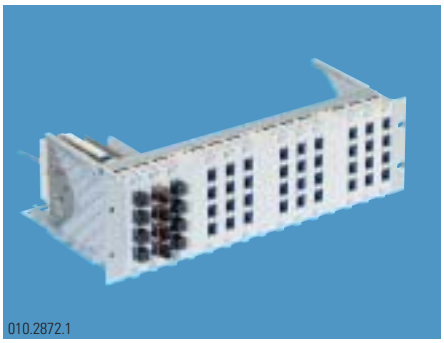
The FOM system enhances network security because cables, pigtails, adaptors and connectors are fully protected. Consistently large radii and solid cable guides additionally support the cables' long-term stability, guaranteeing a secure data transmission. The neat arrangement of the connectors at maximum packing density ensures convenient patching and controlled access to every single fiber.

For enterprise cabling R&M's VISION-system is the absolutely ideal fiber optic complement. The fiber optic backbone system is based on the SC-RJ technology (smallest SC Duplex plug connector), representing a cost-effective, modular extension of existing copper cabling systems all the way to the outlets. The unparalleled, compact and RJ45 compatible SC Duplex design makes installation much easier, requiring much less space because existing RJ45 module holders can be used.

The SC-RJ connection technology from R&M also comes to full use in industrial cabling, e.g. in specifically developed housings and small distributors, meeting protection index IP 67 and 54. Packing density, security, modularity and adaptability to given conditions are further strong points. Entire production facilities can be equipped with state-of-the-art highspeed networks – as demonstrated by VW in Mexico (see page 21).


010.3025

R&M's patented SC-RJ: the smallest SC Duplex connector worldwide.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With VISIONsystem modularity and security come first.

The network challenges of today and tomorrow

- Convergence of voice and data
- Growing PC workstations
- Universal online services
- Intensive use of intranets and extranets
- Mass communication by e-mail
- Networking of locations
- Increasing demand of:
  – bandwidth
  – security
  – real-time capability

get more

Fiber Optic Solutions

Fiber optic components from R&M help carriers and operators of corporate or industrial networks to achieve:

- more economic efficiency
- higher security
- future-proof infrastructures
- shorter installation times
- faster cable management
- comfortable handling
- higher packing density

R&M

Sales International

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In June 2003, our separate international sales divisions were brought together under the roof of Sales International. Connections spoke with Werner J. Signer, Head of Sales International, about the new organisational structure.

Mr Signer, what were the reasons for setting up Sales International (SI)?
For one thing, we wanted to exploit synergy between the different sales divisions (see graphic 1) and optimise their resources. It also enabled us to boost the empowerment and motivation of our sales staff, because every division and each salesperson now has clearly defined competences and designated markets. Another important factor is the increasing convergence of LAN (Local Area Network) and WAN (Wide Area Network) technologies to form project operations, which can now be handled centrally. It's no longer necessary for salespersons from both divisions to visit one and the same customer.

How is SI integrated into the firm?
The basis for our integration was the introduction in summer 2003 of a matrix market-operations organisation (see graphic 2).
SI, like the other eight R&M subsidiaries, is now a marketing organisation (MO), responsible for marketing operations in the vertical direction. This means that SI operates on the global market, with the exception of those countries and regions in which we have subsidiaries.

Business Managers (BMs) are responsible for the horizontal marketing direction (channelling) (see graphic 2), so very close cooperation with the BMs is consequently essential

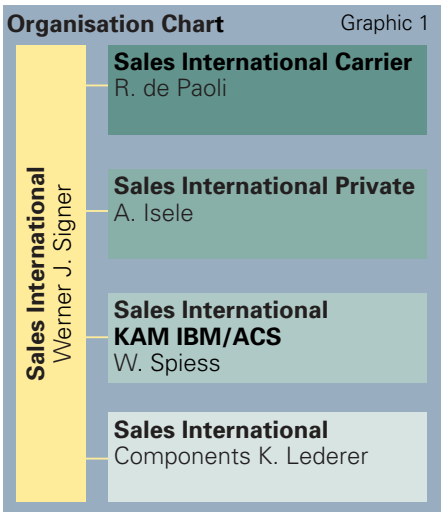
Does this give SI a very broad range of tasks?
Indeed that's so. Although SI is a homogeneous division as far as the organisation is concerned, the markets have to be approached in very contrasting ways: the carrier business is mostly long-term and project-related, whereas LAN and enterprise business is faster-moving and we go through distributors. The component business is equally fast-moving but direct, quite in contrast to OEM (original equipment manufacturer) business, which is very customer-oriented and requires a key account manager who possesses detailed knowledge.

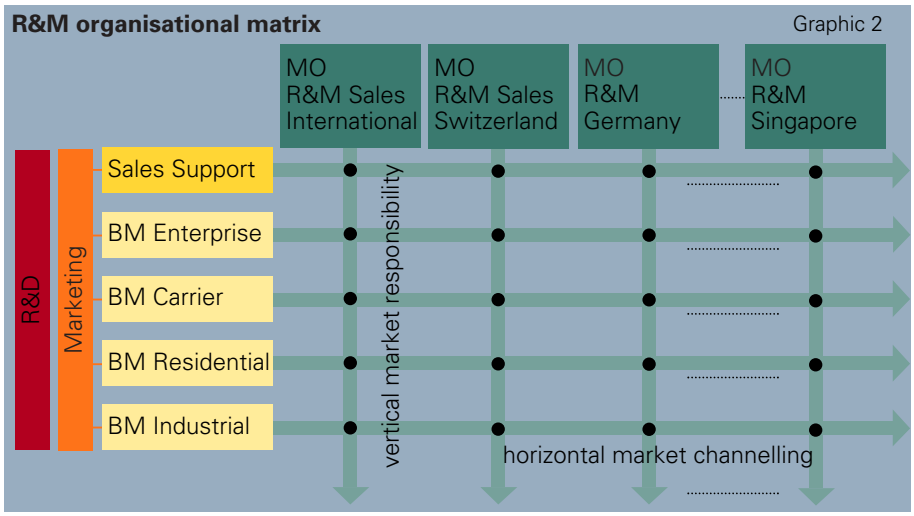
What do you find most important when making contact with your international customers?
We have a passion for putting through successful, long-term business deals. That requires that we enthuse our customers. Although our products are outstanding, customers see the difference between us and our competitors less and less in terms of the products and more and more in terms of «integral service». That means being with the customer personally, knowing him well, being prepared to listen to and understand him, identifying what he wants and offering him solutions that will meet his needs and are worth their price. You can only generate enthusiasm if you are enthusiastic yourself. We give our customers confidence by being reliable, and we build up trust that way. At R&M there are no anonymous departments in the background, but human beings with names that can be contacted and called up at any time. So, besides the salespersons, the customers usually also know the product and business manager as well as the management board.

Do you focus mainly on country-specific factors in your work?
Yes, absolutely. In fact, our focus depends on the market segment. In the carrier business, for example, our focus is on Central Europe, Eastern Europe and the Middle East, while for several years we've also had a strong presence in Cuba. The component business thrives in Central Europe, whereas in private (LAN) business we prioritise Northern Europe, with Spain and France as growth markets. In Asia and South America, on the other hand, there is a great deal of additional potential for the IBM business, and North America and Asia in general will be offering our products many opportunities in future.

What challenges do you foresee in 2004?
A great ongoing need for more bandwidth for multimedia applications, whether in the business, research, production or home area. For this we harness the cabling synergy between copper and fiber optic technology. We want to provide cabling systems and solutions for all areas – LAN, WAN, MAN, home and industry. Our variety of provision, together with the highest quality and just-in-time delivery, is still unique in the world today. Our «get more» slogan is aimed at our customers and, in the choice markets for passive cabling systems and solutions, we want to be among the best.

Mr Signer, many thanks for this interview.





Highest quality for highest demands

MORE SPEED, RELIABILITY, FLEXIBILITY AND INVESTMENT PROTECTION. OSP SOLUTIONS FROM R&M ARE NOT EMPTY PROMISES BUT HARD FACTS.

Outside plant applications stand for highest demands on transmission speeds and bandwidth plus adverse environmental conditions. R&M set new standards for OSP solutions in copper, fiber optic and hybrid applications.

- One-stop shop solutions from cross connection cabinets to splice closures and outdoor distribution boxes
- Highest quality and reliability thanks to 40 years of experience and Swiss Quality
- Highest ease of installation thanks to the intelligent construction
- Space-saving solutions thanks to compact designs

Get in touch and let us give you detailed information about your custom-tailored OSP solution.

Outdoor distribution box for hybrid applications

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40 years R&M 1964-2004

R&M

Convincing cabling solutions

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www.rdm.com

Highest network availability

MORE NETWORK SECURITY, MODULARITY AND FLEXIBILITY: THESE ARE NOT EMPTY PROMISES AT R&M.

Around 70 % of all network problems are caused by faults in the cabling. A banal cause – but the consequences are dramatic. The solution is R&M's three-level security system. For all companies that must have absolutely reliable highest network availability.

- Colour coding to provide a clear overview
- Mechanical keying to prevent misconnections
- Elaborate locking mechanism guarantee authorised plug-in and plug-out protection for connecting cables.

The three security levels can be installed modularly in all R&M cabling systems – even retrospectively. This is an inexpensive and reliable way to achieve greater network security.

The R&M security system in use: (left Plug Guard, plug-out protection; right Jack Guard, plug-in protection)

Get More @ R&M

40 years R&M 1964-2004

R&M

Convincing cabling solutions

Reichle & De-Massari AG
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More power for Manpower


010.3051

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Speed, and a talent for communications and organisation, have made Manpower into one of the greatest service providers for temporary employment. Its branches in France are now being given additional power with cabling systems from R&M.

A solid and absolutely reliable infrastructure is vital for Manpower in organising the everyday deployment of 135 000 workers among 80 000 corporate clients in France, from more than 1050 branch offices.

Manpower has its own IT and telecommunications division (DIT) in Paris. DIT provides support for the French organisation's entire network. Here, too, the objective is the same: the optimal exploitation of resources, and constant improvement of operational performance. In order to achieve this, the DIT management relies on the know-how and services of the Paris installation firm SNTG, led by Ghislain Charrier. SNTG is a certified R&M partner.

The planners and engineers at SNTG are equipped with the latest testing, digital and communications technology and they regularly analyse Manpower's needs and possible optimisation strategies. For SNTG, the basis for implementing projects in record time is to have the maximum current information.

Big plans for 1050 branch offices

That tallies with the service philosophy of Manpower and its DIT group. New tasks are always arising from close cooperation with SNTG. In 2001, SNTG installed the R&M Freenet cabling system, with 3000 Cat. 5e terminations, at the DIT location at Saint-Ouen. Manpower was so pleased with the quality and performance of the network that SNTG was then commissioned to carry out an audit of all 1 050 offices in France.


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Richard Perrein (Manpower), Network Engineer (right), Michel Lendormy (SNTG), Technical Director (left)

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A convinced partner.

