ITMA Munich 2007 **RETECH - Media Information**

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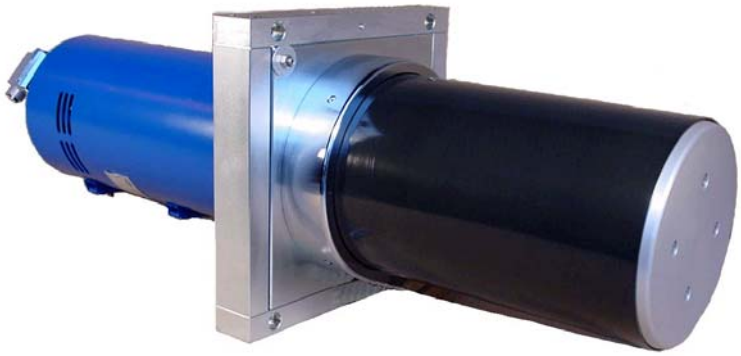
RETECH, a classical manufacturer of components and a specialist for the thermal treatment and drawing in the field of synthetic yarn production, is pleased to be able to present a range of innovations and performance improvements at the ITMA in Munich from 13. – 20. September 2007.

In previous years RETECH has attained a leading position in the market for heated rolls used in spin-draw plants. Besides the initial equipping of new machines and the resulting close cooperation with the leading machinery makers, more and more effort is centred on cooperation with large yarn producers, who develop new polymers and processes, to enable the necessary machines to be developed and built under their own control.

All these different tasks motivated us at Retech to seek new means of driving on developments. As a result we have acquired innovations, which we will be pleased to present to a public drawn from the whole world at ITMA 2007 in Munich. Our innovations mirror our strengths and market position in the field of heated, unheated and cooled rolls.

1. A new alternative concept motor: ESM „Two Birds with one Stone“

A new motor concept as an alternative to the conventional and for many years well known reluctance motor.



(Godet 225 x 350 mm with new ESM motor)

The well known reluctance motor has „nestled“ in our industry and has its deserved place, inspite of eclectic disadvantages, mainly because of its price advantage, which cannot be ignored. Retech also works successfully in certain segments with this motor technology. The chief disadvantages of the reluctance motor are; low efficiency, high energy consumption, limited torque and a high self generated heat accumulation due to high losses in the rotor.

One impressive alternative is the so-called PSM (Permanent Synchronous Magnet) motor. Can it nevertheless compensate all of the aforementioned disadvantages and thereby stand in first place as the logical „winner“? If not, it is only due to its not to be underestimated price, which is seen in many applications (e.g. polypropylene compact spinning plants) as too great a handicap. Therefore this advantageous technology must be judged uncompetitive in these areas.

Retech has now succeeded in combining the advantages of the PSM motor with the price advantage of a reluctance motor, in cooperation with a renowned motor manufacturer.

The new Retech motor generation, which will be shown at ITMA under the name of ESM (Energy Saving Motor), consists of a permanent magnet excited synchronous motor with short-circuited cage for asynchronous self starting. It can be connected to the mains supply as a drive with constant revolutions or to an inverter as a variable speed single or group drive. The ESM motor is currently available in 2 sizes (BG90 + BG112). It has the following impressive key technical data:

- Motor BG90
- 400 V / 4.7Nm, constant throughout the whole speed range / 6.2A
- 800 to 8000 revolutions/min.
  as a standard execution

- Motor BG112
- 400 V / 16.0Nm, constant throughout the whole speed range / 21.2A
- 500 to 8500 revolutions/min.
  as a maximum execution

The BG90 is used for a godet size up to 160 mm (diameter) x 210 mm (length). The BG112 is used for a godet size from 180 mm (diameter) x 270 mm (length) up to 225 x 420 mm and is available in various performance ranges according to the process.

