

Flat bed incubator-experience with G185

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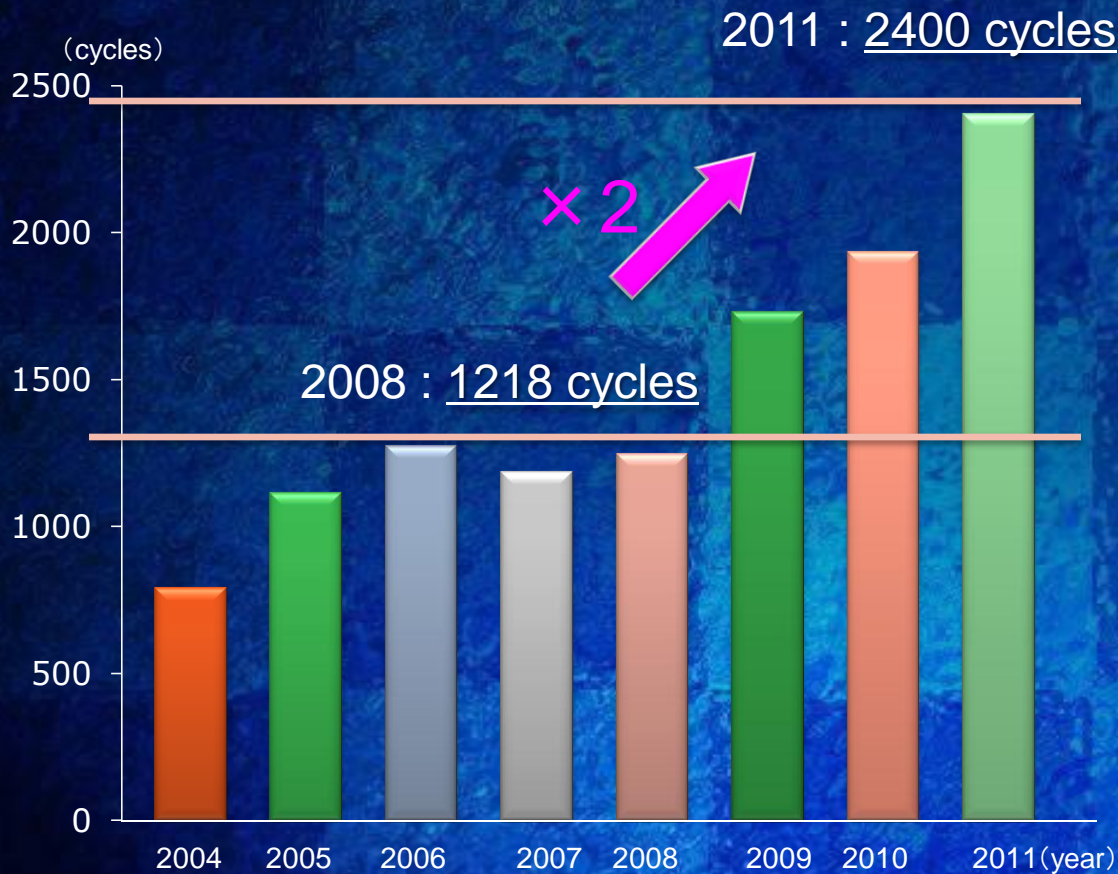
Introduction of Asada Ladies Nagoya Clinic



Flat bed incubator G185 & FN003(rack)



The necessity of the incubator installation



The OPU numbers have increased from 790 cycles to 2400 cycles for 7 years since opening Asada ladies clinic in 2004.

The developmental rate of blastocyst was increased by the improvement of the culture environment and the increase in patients.



Therefore the incubator installation was needed

The incubator installation



ASTECC : APM-30D



By the improvement of culture environment, particularly the developmental rate of blastocyst was increased. Therefore we installed incubators to 22 in 2009.

However, further installation of conventional incubators was difficult from the maintenance of incubators and the requirement of a setting space.



Therefore we looked for new incubators.

·Space-saving design, · Individual culture capability, · Simply maintenance

Our ideal incubator is "a chest type"!