Many of these locations are fitted with relatively old networks. For Manpower, the important question now was how a more powerful and future-oriented cabling system could be achieved, using ADSL as the transmission technology. The objective is a uniform infrastructure in all of the group's French branch offices.

The fundamental technical decision was made in July 2003, based on these requirements and the results of the SNTG survey. Each Manpower branch office is to be fitted with cabling solutions from R&M, in addition to its five workstations. Highly integrated solutions are planned, with specific cabinets that will also contain network units, telephone exchanges and ADSL routers. With 4000 branches in 63 countries and two million employees, Manpower is one of the world's largest service providers for temporary employment and staff recruitment. The firm was founded in the USA in 1948 and has never stopped growing. It has been present in France since 1957. Forty new offices are added every year in France alone. The group is regarded as the leading specialist in human resources management.

Strategic partnership with SNTG

When, five years ago, the Paris installation firm SNTG decided to supplement its telecommunications business by building up a further supporting pillar in the home cabling market, after carrying out exacting tests on the cabling providers it chose R&M as its preferred supplier, and R&Mfreenet as the basis of its range.

get more

Manpower, France

- Greatest ease of installation for Cat. 5e, Cat. 6 and RJ45 products
- Ability to integrate copper and fiber optic networks into R&M rack systems
- Comprehensive product range for the security of networks

@ R&M

The multimedia palace

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The Coburg palace in the heart of Vienna is one of the most beautiful examples of the Ringstrasse's magnificent nineteenth-century architecture. Reichle & De-Massari has been able to implement a topclass network within it.

The magnificent hall of mirrors in the Coburg Palace.

That famous Vienna boulevard, the Ringstrasse, was built in the mid-nineteenth century. Many nobles chose to have their palaces established there, and among them were the Dukes of Saxe-Coburg-Gotha. Their city residence was built in 1840–45 and remained in the family's possession until 1978. In 1997 the building, then badly in need of renovation, was acquired by POK Pühringer Privatstiftung. This private foundation, in close cooperation with the Austrian office for the preservation of historic monuments, restored its historic splendour.

Connection modules hidden behind historic wall panelling.

Unusual general conditions

The client and the monument preservation office insisted that the renovation be faithful to the historic original of the exceptionally magnificent rooms. At the same time, the owner wished to equip the entire building with a network boasting state-of-the-art technology and performance. It was also to be suitable for all conceivable future applications. Because of the demanding general conditions and the requirement for high quality, a network from Reichle & De-Massari was chosen. The conception and planning were done by the technical office of e+c Ing. Wimmer, while Mattig-Schauer, a certified R&M distributor, supplied the components. The installation firm Telekom Building Systems (TBS), also certified by R&M, was responsible for installing the network. Despite severe pressure of time, the installation in the valuable historic fabric of the building had to be implemented with great care. TBS benefited here from the patented design of the R&M modules, which enables rapid wiring without the use of tools. The project manageress, Rudolfine Zachbauer-Zick, expressed her great satisfaction with the R&M components: «The products from Reichle & De-Massari have proved to be the optimal selection in both ease of installation and performance.»

High tech in old halls

Imaginative solutions had to be found in order to make the network available even in the palace's magnificent staterooms. The modern connection modules were not to be visible in the rooms, which are protected historic monuments. So they had to be built in with the greatest care, either behind the historic panelling of the walls or under the precious parquet flooring. Dedicated access flaps, invisible to those not in the know, now enable the use of high-tech applications in the venerable halls. This means that all the magnificent rooms can be supplied with video signals in parallel.

Luxury suites in the noble palace

Besides its glorious historic rooms, the renovated Coburg Palace is distinguished above all for its 35 luxury-class hotel suites, which are connected via glass fibre and copper cables to the building's multimedia network. This provides guests with high-speed Internet access, IP telephony, and many additional technical refinements: individual air-conditioning, the latest locking systems, Intranet for in-house services, and video entry control. The finest entertainment is available via cable TV, plus four German and four English-language video channels. What's more, guests can access the network from anywhere in the building via mobile WLAN tablet PCs. Thanks to R&M technology, the required access points provide the desired transmission reliability and bandwidth.

Sleeping Beauty sparkles with new freshness

The renovation of the Coburg Palace is equivalent to the awakening of Sleeping Beauty from her centuries of slumber. But this time, the Prince took the form of a visionary private investor. And one of the magic spells with which he breathed new life into the sleeping Princess was «R&M».

Coburg Palace network – facts & figures:

Client: POK Pühringer Privatstiftung
Project management: R&M Austria

- State-of-the-art network implanted in historic building
- 71 500 metres of Cat. 6 S-STP copper cable
- 3420 Cat. 6 RJ45 modules
- 44 000 metres of optical fiber
- Fiber optic backbone: 12-fiber multimode cable
- 130 fiber optic terminations
- Project duration for network implementation: ten months

Between tragedy and harmony


010.3035

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Greatly admired, twice destroyed and twice rebuilt, then seriously damaged by the flooding of the Elbe, the Semperoper in Dresden has experienced all the ingredients of a tragedy. Today, however, harmony once more resounds behind the scenes. R&M components are taking care of the quality of the network.


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The flood of the century turned the Semperoper into a «water castle».

Peter Gerstenberger, who works in the IT department of Saxony State Opera, Dresden, won't forget August 2002. It was then that the heavens staged a torrential drama. The flood twice broke into his workplace behind the scenes. The water initially came from a tributary of the Elbe. With wellingtons, Peter Gerstenberger could still get into the office and into the somewhat lower service building.

Four days later, the Elbe itself rose above its hundred-year level and drove 26 000 cubic metres of dirty water into the Semperoper's basement machinery, nine metres underground. In Gerstenberger's office, the water almost reached the two-metre mark.

«Almost the complete infrastructure of our building was affected», Volker Butzmann, technical director of Saxony State Opera, later reported to the suppliers and installers. Roughly 90% of the electrical equipment housed in the cellar, three-quarters of the stage machinery, and almost half of all the heating, ventilation and sanitary installations were destroyed. The communications networks were unserviceable.

Swift action follows the disaster

Swift action was demanded when, after a little time, the water had been pumped away and the damage was inspected. For every day the State Opera was out of action, Dresden lost in esteem and potential visitors.

Dealing with the floodwater damage required a large measure of communications. For that reason, too, an intact network took priority. The Opera management had to get back online as soon as possible in order to tell everyone that the show would go on.

It was immediately clear to Wolfgang Kupsch and his colleagues in Teamplan Ingenieure GmbH that they would actively assist in rescuing the Semperoper. With great dedication, this Dresden planning and installation firm first established a temporary mains supply. The installers likewise took care of the network infrastructure. Complete rehabilitation was called for.

The experts from R&M's partner firm and the management of the State Opera decided in favour of R&M Freenet. They were persuaded by quality features such as de-embedded certification as evidence of real Cat. 6 performance. The objective was to provide cabling of the finest quality, commensurate with the artistic importance of the Semperoper. The system guarantee, compatibility, and the ability to carry out a fast, convenient installation were also decisive factors.

All the necessary modules were assembled and fitted within a few weeks. The restoration was completed in record time. «Many of the building projects that would otherwise have had to be meticulously planned over two long years went through virtually from one day to the next», said the then Opera director, Christoph Albrecht. After just three months, the Semperoper was back in business.

Thousands of floodlights set the 84-metre high facade aglow with a festive brilliance every evening. The figures of the princely poets Schiller, Goethe, Shakespeare, Sophocles and Molière figure impressively on the facades. The Opera has approximately 1300 seats and is often booked up for months ahead.

get more

Semperoper, Dresden

- Real Cat. 6 performance
- Quality
- System warranty
- Ease of installation

@ R&M

Gottfried Semper's masterpiece rebuilt twice

The Semperoper in Dresden is one of the world's major opera houses. The architect and revolutionary Gottfried Semper (1803 – 1879) built it around 1840 as one of his first masterpieces in early Italian Renaissance style.
Actually, he built it twice, for the original Hoftheater burned down in 1869. The second version was reduced to rubble in 1945 by Allied bombing. After the Second World War it took forty years before the GDR undertook its reconstruction.

New networks for old masters

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Paris knows how to stage art and architecture in a brand new way and show the old masters to their best advantage. In the Musée d'Orsay, this is increasingly being done with the aid of modern multimedia technology – but under difficult conditions. Cabling systems from R&M have helped the museum carry out a successful modernisation.

Art collection with high tension
Since 2000, the museum has increasingly been resorting to modern communications technology in order to make visits even more enjoyable for art lovers from all over the world. An electronic payment system helps keep queues as short as possible. Twelve computer terminals stand ready by in the newly equipped multimedia centre. High-quality digital images, a virtual tour of the museum, information about exhibitions and artists, and comprehensive audiovisual productions are delivered over a network that has to provide optimal transmission speeds.

The architectural peculiarities of the building – the Musée d'Orsay, like the Eiffel tower, is a metal structure – and its position directly over a railway station, make heavy demands on the technical infrastructure. Electromagnetic fields from the high-voltage railway cables could cause faults with data transmission in the museum. EMC protection was therefore an important subject in the course of the technical modernisation.

Bruno Vergnault

The Musée d'Orsay lies in an idyllic position right on the Seine.

The Musée d'Orsay
The Musée d'Orsay in Paris houses one of the world's most celebrated collections of French nineteenth-century art.
This former railway station on the Seine accommodates 4000 exhibits in its 16 000 m² of exhibition space. Some 2.5 million visitors come every year to see Impressionist masterpieces by Monet, van Gogh's Sunflowers, and Gaugin's South-Sea beauties.

Decision in favour of shielded cable
Bruno Vergnault, responsible since 2000 for telecommunications and infrastructure, chose a cabling solution from R&M on the basis of earlier positive experience. «I already knew about the high quality of R&M products, and I also knew I could expect positive feedback from customers and colleagues. So we decided on a solution using shielded cables and Cat. 5e RJ45 plugs», he says.

Various installation projects have been successfully effected in the Musée d'Orsay since then, in cooperation with R&M certified partner firms. The installation of the payment system was initially based on the existing cable infrastructure, but this caused serious functional problems. Bruno Vergnault replaced the old system with an R&M solution. «Since then, the problems haven't reappeared», he confirmed. The intention is gradually to change the system over to Cat. 6e standard.

The R&M 19" solution is used in the distributor rooms. The clear lay-out of its panels give it a distinct advantage for cable management. At strategic points the network can be managed, maintained or updated at low cost.

Customer service and the system guarantee repeatedly endorse Bruno Vergnault's choice of cabling solutions from R&M. «The use of R&M products guarantees smooth running behind the scenes and ensures visitors' enjoyment of art is unalloyed.» Such has been his experience. The use of the latest IT technology decisively contributes to enabling the Musée d'Orsay to live up to its claims to be a cultural institution and a magnet for tourists.

get more

Musée d'Orsay, Paris

- Quality
- Positive image in the market
- Positive experience
- System warranty
- Clarity
- Ease of installation

R&M

DaimlerChrysler Holland choose R&M

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Nobody who sees the new building of DaimlerChrysler Holland, can help but be deeply impressed by its fine lines and characteristic open design. The round forms and generous use of glass convey a feeling of transparency and strength. A top class building that perfectly matches the leading brand of cars the company represents. The data cabling too had to be state-of-the-art and absolutely future-proof. The company chose R&M.