In comparison with a conventional reluctance motor the following advantages arise:
The comparison below is based on the assumption of a draw unit with a total of 6 heated rolls (3 pairs) diameter 160 mm x 210 mm length with a BG90 motor:

(drawing with Retech rolls)

Price advantage for the required inverter:
(Prices are RETECH buying prices in Euro)

	Reluctance - Motor	**ESM - Motor**
Inverter DUO 1 (incl. filter)	1210	694
Inverter DUO 2 (incl. filter)	1210	694
Inverter DUO 3 (incl. filter)	1210	694
Total per thread line	3630	2082
Saving in Euro		1548
Saving in %		42.5 %
Saving per roll in Euro		258

Energy advantage:

	Reluctance - Motor	**ESM - Motor**
Annual energy consumption	70‘000 kWh	60‘000 kWh
Climate control cooling energy	17‘000 kWh	8'000 kWh
Annual cost of total energy consumed	7‘000 €	5‘400 €
Annual savings: Energy cost per position	1‘600 € @ electrical energy cost of 0.08 € /kWh	

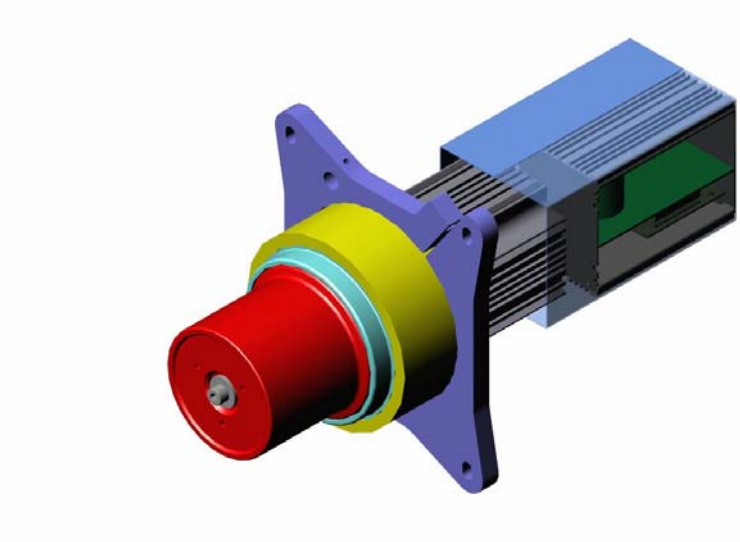
Thanks to the innovative technology and an optimised production cost, the investment price of the heated roll has been maintained successfully at a similar level. The advantages indicated above, thus accrue fully to the account of the customer chain and allow the machine maker (who can specify a smaller inverter), as well as the end user (yarn producer) to produce at lower cost. Besides the customer's gain, one can also offset the warming of the environment through the application of a motor, which complies with efficiency class 1 (Reluctance motor: efficiency class 3).
At the present time, where price is often considered to be more important than quality, this is a considerable step towards a new future, in which quality, performance range, energy considerations and price are in step inspite of all.

From this aspect the well known saying „Two Birds with one Stone" may be quoted with confidence.

2. STS – Godet: compact and modern „GITI" (**G**odet with **I**ntegrated **T**emperature control and **I**nverter)

The subject of cost is not only important in the case of heated rolls for spin-draw and it is almost no longer possible to imagine a development engineer without cost in his vocabulary. Equally our customers are occupied with the cost of 2 stage processes and multiposition machines. Increasingly often, so are we! Whether it is for air jet texturing, draw winding and draw twisting or in the new types of tape production. Above all, the immense work load of wiring between motors and inverters and between heating and temperature controllers should not be underestimated. This is mirrored in the cost calculation of the machinery manufacturer, where it appears as a relatively large overhead.

Retech has developed a new generation of small godet for these applications (diameter 100 mm / length 100 or 130 mm), which comes over as compact and modern, using the classical STS principle (Stationary Temperature Sensor in an air gap),. The godet is driven by a synchronous motor, which possesses similar advantages to the ESM motor. Here, the problems of the classical reluctance motor were also considered and thus it was eliminated from this field of application.