We met our ideal incubator



ESHRE Roma

Asada Ladies Clinic

The incubator was “a chest type”



We met K-system in the 2008 ESHRE, and then K-system have been installed on trial in our clinic since January, 2009.

The clinical trial of G185



K-System : G185
01/09/2009



This incubator has 10 individual non-humidified compartments_ which differentiates it from other incubators on the market whereas humidified culture condition was fundamental to most of the laboratories at that moment.



We compared G185 to conventional incubators in embryo culture

Experience with G185



Experiment: 1

Measurement of pH and osmolality in the culture medium equilibrated in each incubator.

Experiment: 2

Comparison of the developmental rate of embryos cultured in each incubator

Experiment: 3

Comparison of the pregnancy rate after embryo transfer

Characteristics of each incubator



ASTECC APM-30D

Inside

- ❖ **Humidification**
- ❖ **Too much culture space**

Maintenance

Cleaning of incubator is necessary for suppressing of bacterial growth

Cleaning of incubator is complicated

- ❖ **A limit of installation**

K-System G185

Inside

- ❖ **Non-humidification**
- ❖ **An appropriate space for embryo culture**
- ❖ **There are 10 compartments for individual embryo culture**

Maintenance

Low bacterial growth for non-humidified condition
Cleaning, installation and maintenance are easy

pH level of culture medium equilibrated in each incubator



	ASTECC (APM-30D)	K-systems (G-185)	<i>P</i>
QC	7.377 ± 0.02	7.371 ± 0.03	NS
QB	7.391 ± 0.03	7.385 ± 0.03	NS

QC : Quinn's Advantage Cleavage Medium

QB : Quinn's Advantage Blastocyst Medium

pH meter = nova biomedical : STAT PROFILE pHox Basic

Osmolality of culture medium equilibrated in each incubator



	ASTECC (APM-30D)	K-systems (G-185)	<i>P</i>
QC	264.8 ± 3.6	260.3 ± 1.4	NS
QB	261.0 ± 8.6	254.0 ± 2.7	NS

QC : Quinn's Advantage Cleavage Medium (mmol/Kg)

QB : Quinn's Advantage Blastocyst Medium

Osmotic meter = WESCOR : 5520 Vapor Pressure Osmometer

Embryonic development of the OPU cycles



Incubator	ASTECC	K-systems	<i>P</i>
No. of cultured embryos on day3	150	125	—
Good-quality embryos on day3 (n)	38.7 (58)	48.8 (61)	NS

No. of cultured embryos on day5	113	97	—
Blastocyst development on day5 (n)	33.6 (38)	28.9 (28)	NS
Good-quality blastocysts on day5 (n)	24.8 (28)	22.7 (22)	NS

Blastocyst development on day5-6 (n)	39.8 (45)	38.1 (37)	NS
Good-quality blastocysts on day5-6 (n)	27.4 (31)	24.7 (24)	NS