Impressing architecture: the new building of DaimlerChrysler Holland.

A move into a new building means the infrastructure must be ready for all future developments, says DaimlerChrysler Holland. Furthermore, the standards of the German parent company in regard to this subject must also be fulfilled. «A standard environment is the most important requirement for a cabling system and active components. To achieve this and meet our own demands at the same time, we opted for R&M. Our head office was very pleased with this choice», says Cees Boer, Manager Business Support, responsible for the ICT infrastructure at DaimlerChrysler Holland.

Future infrastructure

Flexibility, sufficient growth capacity and a minimum risk of failures were the priorities for the design. «We used to install cabling on the basis of our needs», explains Boer. «In our former building a conference room would not be equipped with data cabling. When it was later used as working space for example, the necessary connections had to be installed after all, which was more expensive and inconvenient.» To prevent situations like that and to be fully flexible, DaimlerChrysler choose a modular concept. For fixed distances the connections are installed along the walls so that all rooms can be equipped as needed, quickly and comfortably.

Another condition was that the cabling system fully supports fast protocols and new applications like Voice over IP.

The Cat.7 cables of R&M in combination with the Cat.6 connectors and patch panels offer the required growth potential. Testing the entire system revealed that the Cat.6 standards were highly exceeded.

To guarantee protection from external radiation in the future too, Daimler Chrysler decided on the shielded version of R&M's Cat.7 cable. Here, all conductor pairs are individually screened with a special foil. This is also stipulated in the international DaimlerChrysler standard for data cabling. «To be sure, if you share out this extra investment over the planned debit-instalment, it is well worthwhile.»

A lot of space and style inside: the new showroom.

Cabling creativity

Neither staff nor visitors are likely to notice the challenges the builder and installer were faced with in the realization phase of the building. Round forms always ask for extra adjustments, and basic installations like ducts and wall panels are designed for straight walls.

The installer company BURGERS ERGON was in charge of all the technical installations and the data cabling installation in the new building. They developed a special cover plate to interconnect the straight panels in bends. Another challenge were the internal footbridge passages between the office departments. BURGERS ERGON solved this by placing a distributor at both ends, providing con-

Dave Kap (BURGERS ERGON), Rien Klein Meuleman (BURGERS ERGON), Gijs Heij (DaimlerChrysler), Cees Boer (DaimlerChrysler), George Kazantzidis (Kannegieter)

nections for 500 work places. Only the fibre backbone runs via basement and along the footbridges.

Another difficult point was the little space available above the ceiling to lay the cable in. This situation called for creativity, skilfulness and sheer bodily strength of the installers. They successfully completed the installation and fulfilled the plan of 2500 connections.

One-time delivery

Kannegieter, the R&M distributor in Holland, also played an active part. At the installer's request, Kannegieter delivered a sea container with the entire material – about 200 reels – directly to the site. «This was great for us», says Rien Klein Meuleman of BURGERS ERGON. «Normally, cables are ordered through the foreman. But in this case there was no waiting time, which gave us more freedom and allowed us to use our time much more efficiently. Loading and unloading always interrupts work, and sometimes takes up an entire day. That time could be saved and used for installation work. This delivery method is also convenient for the administrative handling, the placing of orders, checking and booking invoices.»

Synergies between distributor and installer

At the installer's request, Kannegieter visited the project in various phases. Usually, testing is carried out once a project is completed. However, in view of the short planning phase and the little time margin to rectify possible imperfections, BURGERS ERGON decided to run some tests at an earlier stage. «So that we can fix it right away if there is a problem.» says Klein Meuleman. «Kannegieter came to check when we finished half a floor. Then they checked the assembly, then the final assembly and upon completion they carried out the definitive measurements.»

«We were involved in this project, from start to end», explains Georges Kazantzidis, Account Manager of Kannegieter. «We pointed out the advantages of the R&M connection technique to the installer.» Compared with other brands the R&M way of handling and terminating shielded cabling is quite simple. It only takes a small number of steps per connection. This is a vital factor in a project that is facing a tight deadline. «Before the project started, we trained the fitters of BURGERS ERGON in the assembly of shielded Cat.7 cables. The day before delivery made it clear how well the BURGERS ERGON had learnt the tricks.» Klein Meuleman: «There were 60 connections to set up that were not mentioned in the original design. It is great when you can tell a client the next morning that it's all done. DaimlerChrysler are very satisfied.»

Compact and neat: distribution cabinet with components from R&M.

The «R&M» among car manufacturers

Superior performance, safety and comfort – these are good characteristics for a car. Even better if a network fulfils them. And better still, when the two come together.

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The new administration building with large showroom surrounded by 60 000 m² of service area.

DaimlerChrysler is one of the leading automobile manufacturers in the world. With a staff of 365 000 they reached an annual turnover of 149.6 billion euros in 2002. After the fall of the iron curtain, the dynamic development of the company throughout the world has also started to spread in the countries of the former eastern block. The economic boost there and the resulting raising standard of living led to an increasing demand for Daimler Chrysler products, most of all for the Mercedes-Benz brand. More and more people wish to drive a comfortable, powerful and safe car, matching their professional and financial success.

Investments into the future

The increasing demand soon made further investments into new locations of DaimlerChrysler necessary. In Czechia for example, the Mercedes-Benz sales figures led to the decision to build a new sales and service centre. The building was completed this year; it has a total floor space of 15 000 m². Three companies with a total staff of 260 have their offices in the new building: Daimler Chrysler Automotive Bohemia, Daimler Chrysler Services Bohemia (financial and other car-related services) and EvoBus. This new sales and service centre is designed to provide an increasing number of employees with optimum working conditions in the coming years. Therefore, R&M was entrusted with the issue of the structured cabling system. The subsidiary R&M Austria in Vienna, represented through the authorised R&M distributor ATLANTIS DATACOM s.r.o. Prague, implemented the project on site, together with their certified partner, the company MICOS s.r.o.. The network consists of 75 km of shielded Cat.6 cables, i.e. S-STP cables, and 4300 meters of fiber optic cables, providing 1400 connections, 45 voice panels and 240 E-2000 ports.

Dusan Kovarik, the satisfied IT manager of DaimlerChrysler.

Powerful, safe and comfortable...

...are the most frequently used adjectives for Mercedes- Benz. From now on, these terms can also be applied to its IT network – thanks to R&M. The new IT infrastructure in the sales and service centre of DaimlerChrysler Automotive Bohemia in Prague fulfils the highest requirements when it comes to performance, investment security as well as ease of installation and maintenance. Seen like that, Mercedes-Benz could also be called the «R&M» among car manufacturers...

atlantis datacom s.r.o.

Network for DaimlerChrysler Automotive Bohemia – Facts & Figures:

Client: DaimlerChrysler Automotive Bohemia s.r.o. Project management: R&M Austria GmbH, certified R&M partner in the region: MICOS s.r.o.

- Shielded Cat.6 cabling using S-STP cables
- 75 km of cables (R 35060)
- 1400 connections
- 45 voice panels
- 4300 m of fiber optic cables
- 240 E-2000 connections

Splash Line on the production line

010.3000

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VW wants to have a transparent, digital factory. More and more pieces of information have to be interrelated in the motor industry. To cope with this, production and test units on the new assembly lines for the works in Mexico were networked with Ethernet right from the start. Splash Line by R&M ensures reliable connections.

The new assembly lines for VW are a striking example of the challenges of industrial cabling. The full integration of manufacturing into enterprise-wide data networks is key to meeting market demands and implementing production strategies.

This is because consumers want ever more individual cars and shorter delivery times. Models have to be changed frequently to retain the public's interest, and this reduces batch sizes. As a consequence, construction and production have to work more efficiently. Simultaneous engineering, distributed worldwide, is commonplace. Manufacturing structures require to be constantly optimised.

The only way to keep on top of all this is by the optimal integration of information technology and data transmission. Conventional bus systems in the mechanical engineering world and Ethernet from the office world are converging. The car delivery and production process will soon be entirely digitised.

R&M partners in industrial cabling: LSW and Fleischhauer

LSW Maschinenfabrik GmbH, Bremen, has been in operation since 1982. Belonging to the IWKA AG holding company in Karlsruhe, it employs 300 engineers and technicians and makes a turnover of about eighty million euros. It designs assembly lines for car manufacturers and their suppliers, especially for the drive train area, and has them built worldwide. Process engineering, process planning and simultaneous engineering are among its core competences.
The G. Fleischhauer Ing. Büro Bremen GmbH belongs to the Fleischhauer group, which at present employs around 470 skilled workers at eleven locations and has a turnover of approximately fifty million euros. Its core business includes consultancy, project management, planning, installation, training and further services in all areas of information, communications, electrical, media and reliability engineering.

The LSW Maschinenfabrik GmbH in Bremen faced up to these challenges when it was given an order to supply new assembly lines for rear axles and wheel bearings for VW Mexico. The production and test units were to be networked with Ethernet right from the start. In order to be able to implement this, LSW called in a competent partner in the domain of data networks: the Fleischhauer engineering company.

Only the best products count

Fleischhauer has been active for many years at VW works, so was aware of current requirements. Together with LSW, they worked out the detailed design of the networking structure. The components had to be suitable for industry in every respect, meeting special reliability and quality requirements. Among the latter was, for example, long-term, stable compliance with the IP54 protection class.

«As a manufacturer-independent service provider, we invariably go for the best the market has to offer when selecting products», emphasises Hans-Wilhelm Balssen of Ing. Büro G. Fleischhauer Bremen GmbH. Executing the project also demanded great flexibility and cooperation with other works.

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From left to right: Mr Jens Schröder, Project Manager, LSW Maschinenfabrik GmbH, Mr Hans-Wilhelm Balssen, Head of Sales, Ing. Büro G. Fleischhauer Bremen GmbH, Mr Andreas Selle, Head of Region North, R&M GmbH Germany.

010.3020

R&M IP54 Splash Line on a production line for car axles.

Balssen further reports: «In order to meet the requirements, the Splash System from R&M was projected for the passive networking.» Specifically, wall-mounted Splash Line outlets (IP54) are employed in direct engine assembly. In the switch cabinet, LSW is using 24x RJ45 patch panels from R&M, with patch cables and installation cables.

«R&M has already shown its strong commitment to the industrial environment, and knows its way around there», confirms Hans-Wilhelm Balssen. The project was implemented at a very brisk pace in autumn 2003. Close cooperation with our partners in Bremen also enabled us to react very flexibly to design changes.

get more

Splash Line

- The plug connector is protected against dust and water, up to IP54. Even with the connections made.
- Clearer overview thanks to the colour coding of data ports and patch panels.
- Simple installation: one action to install the bush on RJ45 patch cord.