(STS – GITI godet with integrated electronic)

The highlight of the new STS – GITI godet is nevertheless without doubt not only the motor, but also above all the integral electronics with temperature regulation and inverter. We have succeeded in building a godet with a compact design, which has a total motor length (incl. electronics) of 300 mm and which can be fitted into every machine from the front. In addition godet depth changes from up to 50 mm can be achieved using a modern clamping flange, which enables the machine builder to design a simpler machine frame without an extension on account of the thread path being necessary.

The godet is designed so that the electronics are built into the reverse of the motor and these same electronics regulate both the speed and the temperature by means of frequency. The following diagram shows clearly the design as well as the advantages of the system.

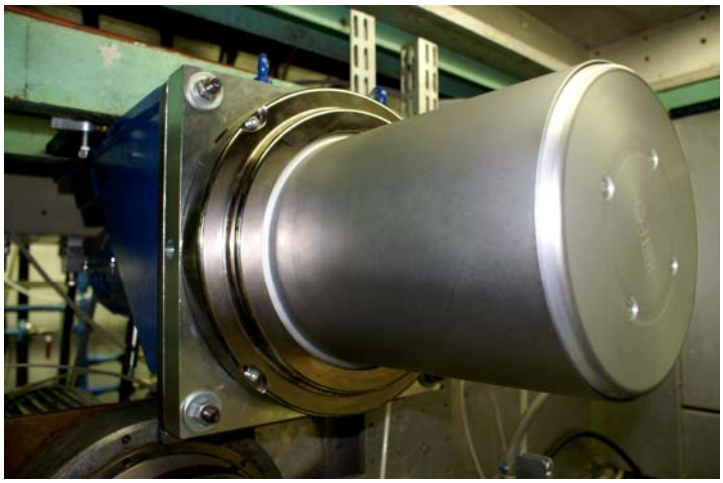
The advantages and customer benefits are as follows:

- higher speed, higher torque, higher efficiency in comparison with a godet driven by a conventional reluctance motor
- energy consumption of the drive is lower than for a conventional reluctance motor drive (factor 20%), no losses in the rotor, therefore longer life time of the motor bearings
- only one integrated electronic system to be connected to the Master's DC-Bus, controlling both speed and godet temperature
- simpler service (the whole godet is replaced after a defect so that the machine is immediately ready to work again)
- in the case of a stoppage, production is lost only at the affected position (in comparison with plants with line inverters)
- lower expenditure on wiring
- plugged connection at the reverse side of the motor
- smaller range of parts as a result of the unified design and single motor concept, even for unheated godets
- significant cost saving in comparison with a conventional design having an external control panel, individual inverter and temperature control.

3. Liquid Cooled Roll (LCR)

In Munich we will show a liquid cooled roll in use by means of a demonstration unit, as well as display the performance range and the advantages.

(LCR – Godet in production process)



(LCR – Godet as an impressive advantage in the development process for new technical yarns)

In diverse processes a cooled roll shell can show a competitive advantage in terms of yarn properties, which is not to be underestimated. This situation will apply more and more to technical yarn applications in the future. In various processes the yarn producers have to contend with the undesirable warming up of godet surfaces.

A description of a PET HT technical yarn process serves as an example: A production position with 2 yarns, each having a yarn count of 1670 dtex, which is heat set at 250 °C, heats up the following feed roll pair to 150 – 160 °C as a result of the transfer of heat by the yarn alone. Thus the shrinking process is affected. This fact means that the feed roll must be heated at least to 160 °C, in order to ensure a stable process. As a consequence the winding process has to be adapted to these circumstances and the winder, as well as the package build, must be able to handle the relatively high yarn temperature as well as the actual yarn property. Additionally, the applicable settings relating to shrinkage and elongation are limited. By means of an actively cooled feed roll it is possible to lower the roll surface temperature to 50 °C and thereby to bring the yarn temperature down to below the point of crystallisation. This fact allows the producer to employ other settings relating to shrinkage and elongation, as well as a simpler winding process.

