

# CAVEL Historical Topics

## 1968

ITALIANA CONDUTTORI has been successfully producing CAVEL coaxial cables since 1968.

At that time only RAI 1 channel was broadcast in Italy.

Since the beginning the production of Italiana Conduttori was branded CAVEL.

The factory was just a kind laboratory in downtown Pavia.

The production started with just two cable styles: *the 300 Ohm twin lead* as well as some *60 and 75 Ohm* coaxial cables, dedicated to the reception of VHF signals, this means for frequencies lower than 400 MHz.

## the '70s

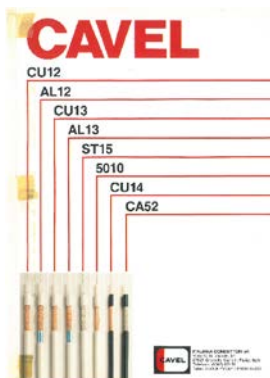
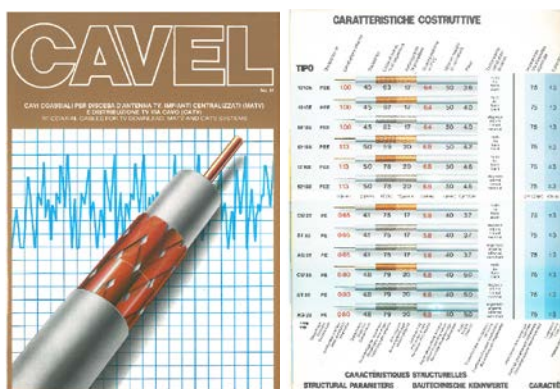
RAI started broadcasting the 2nd national channel in the frequency band UHF, till 862 MHz and the company grew, focusing its production on 75 Ohm coaxial cables that would have represented the triumphant product of the whole '70s.

The generality of those coaxial cables were provided with just **one screen** of braided wires only (picture 1); in the most common case made by plain copper but some in tinned copper and the most efficient ones by silvered copper wires (pictures 2).

Also the market was mostly requiring coaxials with **solid PE dielectric** (picture 3).

Already since the late '70s some cables had been provided with a **second screen**, but initially the simple Al/Pet film foil was added between the braid and the jacket, this to improve the screening attenuation and EMI immunity of cables (picture 4).

The publication dated Sep. 1978 dedicated to our Italian domestic market was featuring this improvements in the form of a pocket size Manual of Installation Technical Notes (picture 5).



Pictures: 1, 2, 3, 4, 5

## the '80s

The '80s were marked by the increasing satellite reception diffusion in Europe and by the start-up of many private networks in Italy (picture 6).

All cables were furthermore modified to satisfy the emerging customers' requirements of improved linear Attenuation as well as of the Screening Efficiency.

The first feature was achieved introducing massively the production of the **foam dielectric**; at that time it was realized by the extrusion of PE blended and moulded with **chemical** substances able to generate gas in the presence of heat and pressure.

Further, researches aimed to improve furthermore the Screening Efficiency made necessary the massive production of **double screened** coaxials. Besides, the application of the Al/Pet film foil and in some cases the Al/Pet/Al film foil moved between the dielectric and the braid of tinned copper wires. In some countries, eg. Spain and UK, the most appreciated combination for the double screen was Cu tape + plain Cu wires instead.

All these improvements were initially pioneered by strict partnership among our company and some of the European leaders of the TV industry like WISI in Germany, Televes in Spain and DKT-Comega in Scandinavian Countries just to mention some among the most important customers of those years. Soon step by step the whole production of qualified coaxial cables moved towards the solution of the Double Shielded coaxials.

The second publication of the manual for installation technical notes (picture 7) was already introducing these features while another publication was stressing the production and technical skill achieved in the years (picture 8).

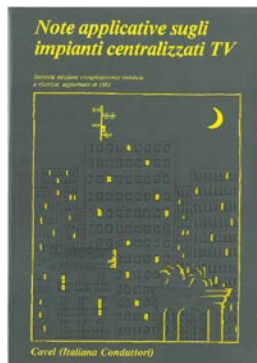
The improvement strategy concerning product's quality and the customer service efficiency made the CAVEL company the leader of the Italian market since the late 80's, while the growing export activity concentrated mainly onto European countries, including the Eastern European countries like Yugoslavia, Bulgaria and Czech Republic.