R&M

Quantum leap in the computing centre with FOM

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F. Hoffmann-La Roche AG installed fiber optic management systems by R&M in two computing centres and experienced a quantum leap in cable management. Previously, when you wanted to change an important cabling system you needed a project period of two to three weeks. The job can now be completed in two days.

The requirements imposed on the two big computing centres of the Swiss health-care group Roche in Basle and Kaiseraugst are ever more demanding. Providing 16 000 network terminations amounts to a great deal of work. Research, production and management expect ever shorter reaction times when IT infrastructures have to be adapted to their needs and projects.

The cabling systems between servers often have to be modified. «Every time, this means measuring up cable sections, ordering and assembling materials, taking up many metres of floor tiling, laying cable etc. It often used to take two to three weeks before a new configuration was ready», says Andreas Schaer of the computing centre network team, describing the once typical situation.

Group headquarters of F. Hoffmann-La Roche AG in Basle. A new age of cabling begins in the computing centre. Photograph: Roche Medienservice

Structured high-performance cabling
Besides these everyday requirements, the computing centres had to contribute to optimising cost structures and coping with the exorbitantly growing quantities of information. As a further challenge, a server changeover was scheduled. All of these factors induced Roland Nyfeler, IT installation manager at group headquarters in Basle, to introduce a new development phase for the computing centres in 2002. A structured fiber optic solution was the objective.

It soon emerged that the mass of fiber optic terminations could hardly be dealt with in a conventional way. Roland Nyfeler: «We needed a central solution with high packing density, so that we could easily wire and manage the cable.» In May 2003 he confronted Christian Reck, R&M's marketing man in Basle, with the situation. Six weeks later, the first FOM cabinet was in place – individually designed in accordance with the needs of Roche. Three more followed in quick time.

As a world-leading health-care company, Roche also makes the heaviest demands on the performance of its data-transmission networks and computing centres. Photograph: Roche Medienservice

The FOM system from R&M
With the fiber optic management system (FOM), R&M has developed a modular, closed 19" cabinet for central distributor locations in high-speed optical-cable networks that can be adapted to meet specific customer requirements.

Major advantages are
- maximum network reliability
- maximum packing density
- well thought-out, rapid cable management.

The FOM cabinet permits
- wiring up to 1008 plug connectors in 42 height units
- controlled, clear routeing of cables and pigtails
- easy implementation of cable feeding, strain relief and generous reserves of cable

The patch panels offer:
- ease of installation/simple access to plug connectors thanks to the sliding-tray technique and lateral/rear cable entry
- optimal exploitation of space, thanks to low mounting depth of 230 mm
- reliable transmission thanks to 45° adaptor outlet and depth-adjustable sub-racks
- modularity thanks to the use of different splice trays as required

Ability to react markedly enhanced
The fiber optic management system (FOM) from R&M lets Roland Nyfeler and his colleagues substantially speed up their services to the group. They only have to patch the corresponding cables into the FOM cabinets and floor outlets. «Now, when we are given a task, we can provide the new server connection within two days at latest. And when there are faults, we can react very quickly now», says Nyfeler.

Roche was particularly persuaded by the clear, well thought-out routeing of the cables and pigtails in the FOM cabinet and the additional features that R&M fitted as requested. «Every individual cable can be easily accessed at any time – even if there are already 600 in the rack», says Roland Nyfeler about the easing of his work. Andreas Schaer emphasises reliability aspects. From the stability of the overall design to the quality of the plugs, their high expectations were fulfilled.

As summed up by Roland Nyfeler: «Since central cable management and the FOM system have made us faster and more flexible, we shall also be able to work at much lower cost in future.»

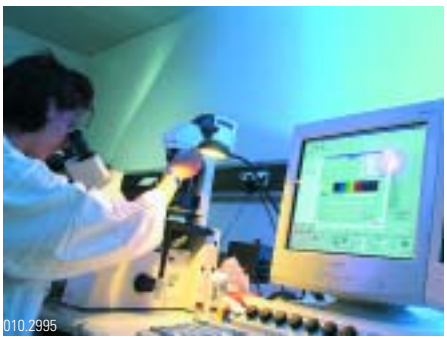
get more

F. Hoffmann-La Roche AG

- Maximum reliability in optical cable networks
- Rapid, flexible central cable management
- Ease of installation
- High product quality
- High packing density

R&M

With FOM systems from R&M, the Roche computing centre in Basle attains a new dimension in cable management. For Roland Nyfeler (right), manager of Roche's IT installation, Christian Reck of R&M (left) implemented an individual solution in rapid time.
Photograph: B. Damm



Research into new active substances for medicinal use at Roche in Basle requires enormous computing power and fast, flexible adaptation of IT infrastructures to suit individual projects.
Photograph: Roche Medienservice

F. Hoffmann-La Roche AG

Roche, whose head office is in Basle, is a world-leading, health-care company, focused on innovation in its two core businesses: pharmaceuticals and diagnostics. Roche is the world's number one in the areas of diagnosis, oncology and transplants, and holds a leading position in the domain of virology. The company contributes on a broad basis to improving the health and quality of human life, with products and services that serve in the prevention, diagnosis and treatment of illness. «Our task is to create genuine added value in the health sector», says the company about itself. Roche employs more than 6500 staff in Switzerland and about 62 000 in more than 150 countries around the world.

Priocom Svjaz


010.3012

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Priocom Svjaz is building a nationwide backbone in the Ukraine that will be used by different network operators. Offering a one-stop solution, R&M are supplying all the passive network components, from splice closures to armoured fiber optic cables.


010.3011

Illia Solodovsky, Director of R&M Ukraine (left) with Andriy Galyapa, General Director of Priocom Svjaz (right).

Priocom Svjaz was founded in the Ukraine in January 2003 as a project aimed at deploying a nationwide FO backbone to be used by several operators. As determined in the agreement, dark fibers were distributed in the cables between UMC, Kievstar and Priocom Svjaz itself. The former two are the biggest mobile carriers in the country, with a joint market share of over 95%. Priocom Svjaz is in charge of the installation of the cable, and UMC and Kievstar can benefit from the project by changing their transmission media from microwave to SDH over leased fibers. That step will dramatically improve their network performance boosting traffic volume and increase the number of services based on GPRS and other bandwidth-consuming technologies.

Project parameters

- 2200 km of fiber optic cables, ready for SDH transmission equipment
- 108 fiber optic patch panels
- 700 fiber optic splice closures
- Wide range of accessories
- Investments in passive elements exceed 11 million euro

The year 2003 saw Priocom Svjaz as one of the fastest growing national operators in terms of network infrastructure. The nationwide fiber-optical backbone network is being deployed on strategic routes. The first stage of the project encompassing the connecting of Kiev, the Ukrainian capital, to the western border is completed and being commissioned. The second stage is under construction covering links to the most developed regions of the country.

R&M can look back on a long-term relationship with the Priocom group of companies thanks to the partnership in implementing R&M structured cabling systems for Priocom's end users. It was therefore a matter of natural choice to invite R&M to participate in the project. The main competitors were Tyco Raychem and Odescable. Centre piece of our unbeatable offer were the new R&M Type FL splice closures with R40 multifunction modules, and the FO 19" FOM Racks


010.3021

Deliveries on track – R&M warehouse worker unloading the cable.


010.3019

Ready to deliver – cable ex stock.

equipped with the innovative E-2000™ connectors. Since the customer was interested to get all the passive equipment from one supplier a lot of additional products were delivered, ranging from armoured FO cables from Alcatel to insulation tape. There even was a custom-tailored unique cable test box that was developed from scratch and produced in cooperation with a local partner.

The services provided by R&M were also a key factor, such as training for 22 installers at the R&M office in Kiev, followed up by a supervision of their work on-site with 12 teams working on the installation. The resources available such as warehouses, experienced logistics, skilled and professional managers, settled the deal. The contract for stage 1 was signed in February 2003, the second stage contract was awarded to R&M later in May.

get more

Priocom Svjaz, Ukraine

- Innovative products
- Wide range of products
- One stop solution, everything from one supplier
- Sound customer relation of many years

R&M

Splicing work at the location.

Mounting of a splice closure.

Top technology for top events

Dieter Kunz
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Where and whenever an international event takes place in Switzerland, a certain dream team is increasingly involved: Swisscom Live Event Support and R&M. Swisscom's service team takes care of smooth communications at many a big event, while R&M supplies the material. That's top technology for top events.

Live Event Support at the Mountain Bike World Championship in canton Ticino, Summer 2003.

Series of successful top events

Ski WM in St. Moritz, Swiss Open in Gstaad, Athletics Meeting in Zurich, Tour de Suisse, Film Festival in Locarno, World Economic Forum in Davos, Expo.02 in the three-lake region – there are numerous success stories of top events made in Switzerland with international appeal. Communications is one of the major factors for success and smooth running of the event. To make it possible for organiser, guests and journalists to be virtually everywhere, they need to be fully connected through data and phone lines, highspeed Internet access, and interference-free voice and sound transmission.

The media and press centres in particular need to meet most exacting demands to make sure the TV stations and news agencies teams can broadcast their information live. If the news reporters cannot work properly, and there is no organised information transfer, then sponsors stop being interested, explains Markus Richle, head of Swisscom Live Event Support.

More and more, the communication infrastructure of these important events is supplied by Swisscom Live Event Support (LES), profit centre of the Swisscom Systems AG, and acting as their general contractor. R&M Swisscom Live Event Support have had a solid and extremely successful partnership for many years.

Top technology from one supplier

The advantages for the LES team of the Swisscom telecom group of working with R&M are that all state-of-the-art technology is supplied by one single source. Thus flexibility of delivery matches up the organisers' spontaneity and together the team is unbeatable. «Coordination of the technical equipment, timely supply of the right hardware and software, and professional installation are key elements of a smoothly-running and reliable operation well-controlled operation», states Markus Richle from Live Event Support. «The team offers a quality level that defies comparison.»

The R&M product range embraces a choice portfolio with R&Mfreenet, VS Modular or Fiber Optics, and evidently all the know-how of all developments in enterprise, industrial cabling and also extended office cabling. R&M is as committed to the events as the LES team – supplying everything from reliable Cat.6 components, to splash-water proof LAN connections or modular 19" distribution systems for copper and fiber optic cabling. Also the elegant desktop boxes

Fully equipped broadcast van of the Swisscom Live Event Support.

Workplace box (bluebox), specifically produced for Swisscom Live Events.

Top quality products for the event support

At events handled by Swisscom Live Event Support, for example the following R&M products are used:

- Desktop boxes from the extended office cabling programme
- Fiber optic distribution systems featuring LSH connectors
- VS Modular distribution systems
- Cat.6 cabling components and systems

featuring mains and data connections for laptops of journalists for example, are increasingly popular in press centres.
Live Event Support developed from a team of technicians who worked for the state-run mail and telecom group PTT, responsible for professional support at events, also to demonstrate the competence of the PTT group. The result was a profitable service enterprise – today's Swisscom Live Event Support.