At the ITMA in Munich Retech will demonstrate a roll (LCR), which can be maintained at a constant cooled temperature by means of a cooling medium (water) in a closed circulation. By means of the proven RTS concept with rotating sensor for a single zone heated roll (TTR-1), the required roll temperature can be regulated accurately by controlling the necessary quantity of liquid using a solenoid valve.

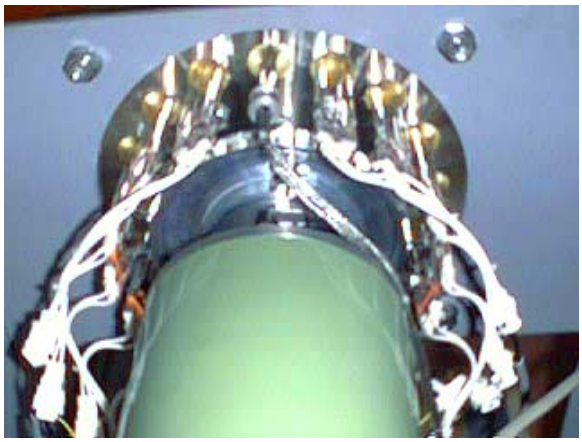
The rolls are available in diameters 225 and 190 mm with various lengths depending on the individual process and number of threads. Rolls are being used successfully by diverse producers at production speeds up to 4000 m /min. at present. Through the use of conventional cooling water, the equipment already existing in most plants can be used.
The functioning model on display shows the heating of a yarn by means of a godet and the cooling of the same by means of the cooled roll described above and thereby demonstrates impressively the high efficiency of the LCR. This heating and cooling process will be snapped by means of an infrared camera and will enable the interested visitor to judge the cooling performance of our roll. In addition the temperature profile of both rolls (hot and cold) can be recorded and displayed by the heat sensitive camera. The temperature profile always provides a critical point of discussion, since even the experienced are not in agreement with each other about this matter. At the ITMA we will demonstrate that an excellent temperature profile can be generated by means of a 3 zone heated RTS godet, which complies with the demands of modern yarn production.

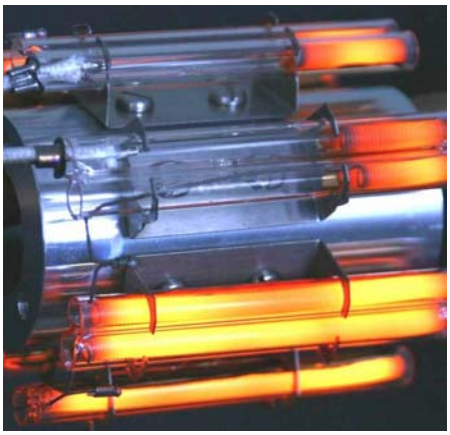
4. Ever hotter and hotter

Not only cooling, but also the opposite has kept us busy at RETECH in recent years. The demands made on our rolls increase all the time and this applies above all in the area of the required production temperature. New materials and polymers also require new methods of processing and thus higher temperatures. The conventional PET application with temperature in production of up to 250 °C is no longer the flavour of the day. Applications up to 300° C in the „normal“ technical yarn business are no longer a rarity. Applications up to 450° C portray our current field of activity and non textile industries already demand 550° C.

So we may mention with pride that we offer, let us not call it a godet but rather a roll with a length of 1800 mm, diameter 160 mm, rotating at low speed, which is heated up to 550° C for the manufacture of solar cells. The experience that we have gained this year in a specialised application, has also helped us in our main business area of yarn production.

By means of infrared heating we can cover a temperature range up to 450 °C as well as speeds up to 4000 m/min. A heated roll with dimensions of 220 mm diameter and 350 mm length can be equipped with a heating capacity of up to 20 kW, in order to guarantee the exact required temperature in the production plant.