Some examples of the internationalization are given by the attached covers of some catalogues dedicated to important European customers of those years, like:

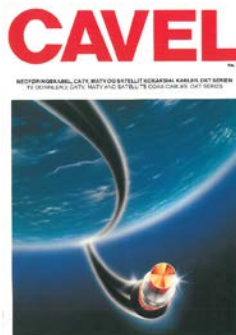
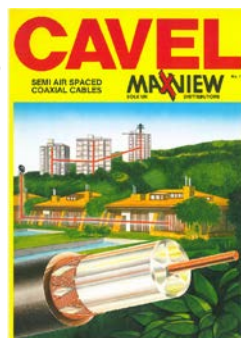
Maxview in UK with a line of Semi Air Spaced coaxials (picture 9),

Dansk Kabel in DK with the first line of trunk cables for underground installation (picture 10).

Nevertheless, at the end of the 80's the commercial activity reached Middle and Far East countries as well with CAVEL cables delivered in Egypt, Turkey, Saudi Arabia and Hong Kong.



p. 6, 7, 8



p. 9, 10

**1988**

A **wire drawing department** was created in the factory in order to improve the qualitative standard of one of the most important cable's components that is the inner conductor made by plain copper wire. Further, step by step this activity grew up to the capacity of producing the whole amount of plain copper wires used in the company for our production.

## the '90s

During the first half of '90s the CAVEL **laboratory** has been developed both in terms of new competences and equipment with the most up-dated measurement and testing systems and this carried out the products' evolutions explained forwards as well as the most stringent quality controls on all raw materials and final products.

Besides, also a new **informatics** operative system developed for the company connected administration, commercial, technical and operational departments together this allowing a quick and efficient control on from the production to the logistic.

**1993**

The consolidation of the leadership in the Italian market was achieved enlarging the number of agents present in the domestic territories; besides, they started to be closely assisted by skilled personnel just devoted to the promotion and dedicated to the spreading of their technical experiences to installers and contractors, this through a number of **seminars** hold in many Italian towns.

Another up-dated edition of our Manual for the TV Reception Systems Installation assisted these activities becoming a popular guide for the operators of our field of activities (picture 11).

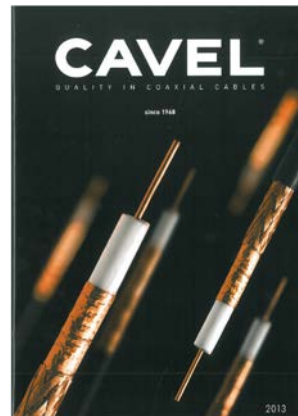


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**1995**

At the end of 1995 for the first time the yearly production capacity of the company overtook the amount of **100.000 km** of cables, this also thanks to a new strategic sales policy started to take place into the company's management; which was to concentrate the marketing efforts to furthermore consolidate the export sales of CAVEL branded cables instead of perpetuate the ties of the OEM supplies.

Is no accident that we seized the opportunity of starting the business in Russia just that year with **LANS Corporation**. A fortunate occasion for both the companies which developed step by step one of the best opportunity for growing together ... still lasting with mutual satisfaction (pictures 12).



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1996

In 1996 CAVEL introduced the new technology of the **physical gas injection** (nitrogen) for the expansion of the foam dielectric. This technology was firstly introduced in Europe by Pope in Netherland whose industrial plant already belonged to Belden (USA). Our company was the second in Europe managing the physical extrusion of foam dielectric and since the beginning we started with the most sophisticated version of the physical foam extrusion, which is the so called “skin-foam-skin” technology (picture 13, 14). This step represented another essential qualitative improvement for what concerns the mechanical strength and the long lasting of cables electrical characteristics, one of the pillars which the 15 years warranty of our products is based on (pictures 15, 16).



pictures 13 14



pictures 15 16

In **April 1996** Italiana Conduttori also obtained the ISO 9002 Certification, as the 1st Italian company of this industry.



1997

In 1997 another two goals had been reached.

The **CABLEBOX** dispenser was designed and launched on the market.

It was thought with the purpose of making easier the job for the installers. Indeed this item joined the target and also introduced a new concept of ecological consciousness; the reduction of packing materials. This is the case of the shrunk packed coils suitable to be unwound by the CABLEBOX dispenser.

The great success met by CABLEBOX became the start for a new marketing era, made of several other CAVEL products dedicated to the comfort in handling the coaxial cables during their installation. Therefore, a number of cable strippers, both for drop and distribution cables, were launched, as well as the improvement of our trade and offer in terms of complementary items like the connectors and tools (picture 17, 17.2).



p. 17 17.2

Besides, thanks to the trial start-up of the broadband digital network of Telecom Italia, the so called SOCRATE project, we had been asked to develop a set of drop coaxials provided with **LSZH outer sheath**. Even if that project soon declined, we kept and further developed the skills for the extrusion of a number of coaxials cables with Zero Halogen jacket. Besides, the number of such cables started to become little by little demanded by those operators and contractors of public buildings researching cables safe in case of fire; so, even additional features became important and were developed till the deployment of the present LSZH compound, having the following characteristics: flame and fire retardant, low smoke and fume emission, zero halogen and UV resistant (picture 18).