Embryo utilization (n)	42.7 (64)	37.6 (47)	NS

Embryonic development of the thawed ET cycles



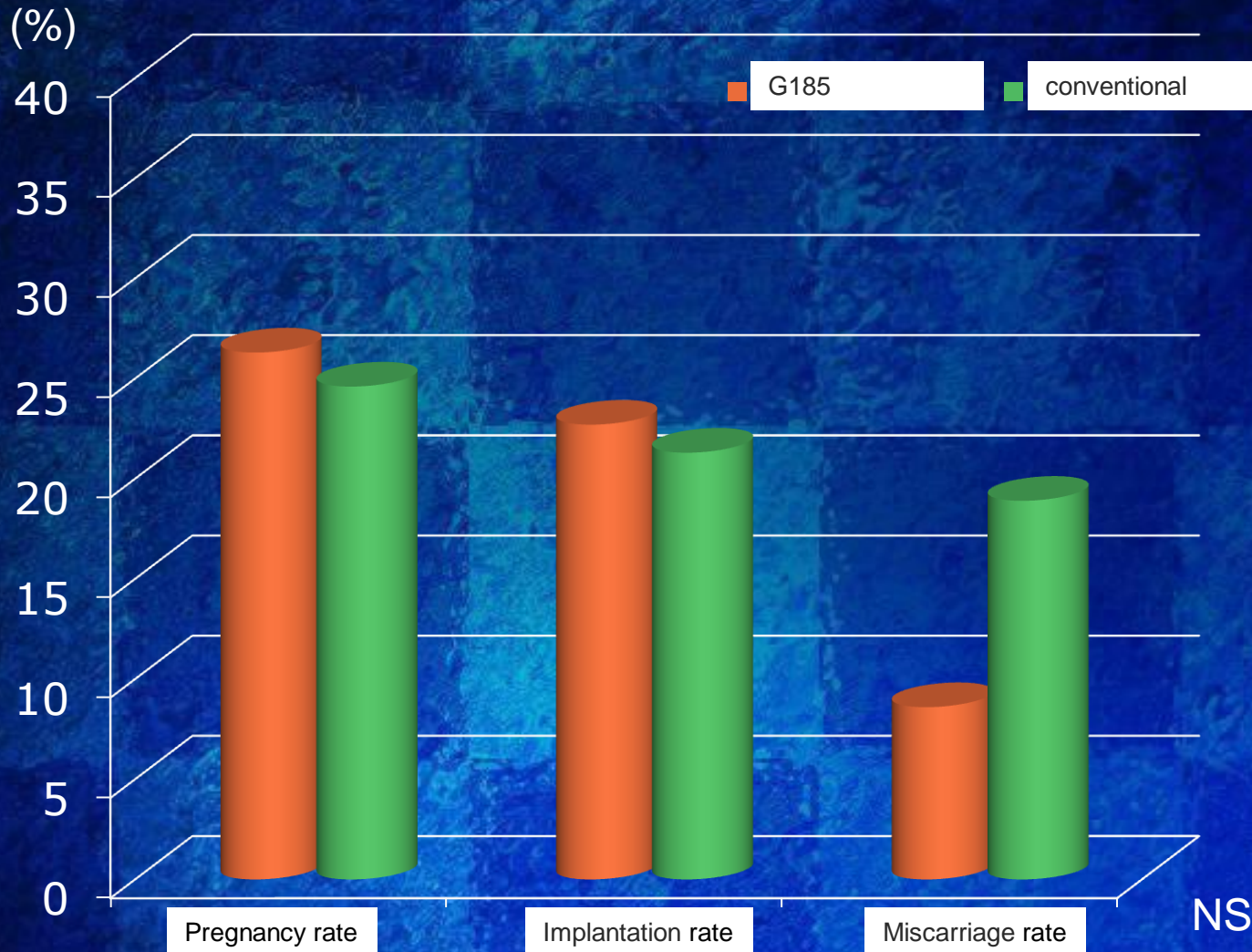
Incubator	ASTECC	K-systems	<i>P</i>
No. of cultured embryos on day3	85	75	—
Good-quality embryos on day3 (n)	40.0 (34)	<u>56.0 (42)</u>	0.05

No. of cultured embryos on day5	48	43	—
Blastocyst development on day5 (n)	12.5 (6)	<u>23.3 (10)</u>	0.05
Good-quality blastocysts on day5 (n)	12.5 (6)	18.6 (8)	NS