The competence centre generates approximately 65 percent of the turnover with orders from the private sector. This means public and corporate events, press and video conferences, product launches and general meetings. Approximately a third stems from orders from Swisscom themselves and their diverse sponsoring activities in the sports, culture, and business sector.

Enormous achievements at the Ski WM in St. Moritz

The Ski WM in St. Moritz in 2003 is one of the largest job orders to date. The event's success and its image boost for Switzerland are legendary. Swisscom Live Event Support set up the entire voice communication and was in charge of parts of the image and sound broadcast technology of the media. The installation order included 50 kilometres of cables, 300 ISDN connections and data lines at the International Broadcast Center, 200 for outdoor broadcast vans and commentator cabins, and 400 workplace connections at the press centre, all this for the 3000 accredited journalists. In addition, a comprehensive, decentralised backup concept was set up for additional reliability.
While the infrastructure in St. Moritz was fixed for the duration of the WM, the challenge presented by bicycle races such as the Tour de Suisse are even tougher. Here, part of the equipment needs to be moved every day, from stage to state. This requires enormous installation and logistical efforts. Evidently, Swisscom Live Event Support successfully mastered these tasks, supported by R&M.

Meanwhile the team has acquired so much experience to enable it to offer comprehensive and detailed customer support. This includes individual support for organisers, project and budget planning, aiming at working out an event-specific solution covering all aspects of the required data and communication technology. In addition to professional installation there are experts available for instant service at the event location, 24 hours a day.

Swisscom Live Event Support

Markus Richle
Head of Live Event Support
markus.richle@swisscom.com

The finishing line in St. Moritz seen from the broadcast container.

Discussion in the broadcast container in front of a VS Modular distributor from R&M.

Presence on five continents

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The Arab Bank is one of the most important financial services providers in North Africa and the Near East, with locations in all five continents.
In order to give its customers optimal attention, it relies on a first-class IT infrastructure. But that isn't the only thing linking the Arab Bank with R&M.

The headquarters of the Arab bank in Amman, Jordan.

When two companies that can look back on a similar foundation history work in cooperation, success usually doesn't take long to arrive. Looking at it that way, it's no surprise that cooperation between the Arab Bank and R&M runs smoothly. For, just like R&M, the Arab Bank was set up by a visionary who had an idea and turned it into reality. And, like R&M, the Arab Bank is still being run by the descendants of that visionary founder.

From one country to five continents
The Arab Bank (www.arabbank.com), whose head office is in Amman, Jordan, is one of the leading banks in the Arab world, with more than 400 branches around the world and a balance-sheet total of 26 billion USD.

It was set up in 1930, when a Palestinian emigrant by the name of Abdul Hameed Shoman had a vision of spurring on the economic development of the Arab world. Shoman had previously spent eighteen years in the USA, where he built up a successful trading firm. The development of the Arab Bank is closely linked with the recent history of the Arab states. The bank was established precisely at a time when the Arab countries were beginning to recover their independence. During this period, a business providing finance was obviously in great demand as a partner for the growing economy. The Arab Bank was also in a position to profit from the economic boom in the Arab world that accompanied the exploitation of the region's oil deposits. It is now a financial firm with worldwide representation. Its locations are situated not only in the Arab area but also all over Europe, the USA, Asia and Australia. The Arab Bank has a historic connection with Switzerland: when it set up branches in Zurich (1962) and Geneva (1964), it was the first Arab bank to become established in Switzerland.

Cash flow and high tech
One of the success factors of the Arab Bank is its combination of many years of experience with the latest technical equipment. A first-class infrastructure is a fundamental requirement for the bank, so that both management and customer services can be made as efficient as possible.

Mohammed Sweidan (right), R&M, and Majed Abdul-Rahim (left), Global Head of Information Technology, Arab Bank HQ Amman.

get more

Arab Bank

- High product quality
- Outstanding service
- Sound cooperation with certified R&M installation partners
- Reliability

R&M

Arab Bank network – facts & figures:

Client: Arab Bank plc
Project management:
R&M Middle East & Africa

- Total order for all branches worldwide
- UTP/S-STP Cat. 6 cabling
- R&M Security System: colour coding, Plug Guard connection locking device
- 17 000 terminations in all worldwide
- Implemented in 2002, 2003 and 2004
- Already completed: United Arab Emirates, Egypt, Lebanon, Palestine, Jordan and Italy

Emad Negresh (left) and Riad Tayem (right) with Mohammed Sweidan.

Thus, the Arab Bank was one of the first enterprises in the Arab world to install computer-controlled information systems. On top of that, innovative customer services are forever being introduced whose operation requires rapid, uninterrupted data transfer. The Arab Bank has an Intranet for internal communications between individual branches, and an electronic signature system. All branches are connected to the SWIFT system, which increases both efficiency and customer satisfaction.

Worldwide order for R&M

To get an IT infrastructure that would satisfy their high demands, the Arab Bank commissioned R&M with the installation of structured Cat. 6 cabling in all its branches worldwide. In all, 17 000 terminations for data and voice communications were or are being installed (UTP/S-STP Cat. 6) in 2002, 2003 and 2004. The major part of the networks has already been completed, for example at locations in the United Arab Emirates, Egypt, Lebanon, Palestine, and at all branches in Jordan and Italy. As a financial firm, the Arab Bank sets the greatest store by maximum failure safety. R&M ensures this with its proven colour-coding system and its patented Plug Guard, which protects terminations simply but effectively against accidental loss of contact.

The complete network installation at the Amman centre has already been completed – to the delight of the customer. «We are as satisfied with the high quality of R&M products as with their services. Also, we are satisfied with our good cooperation with the certified R&M installation partners», comments Mr Majed Abdel-Rahim, project management for the Arab Bank, on the installation. The order from the Arab Bank enabled R&M not only to add yet another important customer to its list of references, but also to consolidate its market leadership in the Arab area.

Mohammed Sweidan (right), R&M, Simon Salameh, Team Leader at the Arab Bank, HQ Amman.

The two certified R&M engineers, Kamal Barahmeh (centre) and Hani Sweidan (right), with Riad Tayem (left) of the Arab Bank, HQ Amman.

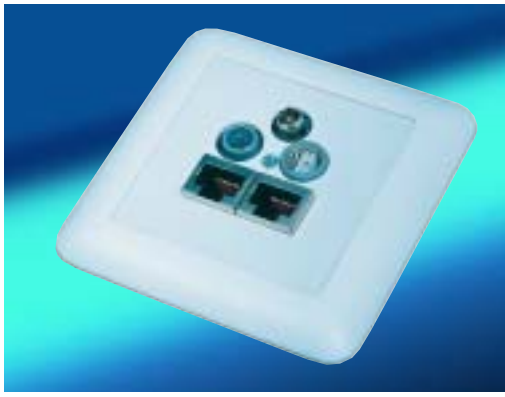
One for all

MORE FLEXIBILITY AND COMMUNICATION CONVENIENCE AT HOME: THESE ARE NOT EMPTY PROMISES AT R&M.

Three coaxial connection sockets for TV, radio, Internet, cable modem and SAT receiver, plus two RJ45 sockets for telephone and Ethernet connection. The all-in-one multimedia outlet covers all communication requirements. The planner's job is made easier. Expensive enquiries are dispensed with.

- 1 communication distributor per residential unit
- Star cabling topology
- Multimedia outlets in all rooms

Home wiring by R&M covers all present and future requirements of home networking.



The multimedia outlet from R&M

Get More @ R&M

40 years R&M 1964-2004

R&M

Convincing cabling solutions

Reichle & De-Massari AG
Binzstrasse 31, CHE-8622 Wetzikon
Telephone +41 (0)1 933 81 11
Telefax +41 (0)1 930 49 41

www.rdm.com

IP protection for RJ45

MORE PROTECTION AND NETWORK SECURITY:
THESE ARE NOT EMPTY PROMISES AT R&M.

Data outlets are being exposed more and more often to highly adverse environmental conditions. This pushes the risk of network interruptions to extreme levels. But the unique protection provided by R&M Splash Line enables it to guarantee excellent network availability:

- Splash Line effectively shields RJ45 connections against penetration by moisture, oil, chemicals and dust
- Degrees of protection going right up to IP54 can be achieved
- Terminations can be colour-coded to prevent incorrect manipulation

The three security stages can be installed in all R&M cabling systems – including retrospectively. An inexpensive way to make your network more secure.

R&M Splash Line – IP protection for RJ45 connector systems

Get More @ R&M

40 years R&M 1964-2004

R&M
Convincing cabling solutions

Reichle & De-Massari AG
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Wired or not wired, that is the question

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Wireless LAN has been the bugbear of the cabling industry and hyped up by progress fanatics for a long time. Today, the prevailing view is more pragmatic and objective: wire-bound and wireless communication are complementary components of a greater whole.

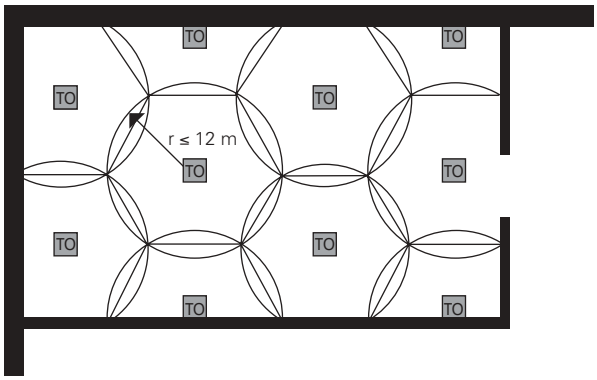


Figure 1: here are the principles as defined in TR 24704 regarding the placing of telecommunication outlets and the radio base station for a complete coverage of parts of the building (e.g. a storehouse). To do so, a structure of hexagonal cells with a maximum radius of 12 metres is laid out in the room. It is assumed that outlet and base station are located at the ceiling.

Advantages and disadvantages of radio data transmission
From modest 2 MBit/s to considerable 54 MBit/s: the drastic increase of the data transmission rate is the most obvious indicator of the fast-paced progress WLAN technology went through these last years (WLAN = Wireless Local Area Network, radio data transmission, also WiFi = Wireless Fidelity). To ensure compatibility between the devices, there were parallel efforts undertaken to work out binding standards. (Table 1)

There are no doubts regarding the great advantages of the wireless transmission technology, which obviously fully satisfies the demands of our modern communication society of more mobility, flexibility and high user convenience.

However, increased use and distribution of WLAN also reveal its limitations and drawbacks:

Limited bandwidth
Since all users in one cell use the same transmission medium (air) the available transmission bandwidth must be distributed among them. The more intensely WLAN is used, the less power for each user.

Electrosmog
WLAN applications operate at transmission frequencies that are similar to or twice the radiation of microwave ovens (2.45 GHz). This might explain why sensitive people in particular may already experience negative effects – regardless of the low transmitting power.