(Infrared heated roll in operation)

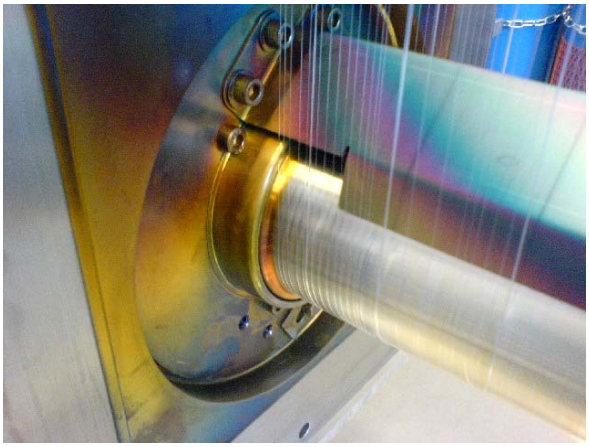

(Detail of the infrared heater)

5. Rolls: from large to small, from hot to cold, from slow to fast

As a summary of the 4 innovations described above in the field of rolls, we may claim without exaggeration that we are in a position to cover all the needs of each and every producer. Whether it is with standard products for normal large scale production, at the same time energy saving, compact and modern. Whether it is for the maker of specialities, who wishes to distance himself from the competitor and therefore needs an alternative roll technology. Whether it is for research purposes and for an institute that works for the future of our industry or also for producers, who rebuild their existing machines using up to date roll technology or want to bring a new dimension to their plants through an additional „cooling possibility“ . Or whether it is to apply a godet or a roll in another industry and area of application. Retech has a ready solution for all.

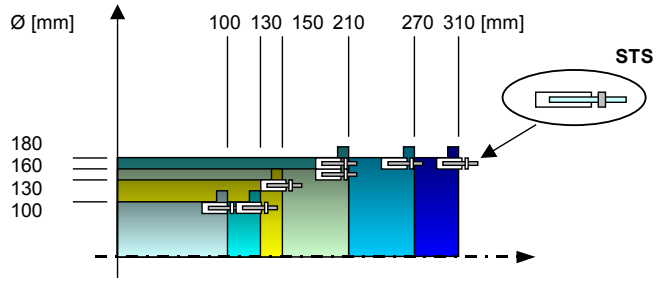
Not only fast and faster, no, also “slow” is entitled to its place. There are many processes in which the production speed does not appear in the headline. It is much more the accuracy, with which the roll must be driven. 0.5 meter / minute is no rarity here. Special drives with no free play are demanded by such applications using multiple pole motors, which can maintain the required accuracy. Also a subsequent precise „ramp up“ to 5 meter / minute must be achieved without jerking so that the whole process can be controlled exactly. Also in this very special field of application, which is found not only in medical technology but also in diverse horizontal drawing plants, we have the right products and experience stretching back many years.

The subject of medical textiles becomes ever more important. When synthetic yarns are required to be treated in a special way, the process can take place in a vacuum and if rolls are required for this, we can offer the corresponding product.

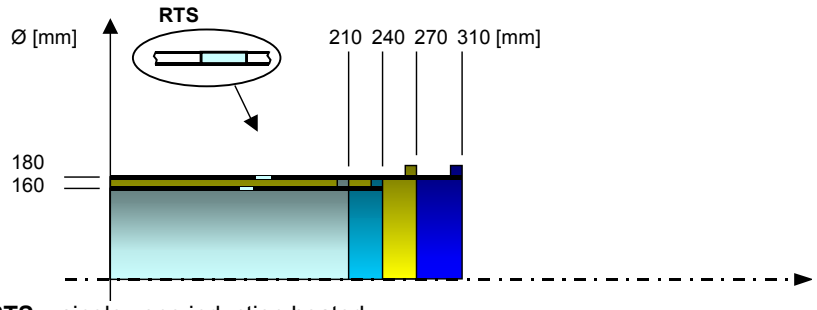


(yarn running on Retech rolls in a vacuum
with a dimension of 160 mm diameter and a length of 900 mm)