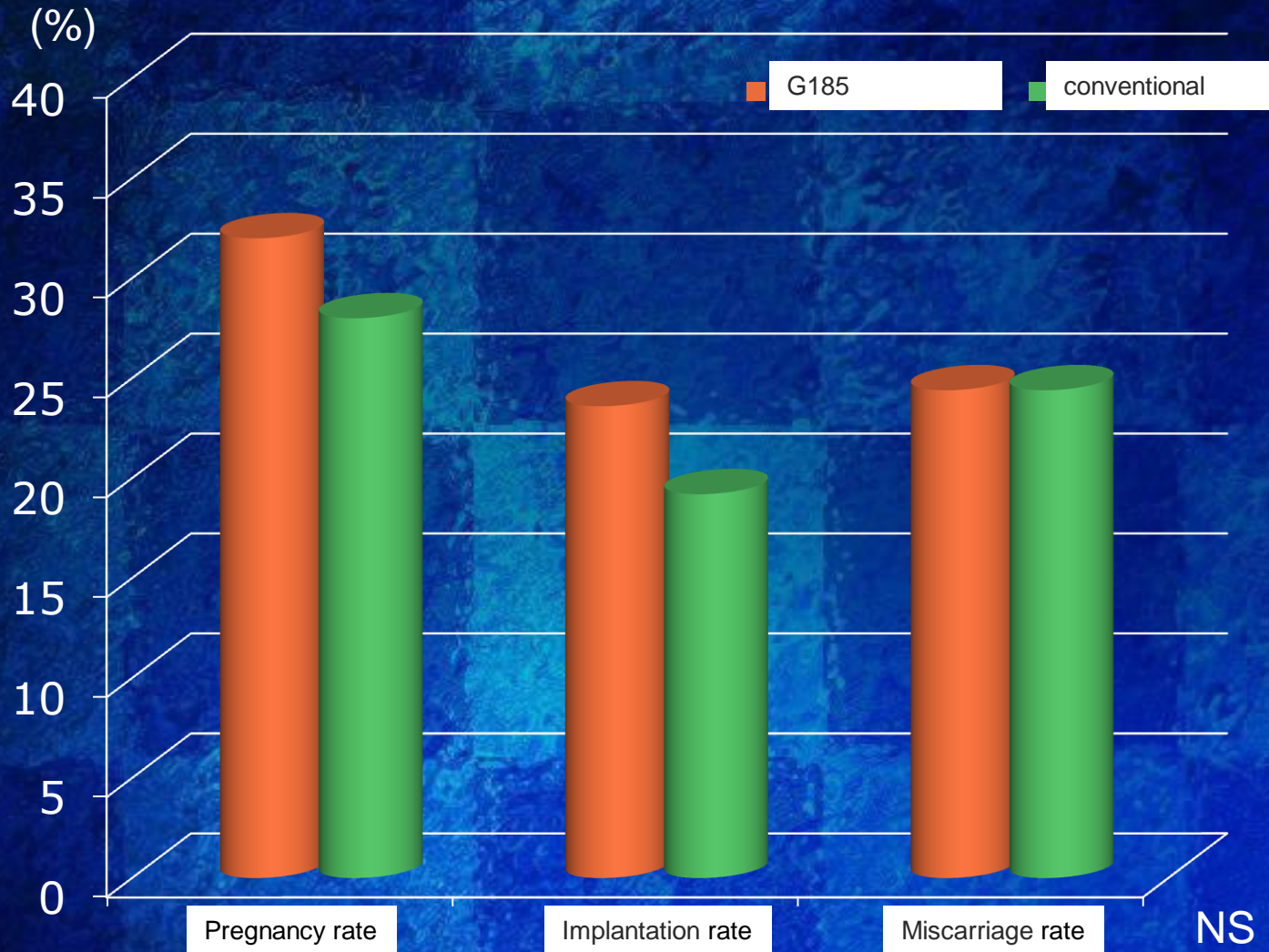
Blastocyst development on day5-6 (n)	20.8 (10)	30.2 (13)	NS
Good-quality blastocysts on day5-6 (n)	16.7 (8)	23.3 (10)	NS

Embryo utilization (n)	37.6 (32)	<u>52.0 (39)</u>	NS

Clinical Outcome of the Fresh ETcycles (481 cycles)



Clinical Outcome of the Thawed ET cycle (680cycles)



Conclusion



We compared G185 to conventional incubators

- ❖ **There was no difference in pH levels and osmolality. However, the osmolality tended to be lower in G185**
- ❖ **The developmental rate of embryos increased when using G185 than conventional incubators**
- ❖ **The pregnancy rate increased when used G185**
- ❖ **Humidified environment was not necessary for embryo culture**



These results suggest that K-systems G185 has valuable performance as a incubator.