Data security
Offices and buildings are not easy environments for radio transmission. Not only partition walls and office furniture dampen the electromagnetic waves but also numerous office devices may interfere with the transmission. To increase the field strength it takes relatively small cell sizes or high transmission power. This means the radio waves on a straight path can propagate far beyond the cell – for example outside the building. Obviously, multilevel security precautions are imperative to prevent eavesdropping or even dial-ins into the network.

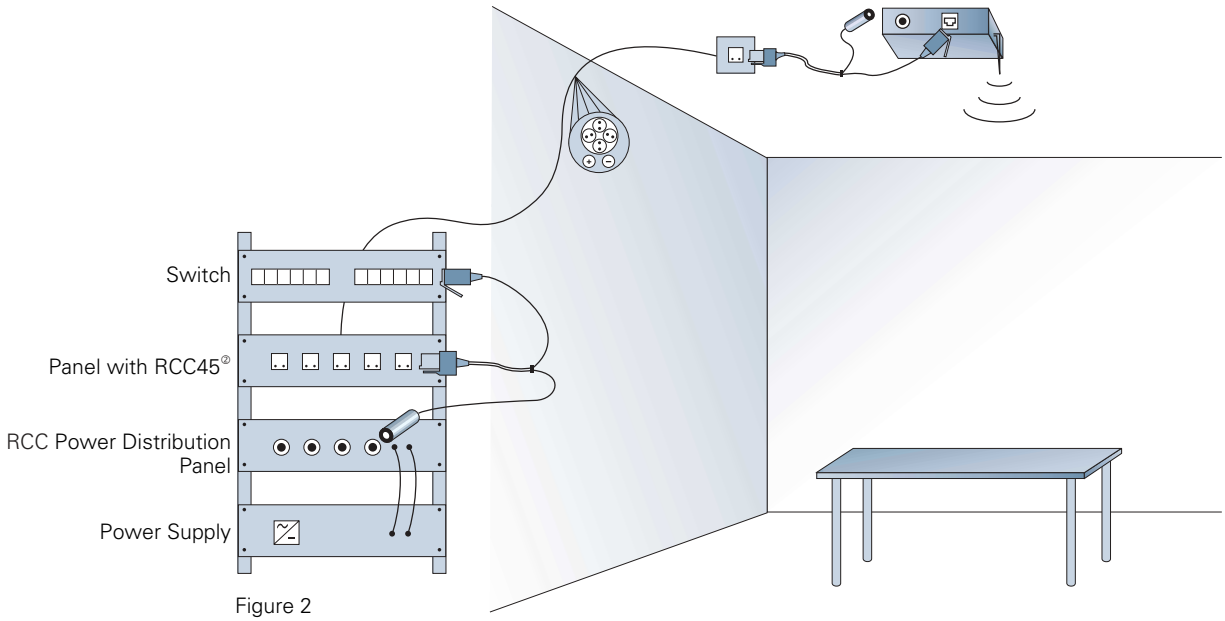


Figure 2

Standard	Description	Typical range
IEEE 802.11	WLAN (2 MBit/s @ 2,4 GHz)	30 m
IEEE 802.11a	WLAN (54 MBit/s @ 5 GHz)	12 m
IEEE 802.11b	WLAN (11 MBit/s @ 2,4 GHz)	30 m
IEEE 802.11g	WLAN (54 MBit/s @ 2,4 GHz)	12 m
DECT	Digital European Cordless Telephony (1 MBit/s @ 1,8 GHz)	30 m
Bluetooth II	ISM Band (1 MBit/s @ 2,4 GHz)	12 m

Table 1: Standards for WLAN

For these reasons the prevailing opinion among experts is now that WLAN components will not replace the regular wire-bound communication devices in office cabling, but be used to complement specific applications. WLAN is particularly ideal for environments where high mobility is of the essence and where the expected volumes of data are relatively small, e.g. in conference rooms or storehouses.

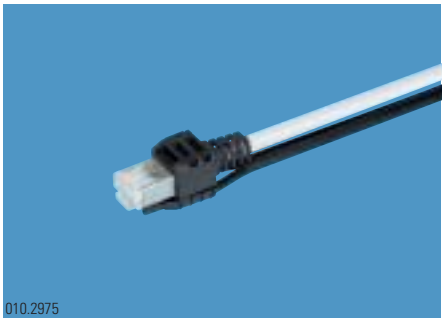
Supportive standardisation bodies
In order to support the end-user setting up WLAN in parts of a building, the international standardisation body ISO/IEC SC 25 will issue the technical report TR 24704. Planned date of completion is the end of 2004.

This technical report TR 24704 will show the user the required design of cabling structure for interconnecting the radio base stations and linking them to the existing information network. It will contain information about the positioning of the radio base stations to achieve full coverage (see Figure 1). TR 24704 recommends that every base station access point be connected to at least one data outlet (TO)

When setting up these access points, not only the connection to a data outlet needs to be taken into account but also the power supply of the base station. R&M supply the ideal product range for this application too.

Integration and hybrid solutions
For WLAN base stations with integral power supply units that are directly connected to the mains, R&M's standard R&Mfreenet product range is ideal and so is the power integration product range from R&M. The required 230V supply connections are provided through a looped round cable by means of the Cable Outlet Adapter.

For base stations with external power supply units the new RCC45® power solutions is perfect. The required DC power supply is fed to the power supply strands running separately in the hybrid power cable. From the RCC45Ç outlet both data and DC power are transmitted through a hybrid patch cable to the base station.



R&M RJ45 plug with RCC Power-Patch

Required on site are therefore only data outlet, base station and a RCC45® power patch cable. (Figure 2)

WLAN advantages:
- Mobility
- Flexibility
- High user convenience

Disadvantages:
- Limited bandwidth
- Causes electrosmog
- Data transmission requires heightened security precautions

WLAN and wire-bound cabling do not compete but complement each other. Both technologies are ideal in their operational areas. With their R&Mfreenet and power integration product range R&M also supply ideal solutions for setting up of WLAN applications.

Structured throughout the house: ISO/IEC 15018

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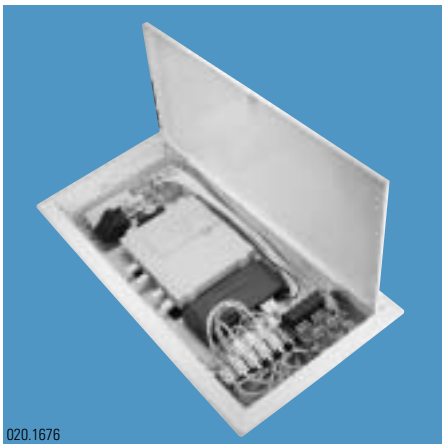
Seven years of animated debates, and suppliers who brought the most varied solutions on the market. Now, the ISO/IEC 15018 draft has been issued, providing architects, building owners and installers with more certainty for their planning of multimedia home cabling.
What does the standard include, and what does it mean in practice?

A real MATO (Multi Application Telecommunications Outlet): the R&M multimedia outlet.



Central home distributor from R&M.

In 1996 the member bodies commissioned the ISO/IEC with the task of working out a standard for residential cabling. The project was named SOHO, short for Small Office/Home Office. At the beginning of last year, the responsible standardisation committee gave the project teams the directive to bring out the standard for residential cabling (former SOHO) as soon as possible, particularly focusing on the relevant functions; the individual technical details could be incorporated in a later edition. The paper has now been made public:

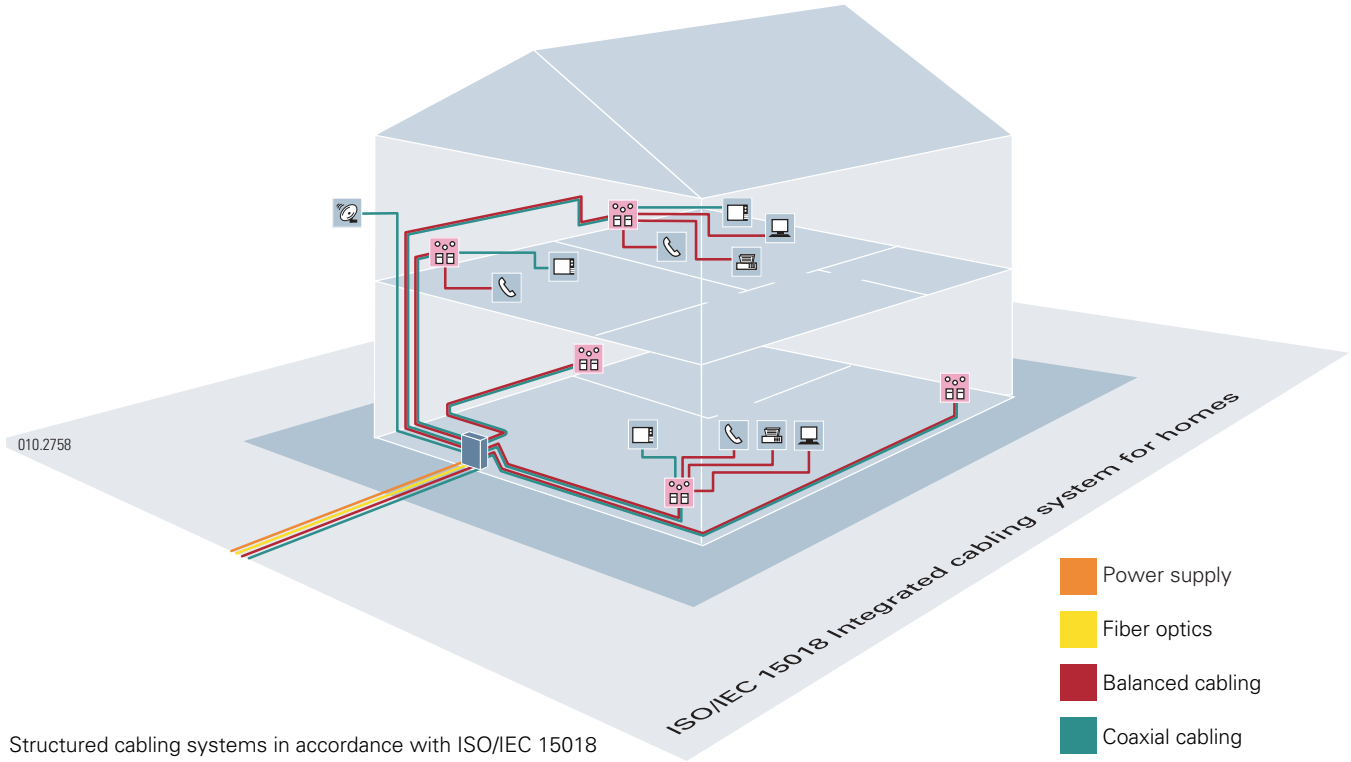
Working Draft ISO/IEC FCD 15018 of October 9, 2003
Information technology – Generic cabling for Homes

At the beginning of 2004 the member bodies will decide over the FCD (Final Committee Draft). The next step is the FDIS (Final Draft International Standard). At this stage the project teams may only do editorial changes but no more technical ones. This means that autumn 2004 is the expected publishing date of the ISO/IEC 15018. Chances are good.