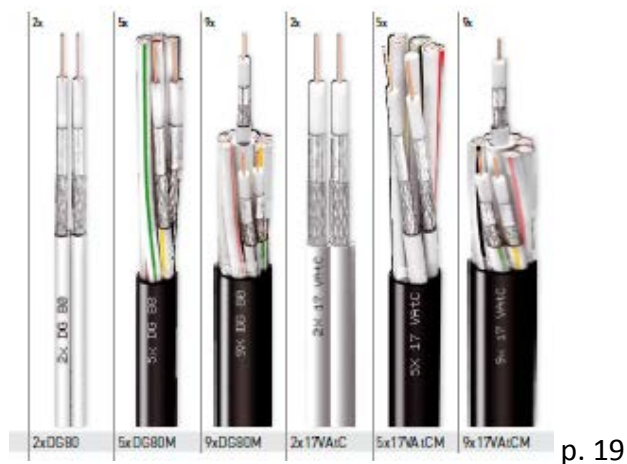


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## the new Millennium

### 2000

The Multiswitch 1st IF Distribution started since the late '90s and became a quite interesting business at the beginning of the new millennium. To face this requirements CAVEL developed a range of **SMATV Multicore Coaxials**. After several trials with PVC rather than HDPE outer jackets both for the inside single cables and the overall external sheath the last issue of improvement in terms of their easy and comfortable application, was the application to the full line of these cables of a flexible PE outer sheath suitable to indoor, outdoor and safe installation in case of fire (picture 19).



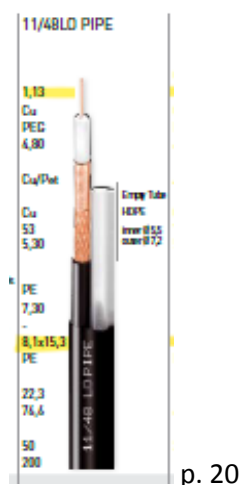
### 2002

In Nov. 2002 the company up-dated its Quality System Certification achieving the UNI EN ISO 9001-2000, called VISION 2000.

### 2006

Among the line of **Hybrid coaxial cables**, thanks to the development of business in the Scandinavian markets we designed and started to supply one peculiar combined cable made of one drop coaxial for underground installation combined into the same overall outer sheath with a loose pipe; the latter available for further insertion of fiber optic cables with the blow system.

The evolution of this cable came and developed just at the beginning of this year (2013) consisting in the addition of one FO cable made by two fibres already available into the pipe (picture 20).



## 2009

**Video security** is continuously demanding better performances for the remote camera. The CAVEL answer to this field of applications was the introduction of one set of dedicated cables, providing: incomparable better attenuation and screening efficiency than any previous RG59/11, URM or KX6/11 type coaxials and a wider range of applications (indoor, outdoor and safety in case of fire) this due to the outer sheath of flexible EVA without halogen. The offer includes just one single VS80 cable or two other versions already provided with electrical leads according to the lengths and extension of the designed security system. In terms of Video the cable VS80 allows to cover connection lengths of 1.000m by analogue and up to 200m by HD\_SDI cameras (picture 21).

VS80	VS80 205	VS80 210
0,80	0,80	0,80
Cu	Cu	Cu
PEC	PEC	PEC
3,50	3,50	3,50
AFR	AFR	AFR
CuSn	CuSn	CuSn
45	45	45
4,00	4,00	4,00
5,00	5,00	5,00
LSZH	LSZH	LSZH
11,1	20,0	27,8
24,7	44,5	78,0
25/50		
90		
75x3		
52x2		
85		
2,1		
7,8		

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## 2010 till today

Further some market researches and the feasibility study started since the beginning of 2009, in the early 2010 we have got the first line of equipment for manufacturing LAN cables. Of course the challenge was to acquire in short time a large amount of knowledge to recover the gap of the many improvements made by this industry in decades of perfecting the cable's performances.

Our approach was to start the production of the easier Categories like 5e and 6 which represent today our offer for single or twin cables provided with PVC, PE and LSZH jackets (picture 22).

The acquisition of experience during the 2012 and further improve of our equipment will give us the chance to start the distribution of the Cat. 6a as well in the 1<sup>st</sup> quarter of 2013; then, we also planned for the second quarter 2013 to duplicate our production capacity.

Last but not least, thanks to further acquisition of up-dated dedicated equipment we'll start in the second part of 2013 the production of LAN cables provided with PIMF twisted pairs for S/FTP versions of screened cables as well as the true CAT. 7 and 8.



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Goodbye for now ... and let's go on.