The decision of introduction



K-System : G185
06/01/2009



For individual embryo culturing in patients, we decided to install more G185.



Next, we designed a stacking shelf rack for putting several sets of G185.

The necessity of usability in the rack design



Redesign the rack for our ideal “Chest”

G185-FN001



The incubator...

- Space-saving
- Easily individual culturing
- Simply maintenance

We started to operate the incubator with two sets of G185.

By installation of G185, the culturing spaces were increased.

06/23/2009

The workability design of the rack



G185-FN001

06/23/2009



A gap of our ideal and the utility

The need for improvement

Characteristics

rack for housing 3 sets of G185

Weakness

We tried to use the sample rack and realized that it was quite complicated in taking out and pushing back the drawers for embryo assessments.

Improved form of the rack



G185-FN002

12/28/2009



But two G185 were managed by 1 monitor, we could not notice the alarm.

The need for improvement

Characteristics

This shelf could only contain 2 G185s, upper shelf was fixed but the lower shelf was able to be moved in and out

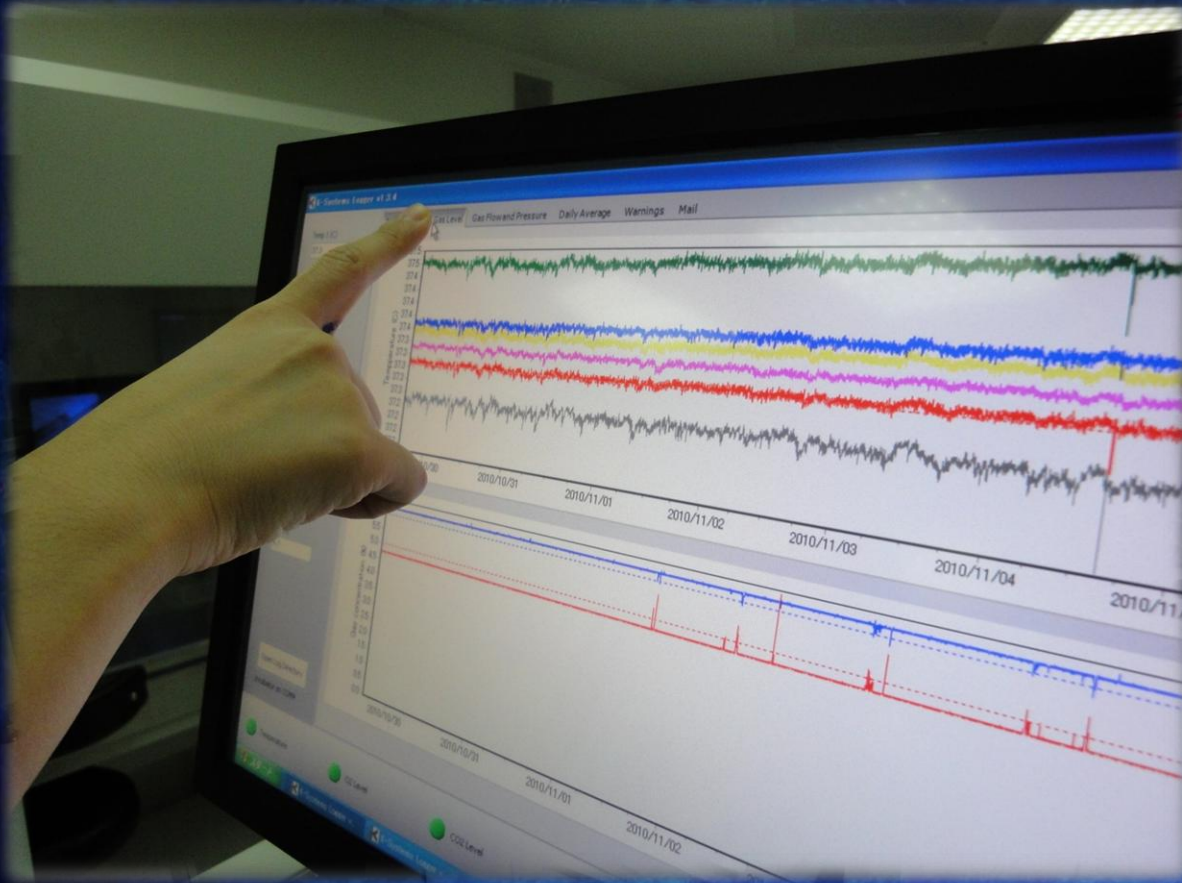
Weakness

There was only one concern that these 2 incubators were being monitored by one display and sometimes we missed some of the alarms they raised