Home cabling, ordered by applications
ISO/IEC splits applications in structured cabling into three groups:

ICT – Information and Communications Technologies – includes voice and data, i.e. telephone, ISDN, intercom systems, computers and home networks.

BCT – Broadcast and Communications Technologies – includes audio and video, i.e. radio, TV, HiFi.



Structured cabling systems in accordance with ISO/IEC 15018

Cabling	ICT (Information and Communications Technology)	BCT (Broadcast and Communications Technologies)	CCCB (Control/Command Communications in Building)
Topology	star	star	bus, tree, star
Medium	balanced cables, optical fiber (glass or POF)	balanced cables, coaxial cables, optical fiber (glass or POF)	balanced cables
Length	up to 100 m	balanced: up to 50 m coaxial: up to 100 m	
Frequency range	up to 100 MHz	balanced: up to 1 GHz coaxial: up to 2.5 GHz	up to 100 kHz
Cabling class	class D in acc. to ISO/IEC 11801, Ed.2	none	none
Energy supply	occasionally	occasionally	regularly
Mobile devices or staggered evenly	yes	yes	no: sensor, switch yes: special applications
Terminal interface	RJ45, series IEC 60603-7	coaxial: IEC 60169-2 Type 9.52, IEC 60169-24 Type F, balanced: IEC/PAS 61076-3-104, also IEC 60603-7-7	hard-wired connection

CCCB – Control/Command Communications in Buildings – includes building services management such as control applications for garage doors, heating systems, blinds and lights, alarm system against fire and forced entry, door buzzers, and monitoring cameras.

The installation of a CCCB cabling is optional; ICT and BCT are compulsory.

The principle
The idea of structured home cabling is to grant flexible and individual access to all communication services in every room, all in one outlet. This requires three functional elements: a central home distributor, cabling in star topology to connect the outlets and at least one MATO outlet (MATO – Multi Application Telecommunications Outlet) in every room. By definition a MATO simultaneously supports at least one ICT and one BCT application.

Components, specified by existing standards
In ICT the ISO/IEC 15018 specifications for the components are based on ISO/IEC 11801 (generic customer premises cabling). The cables are thus balanced, twisted pairs, and at least Cat.5 compliant. The connector used is the well-known RJ45 connector from the IEC 60603-7 series, including IEC 60603-7- 7 (RJ45 oriented).
In BCT the 75-Ohm coaxial cable can be used up to 2.5 GHz or a balanced cable. The regular plug connectors IEC 61169-2 Type 9.52 for radio and TV and the screwed connectors IEC 61169-24 Type F for satellite and CATV modem provide the coaxial connections. For the balanced connections the connectors acc. to IEC/PAS 61076-3-104 («non-RJ style connector») were chosen. It allows cable sharing, i.e. separate use of single wire pairs. When interoperability with RJ45 is more important connectors acc. to IEC 60603-7-7 can be used.
This first edition of standards does not yet include any specifications for plug connectors in CCCB. CCCB cabling is optional after all. The minimum requirements are to be determined in accordance with the planned applications.

Advantages of structured cabling
With a structured cabling acc. to ISO/IEC 15018, altered living situations or communication requirements can be accommodated without the need for any new installation. Every application is available at every outlet. The advantage for the planner is that he does not need to determine where to place which connections in the planning stage. And the star topology makes signal level calculation for the coaxial cabling much easier for the installer.

Polymer Optical Fiber for home cabling


010.3045

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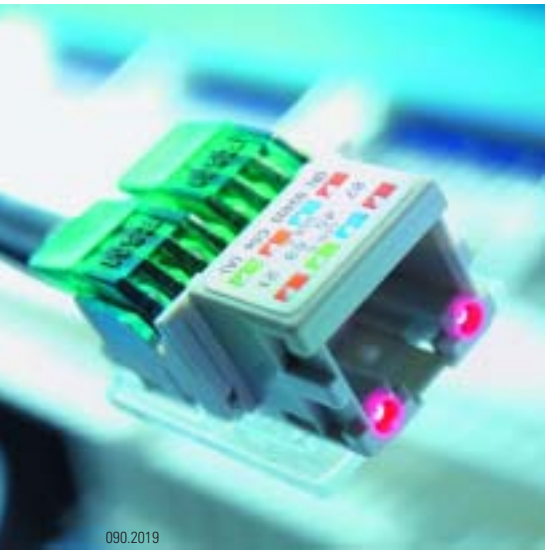
Multimedia: ever more terminal equipment is being fitted with the IEEE 1394b fast serial bus. This makes it sensible to augment structured home cabling on a copper basis with an IEEE 1394b network using polymer optical fiber. The RCC45® system from R&M already combines the standard Cat. 5e RJ45 termination with an F07-compatible optical connection.


090.2019

RCC45® combines a Cat. 5e RJ45 socket with two F07-compatible POF terminations.

Anyone who sees copper and glass as genuine and valuable, and plastic as artificial and cheap, has a mistaken view of optical cabling. POF (plastic optical fiber, though connoisseurs insist that the «P» stands for «polymer») isn't just a cheap imitation of fiber glass. It's true, however, that POF is comparatively inexpensive.

POF is simple, tolerant and flexible

What POF and fiber glass have in common is the principle of the propagation of light: Refraction in the outer layers guides the light rays within an optical fiber. POF differs from glass fiber in every other respect: it's simple, tolerant and flexible. Simple means that, because of its ease of handling, anyone can work with POF. It's tolerant of mechanical irregularities in plug connectors because of the large diameter of its strand. Flexible means that, because of the polymers used, the fiber is pliable and easy to lay. As a result, it has long been used in motor manufacturing. Its qualities for home cabling are only now being recognised.

A multimedia network in the home needs high performance

Telecommunications and data communications within the home are usually carried over an Ethernet LAN and thus over copper cables. A PC, for example, is connected to a DSL modem via Cat. 5 cable and RJ45 plug connectors.

The IEEE 1394 serial interface, also known by the brand names FireWire or i.LINK, is being used ever more frequently for networking PCs with peripheral devices such as printers and mass storage devices. This interface has long been established as standard for digital audio and video networking in the consumer area. The new version, IEEE 1394b, makes it possible to construct genuine multimedia backbone networks and, being backwards compatible, secures the standard for the long term.

With the old IEEE 1394, the length of copper cable was limited to 4.5 metres. That was enough to connect a digital camera, a DVD player or a notebook to a stationary PC. It was too little, however, for setting up a home multimedia network. The new IEEE 1394b defines not only higher transmission rates, but also includes POF as the transmission medium. With POF, you can have 400 Mbit/s throughout the house.

The R&M design for structured home cabling

R&M has therefore developed a twin-track design. The basis is structured cabling in accordance with ISO/IEC 11801, supplemented by the draft version of ISO/IEC 15018. This structured copper cabling is augmented by R&M with an optical IEEE 1394b serial bus, creating a future-proof, digital multimedia network.


010.2768

The RCC45® toolbox.

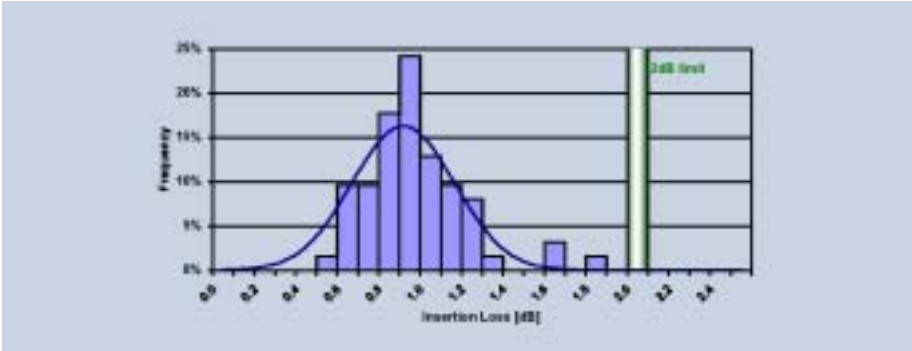
At the heart of the solution is the RCC45® connection module, a genuinely talented component. It looks like a conventional Cat. 5e RJ45 interface for telecommunications and data communications. Only on closer inspection do you notice two extra openings, for a duplex POF connection in accordance with IEEE 1394b.

Special ferrules (fiber end sleeves) and an adapter make it possible to use a standard F07 plug connector as defined in IEC 61754-16 and specified as an optical connector for POF in IEEE 1394b.

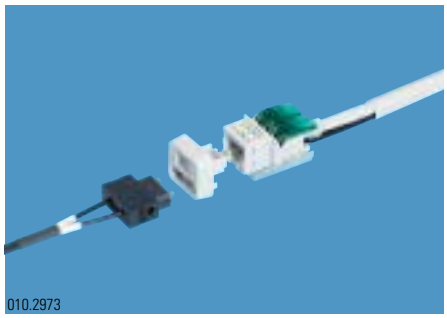
Assembly is simple. The POF is cut to length with a knife and stripped, and the ferrule is screwed on. To keep attenuation as low as possible, the fiber end-faces have to be polished. Given the appropriate toolbox, installing POF is no problem for craftsmen and the complete process takes less than one minute per fiber.

Wavelength and attenuation

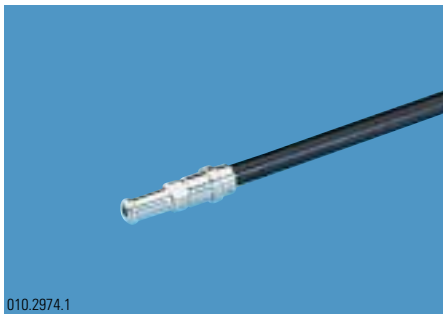
R&M recommends and uses SI POF A4a and A4d 1000 µm standard fibers as defined in IEC 60793-2-40. They are nor-



Insertion loss of the RCC45®-POF connection at a wavelength of 660 nm.



The RCC45® solution with F07 plug connector, POF adapter and connection module.



The new 2.5 mm POF ferrule, patent applied for.

RCC45® with power contact.

mally operated on a wavelength close to 650 nm (visible red light).

The structured cabling shown is based on the following attenuation budget. Assuming average transmitted power and taking account of the ageing factor, 12 dB are available for total attenuation. If each of two plug connectors «consumes» a maximum of 2 dB, 8 dB remain for attenuation by the fiber. With standard SI-POF and a wavelength of 660 nm, this corresponds to a length of 36 metres.

The typical insertion loss of the RCC45® POF connection is only 1.0 nm. This permits installations with a length of up to 46 metres.