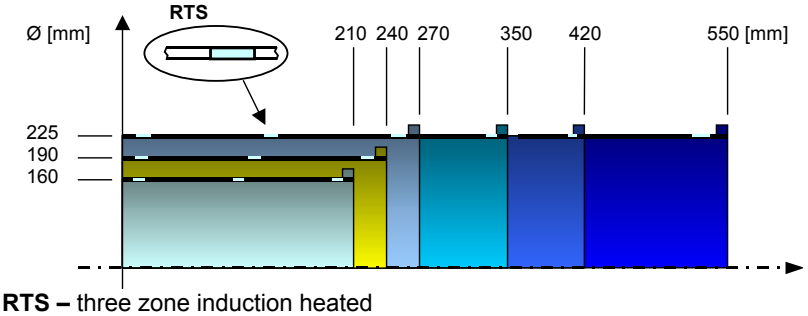
To underpin our numerous products the following display of our „standard“ rolls will serve.



STS – single zone induction heated



RTS – single zone induction heated



RTS – three zone induction heated

6. Plant Engineering: Haul off and draw stands - Conversions / Modernisation

Besides the 4 innovations within the range of roll products, which we wish to present at the exhibition, we want to cast a little light on a special subject, which we have nurtured and developed successfully in recent years.

On the one hand there are ever more yarn producers, who have noticed the signs of the time and have adapted themselves to new processes and materials. On the other hand there are diverse manufacturers of specialities, who hold on to their proven plants and leave these to run on with certain modifications and improvements. For both we are the right partner - both flexible and customer orientated.

A) New processes and new production possibilities necessitate alternative plants, which are not available to buy in the required form „off the shelf". Machine makers are more interested in selling their standard plants, rather than in special solutions. A niche has emerged for us arising from this situation, which can be described confidently as special machine building. Whether aimed at the conception and fabrication of a new haul off unit or a draw stand for synthetic yarns, we will gladly make available our know how in cooperation with our customers.

   Under the title „from conception to the finished draw stand" we work out the layout of the draw stand according to the specification provided by the customer, the arrangement of the rolls (our main concern), incl. all necessary additional components such as the application of oil, aspirating and cutting units, intermingling, and yarn guides. These tasks include the mechanical design of all parts incl. machine frame, electrical layout, definition of the interface up to and including operator software or alternatively networking with a higher level system. The complete draw stand will be built and tested by us, the responsibility for the process nevertheless remaining with the customer. Such contracts are placed with us either directly by the client, or also by engineering companies.

B) Existing plants, which make special products, have approached us in the meantime. They can no longer obtain spare parts from the original manufacturer and always pose a challenge for us. The customer wants to keep the plant running, since the majority of the parts still function without any problem. Also products that are made in these plants cannot be reproduced in an identical form in new plants. So these machines represent an asset of the company, which should not be underestimated . If the solution of the problem is concentrated on the heating of yarns, whether involving the mechanical parts and/or the temperature control (electrical), we can offer assistance, both with our products and our know how.

   A few examples in this area: The successful replacement of Vapotherm rolls with 3 zone Retech RTS heated rolls (1). The conversion of elderly draw twist machines using new rolls, which were fitted to the existing central bearing block incl. new temperature regulation with interface to a higher level PC system (2). The replacement of an old temperature controller by our new ETC-24 system (3) on a draw twist machine. Also the integration of an additional draw zone to an existing FDY textile plant (4) incl. temperature and motor control.

(1: new RTS-rolls in a technical yarn process replacing vapotherm rolls)

(2: new STS rolls (feed- and draw rolls) on existing bearing housing of an old Rieter draw twist machine)

(3: new temperature control system ETC-24)

(4: additional heated draw rolls implemented on an existing draw wind machine)

7. Separator rolls ?!?

Is there an alternative to separator rolls with air bearings in the spin draw process at high speeds and with high draw forces? If you are of the opinion that this does not exist, would you like to be convinced to the contrary?

Visit us in hall A5 stand number 241 at ITMA in Munich