Completion form of the rack



G185-FN003
12/28/2009

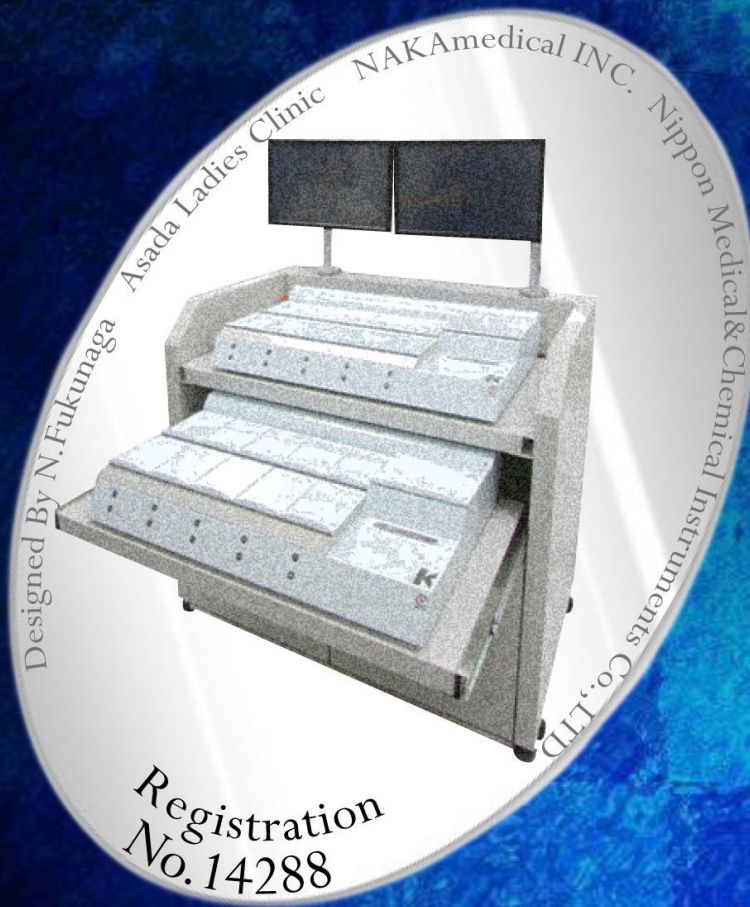


Characteristics

This rack has been developed and has one display per incubator and is able to monitor all of them at the same time during the culturing.

A touch screen has been introduced to the displays allowing for easy operation.

Registration of design rights of the originality rack



Asada Ladies Clinic

Naka medical INC.

Nippon Medical &
Chemical Instruments Co.,LTD

06/03/2010

A new concept laboratory



08/01/2010



We introduced G185 as all incubators into our new laboratory.

We are no longer using any of the previous incubators.



Asada Ladies Clinic

Accomplishment of individual embryo culturing



Currently we have been using 18 sets of the G185 incubators in both of our clinics and implementing completely individual culturing for all the patients

Asada Ladies Clinic

Discussion



- ❖ We were able to set up a large amount of a space saving individual culturing by updating conventional incubators and making a bold rack stand without trapping in stereotypes of embryo culture.
- ❖ The installation of G185 can cut costs.
e.g. Electricity costs were reduced to 1/2.
Gas consumption was reduced to 1/3
Maintenance time was reduced to 1/20.
- ❖ By using G185, we were also able to establish a method to individual culture system of embryos.

Thank you for your attention!