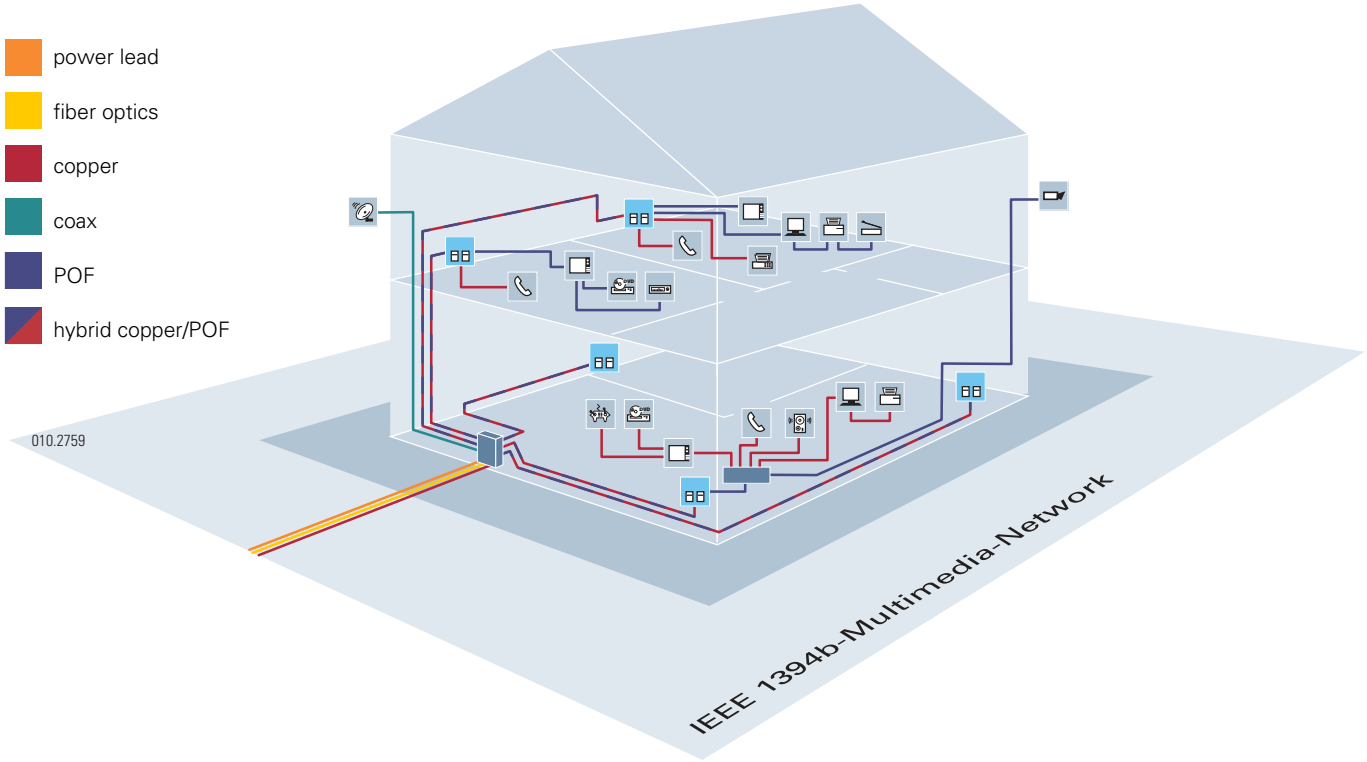
RCC45® as a total solution open to the future

RCC45® is not confined to 1000 µm SI-POF, but can be adapted to other types of fiber, such as 500 / 750 µm GI-POF.

With the appropriate transceivers, the system can be operated on a wavelength of 520 nm. Because of the lower fiber attenuation, SI-POF lengths of up to 100 metres are then possible, suitable even for Fast Ethernet.

Further development of the POF ferrule (patent applied for) will in future make it possible for the whole SC plug family to be assembled from POF. In addition, IP67 industrial solutions will then be possible with the SC-RJ.

And, not least, copper wires of up to AWG18 (1 mm²) can also be accepted instead of POF. Power of up to 48 V DC (200 W) can be supplied through these contacts.



Structured cabling for an IEEE 1394b multimedia network

Industrial Cabling – quality is the way to go

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Ethernet goes industry. That's easily said, but it hasn't been completely thought through. The committees have indeed brought out unambiguous and far-reaching standards – on paper. A LAN in the factory building is now indispensable. Individual machines, however, still don't speak TCP/IP. What interfaces will they use in future to communicate with the LAN?

Splash Products from R&M meet protection class IP54, reliably protecting points of connection against dirt and moisture.

Two levels of industrial cabling at R&M

Anyone discussing industrial cabling today must bear two levels in mind. On one level, it can be understood as the data cables running around the production area, linking the machines up with the control station. The general vision is of an industrial LAN that links up smoothly with the office world. On this level, the experts are in relative agreement, as is shown by the wide acceptance of the standards and the current growth of the market.

R&M is successful here with its RJ45 and optical cable products, which have already proven themselves in generic cabling and are leaders in quality. A good portfolio is available, which is now being supplemented from our own production with patch panels mountable on the top hat rail, and with components (cables and IP67 plugs) from third-party firms that have already shown their worth in the industrial environment. Our Security System and our Splash Line products are particularly interesting for an industrial LAN. An industrial LAN mainly differs from a «normal» LAN in that the plug contacts and to some extent also the cables have to withstand heavier mechanical loads or environmental effects. R&M has developed innovations especially for such situations.

The other level has to do with manufacturing itself. The question is whether Ethernet can penetrate right down to the individual tool, sensor or circuit. What does the machine itself contribute to integration into a LAN? Can it speak TCP/IP? Can the performance required by Fast Ethernet be obtained at the point where things actually happen?

On this level, the ideas of the experts diverge widely. The euphoric fraction considers that everything is feasible. The conservative fraction has many good arguments in favour of the proven panel bus and plug solutions. Manufacturer-specific solutions still predominate. Fitters of original equipment either have little or no experience with the generic protocol, or don't trust it.

They have to act now

Findings by R&M show that fitters of original equipment will soon have to decide. They can't dodge the Ethernet question. Now and in the near future, technological changes are also emerging for communications between the machine and the in-

Modern assembly plants of today are linked to the office worlds via industrial LAN.

LAN reliability in industrial environments

Computers, data networks and intelligent control systems now have to be located where conditions are anything but optimal. In industrial production, for example, where dirt, oil, liquids, vibrations and other environmental effects can impair connection quality.
R&M has recognised the intensified requirements and has developed the Splash Line range, together with others, for the world of industrial cabling.

dustrial LAN. Genuine solutions to the problems are required here. The fitters of original equipment will need experienced partners and system integrators who are able to provide such solutions.

For example, they will have to provide higher data rates and real-time processing. This aggravates problems with electromagnetic fields. Shielded RJ45 contacts or fiber optic connections can help here. The RCC45® design from R&M opens up totally new possibilities – and it can incorporate the power supply.
In this way, data and power for industrial computers are combined in a hybrid RJ45 plug. This pathbreaking innovation simplifies cable handling and opens up a wide field of application to fitters of original equipment.

Industry needs uncompromising product quality

Technical know-how and uncompromising product quality – R&M stands for both – are of even greater significance in the industrial milieu than in the office, because of the much higher cost of network downtime in manufacturing. In this connection, it's interesting that products from R&M already display properties and performance figures which, although of less consequence in «classic» cabling systems, can spell the difference between success and failure in industry.

One example is the way that contact is made in RJ45 modules and RJ45 plugs. The technique used by R&M – insulation-displacement contacts and mechanical stabilisation of individual copper wires by clamping them in the module – not only increases resistance to vibration. It also guarantees excellent protection against corrosion, oil, moisture and pollution, because the coating on the contacts is not injured during the wiring of the cable. A small detail that can be of serious significance in a rough industrial environment.

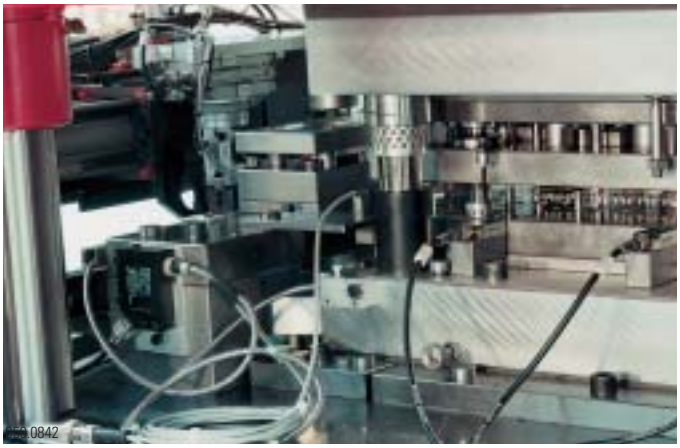
Splash Products are perfect for industrial LAN networks. They meet protection class IP54 and provide inexpensive but reliable protection against dirt and moisture for exposed points of connection. A further plus factor in industrial cabling is a fully modular connection technology. R&M provides the unique ability to change, add to or protect an installation retrospectively.

R&M has another iron in the fire – the SC-RJ range of optical plug connectors – which meets the requirements of industrial cabling at all levels. Innovations associated with the SC-RJ range will be presented at CeBIT 2004. Developments in the area of explosion-proofing can also be expected. This will be a big topic, especially for the chemical and petrochemical industry. Thus, in every respect, R&M is holding out the prospect of many promising and attractive solutions for industrial cabling, and this makes it the definitive partner for fitters of original equipment and factory planners.

Industrial cabling as reflected in the standards

The international standardisation committees have set out the path that Ethernet and TCP/IP are to follow into factory buildings and manufacturing plant. Their standard, formulated in 2002, has enhanced the LAN technology widely used in the office world to make it suitable for use in industry. So there is now clarity about the requirements that cabling must fulfil in the harsh industrial environment. Experts call it the «first real revolution in the history of the EN 50173 cabling standard».

The IEEE 802.3ae standard (10 Gigabit Ethernet) defines Gigabit transmission. The ceramic version of the SC duplex plug is to serve as the plug connector in this context. The IEEE 802.3af standard (power via TP) deals with the transmission of 48V/350mA power over an eight-wire data cable (only shielded). Here, the RJ45 type of plug is to be used. The corresponding EN standards are EN 50173-1 (Cabling for office networking) and EN 50173-2 (Cabling for industry). The first producers of passive components (such as R&M) and active components have already begun to implement these standards in their products.



An industrial LAN is standard today. And in future, what will be the communication interfaces between individual machines and a LAN?

R&M trade fair appearances until October 2004:

CeBIT'04, Hannover, Germany
March 18–24, 2004

light + building, Frankfurt, Germany
April 18–22, 2004

Gitex, Riyadh, Saudi Arabia
April 18–22, 2004

INFORMATICA, La Habana, Cuba
May 10–15, 2004

Expo Comm, Seoul, Korea
May 19–21, 2004

CommunicAsia, Singapore
June 15–18, 2004

ANJA, Bandung, Indonesia
August 3–5, 2004

ECOC 2004, Stockholm, Sweden
September 6–8, 2004

Networks Telecom, Stockholm, Sweden
September 23–25, 2004

Cabling Business Show, Tokyo, Japan
October 7–8, 2004

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